MOOLARBEN COAL PROJECT

Response to Submissions

APPENDIX A I

Director General's Requirements

Director-General's Requirements

Section 75F of the *Environmental Planning and Assessment Act 1979*

Project	The proposed Moolarben Coal project and associated infrastructure, which includes the: • establishment and operation of three open cut coal mines and an underground coal mine, and associated infrastructure including a coal handling and preparation plant and rail facilities; • production of approximately 12 million tonnes of run-of-mine coal a year; and • rehabilitation of the site.
Site	Approximately 40km north east of Mudgee and 25km east of Gulgong
Proponent	Moolarben Coal Pty Limited
Date of Issue	16 March 2006
Date of Expiration	16 March 2008
General Requirements	The Environmental Assessment (EA) must include • an executive summary; • a detailed description of the project including the: – need for the project; – alternatives considered; and – various components and stages of the project; • consideration of any relevant statutory provisions; • an environmental risk analysis of the project which takes into consideration the issues raised during consultation; • a detailed assessment of the key issues specified below, which includes: – description of the existing environment; – an assessment of the potential impacts of the project; – a description of the measures that would be implemented to avoid, minimise, mitigate, offset, manage, and/or monitor the impacts of the project; • a draft Statement of Commitments, outlining environmental management, mitigation and monitoring measures; • a conclusion justifying the project, taking into consideration the environmental impacts of the proposal, the suitability of the site, and whether or not the project is in the public interest; • a signed statement from the author of the Environmental Assessment certifying that the information contained in the report is neither false nor misleading.
Key Issues	• **Surface and Groundwater** - including detailed modelling of potential surface and groundwater impacts, a site water balance, and a detailed description of any proposed creek diversions. A surface and groundwater contingency strategy must be included as part of the mitigation measures for the project which details the measures proposed to protect environmental flows and the water supply of landowners in the region; • **Subsidence** – including impacts on surface and groundwater resources, cliff lines and other geological formations, cultural sites, areas of public access, and surface infrastructure including roads, utilities, buildings and other structures; • **Flora and Fauna** – including impacts on critical habitats, threatened species, populations, ecological communities, native vegetation and adjacent national park estate. A comprehensive offset strategy must be included as part of the mitigation measures for the project to ensure that there is no net loss of flora and fauna values in the area in the medium to long term;

	• **Rehabilitation, Final Landform and Final Void Management** – including a justification of the proposed final land use for the site in relation to the strategic land use objectives for the Mudgee/Gulgong area; a detailed description of how the site would be progressively rehabilitated and integrated into the biodiversity offset strategy for the project; and the measures which would be put in place for the long term protection and management of the site (and any off-site biodiversity offset areas) following cessation of mining; • **Noise** – including construction, operation, and on-site and off-site road and rail noise impacts; • **Blasting and Vibration**; • **Air Quality** – including a detailed greenhouse gas assessment; • **Heritage** - both Aboriginal and non-Aboriginal; • **Visual**; • **Traffic and Transport**; • **Social and Economic**; and • **Cumulative Impacts** – potential cumulative impacts (particularly on surface and groundwater, flora and fauna, noise, and air quality) that may arise from the combined operation of the mine, together with the Ulan Coal Mine and the Wilpinjong Coal Mine.
References	The Environmental Assessment must take into account relevant State government technical and policy guidelines. While not exhaustive, guidelines which may be relevant to the project are included in the attached list.
Consultation	During the preparation of the Environmental Assessment, you must consult with the relevant local and State government authorities, service providers, community groups, affected landowners and any affected Commonwealth government authorities. In particular you must consult with: • Department of Environment and Conservation; • Department of Natural Resources; • Department of Primary Industries; • Australian Rail Track Corporation; • NSW Roads and Traffic Authority; and • Mid-Western Regional Council. The consultation process and the issues raised must be described in the Environmental Assessment.
Deemed refusal period	120 days

State Government Technical and Policy Guidelines - For Reference

Aspect	Policy /Methodology
Soil and Water	
	• *Managing Urban Stormwater: Soils & Construction* (Landcom); • *Guidelines for Fresh and Marine Water Quality* (ANZECC); • *Rehabilitation Manual for Australian Streams* (Land and Water Resources Research and Development Corporation); • *NSW State Rivers and Estuaries Policy* (DNR); • the various *State Groundwater Policy* documents (DNR); • *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* (DEC)*;* • *Environmental Guidelines: Use of Effluent by Irrigation* (DEC);
Flora and Fauna	
	• draft *Guidelines for Threatened Species Assessment* (DEC); • *Threatened Biodiversity Survey and Assessment: Guidelines for Development and Activities* (DEC); • *Guidelines for Developments Adjoining Department of Environment Conservation Land* (DEC)*;* • *NSW Groundwater Dependent Ecosystem Policy* (DNR); • *Policy and Guidelines for Fish Friendly Waterway Crossings* (DPI);
Blasting and Vibration	
	• *Technical Basis for Guidelines to Minimise Annoyance due to Blasting and Ground Vibration* (ANZECC)*;*
Noise	
	• *NSW Industrial Noise Policy* (DEC); • *Environmental Criteria for Road Traffic Noise* (DEC); • *Environmental Noise Control Manual* (DEC);
Air Quality	
	• *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (DEC)*;*
Heritage	
	• draft *Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation* (DEC)*;* • *Assessing Heritage Significance* (NSW Heritage Office); • *NSW Heritage Manual* (NSW Heritage Office);
Traffic	
	• *Guide to Traffic Generating Development and Road Design Guide* (RTA); • *RTA Road Design Guide* (RTA); • relevant Austroad standards;
Rehabilitation	
	• *Guidelines for Rehabilitation of Land for Agricultural End Use* (DPI);
Waste	
	• *Environmental Guidelines: Assessment and Classification and Management of Liquid and Non-Liquid Wastes* (DEC).

MOOLARBEN COAL PROJECT

Response to Submissions

APPENDIX A2

Acceptance of Environmental Assessment

NSW GOVERNMENT
Department of Planning

Mining & Extractive Industries
Major Development Assessment

Phone: (02) 9228 6481
Fax: (02) 9228 6466
Email: mike.young@planning.nsw.gov.au

Level 4 Western Gallery
23-33 Bridge Street
GPO Box 39
SYDNEY NSW 2001

Our ref: S04/01440

Alan Wells
Principal
Wells Environmental Services
PO Box 205
EAST MAITLAND 2323

Dear Mr Wells

Moolarben Coal Project - Adequacy of the Environmental Assessment (Project Application No. 05_0117)

I wish to advise you that, pursuant to section 75H of the *Environmental Planning and Assessment Act 1979*, the Environmental Assessment (EA) for the Moolarben Coal Project adequately addresses the Director-General's requirements issued on 16 March 2006, and has been accepted for public exhibition.

Arrangements have been made for the EA to be publicly exhibited from Monday 18 September until Monday 23 October 2006, and I have attached a copy of the public exhibition notice for your information. It would be appreciated if you would arrange for copies of the EA to be distributed to the locations in the attached table prior to the commencement of the exhibition period.

I also wish to advise you that the Minister for Planning has directed that an Independent Hearing and Assessment Panel (Panel of Experts) be constituted to assess certain aspects of the project in more detail (see attached). Under its terms of reference, the Panel of Experts is required to assess the following:

- groundwater impacts;
- subsidence impacts; and
- noise impacts.

The Panel will hold hearings in Mudgee from Tuesday 7 November 2006.

Please also note that following the exhibition of the EA you will be required to provide a Submissions Report to the Department which addresses the issues raised in submissions from the community, government agencies and Council. You may also be asked to respond to matters raised during the Panel hearings, and may be required to provide additional information to address any matters arising from the Department's detailed examination of the Environmental Assessment.

The Department will advise you about the arrangements for the Panel of Experts in the near future. In the meantime, if you have any queries about the assessment process, please contact Mike Young on (02) 9228 6481.

Yours sincerely

15.9.06

Chris Wilson
Executive Director
Major Project Assessments
As delegate for the Director-General

MAJOR PROJECT APPLICATION

Proposed Moolarben Coal Project

Application number 05_0117
Location Near Ulan, approximately 40 kilometres northeast of Mudgee
Proponent Moolarben Coal Mines Pty Limited
Council area Mid-Western Regional

Description of the Project

Moolarben Coal Mines Pty Limited proposes to establish a new coal mine and associated infrastructure near Ulan. The proposal, known as the Moolarben Coal Project, includes the:

- extraction of approximately 12 million tonnes of coal a year over a 21 year period, using open cut and underground mining methods;
- construction and operation of associated infrastructure, such as a coal handling and preparation plant, rail loop and coal loader, offices, workshops, and water management system;
- transportation of coal to various markets by rail; and
- rehabilitation and revegetation of the site.

Approval Authority

Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act)

Exhibition

The Environmental Assessment (EA) for the project will be made publicly available from **Monday 18 September 2006** until **Monday 23 October 2006**. During this period you may:

- view a copy of the EA at:
  - **Department of Planning**, Information Centre, 23-33 Bridge Street, Sydney;
  - **Mid-Western Regional Council Offices**, 86 Market Street, Mudgee; and 109 Herbert Street, Gulgong;
  - **Mudgee Library**, 64 Market Street, Mudgee;
  - **Nature Conservation Council**, Level 5, 362 Kent Street, Sydney;
- download a copy of the EA from the Department of Planning's website at www.planning.nsw.gov.au (go to Major Project Assessments/On Exhibition/Major Projects Part 3A); or
- ask the Department of Planning (1300 305 695) to send you a CD-ROM copy of the EA.

Independent Hearing and Assessment Panel

Under Section 75G of the EP&A Act the Minister has directed that an Independent Hearing and Assessment Panel (Panel) be constituted to assess the following aspects of the Moolarben Coal Project:

- groundwater impacts;
- subsidence impacts; and
- noise impacts.

The Panel will hold public hearings in Mudgee from **Tuesday 7 November 2006**.

Submissions

You are invited to make a written submission on the project. Your submission should include:

- your name and address;
- the project application number (No. 05_0117);
- a statement on whether you support or object to the project; and
- the reasons why you support or object to the project.

Your submission must reach the Department by **23 October 2006**, and should be:

- posted to: Major Development Assessment, Department of Planning, GPO Box 39, SYDNEY NSW 2001;
- faxed to: (02) 9228 6466; or
- emailed to: moolarben_comment@planning.nsw.gov.au

All submissions received by the Department will be provided to the Panel. However, if you wish to present your submission to the Panel, you should state this in your submission and provide your daytime contact details so that the Department can contact you to arrange a time for your appearance at the Panel hearings.

Under Section 75H of the EP&A Act, the Director-General is required to provide copies of submissions received during the exhibition period, or a report of the issues raised in those submissions, to the proponent and other interested public authorities. If you do not want your submission to be made available to the proponent or these public authorities, please state this in your submission.

Enquiries

Michael Moore: (02) 9228 6306

MOOLARBEN COAL PROJECT

Response to Submissions

APPENDIX A3

IHAP Terms of Reference

Direction

Section 75G(1)(a) of the *Environmental Planning and Assessment Act 1979*

Under Section 75G(1)(a) of the *Environmental Planning and Assessment Act 1979*, I, the Minister for Planning, direct that a Panel of Experts be constituted to assess the following aspects of the proposal by Moolarben Coal Mines Pty Limited for the Moolarben Coal Project described in Schedule 1:

- groundwater impacts;
- subsidence impacts; and
- noise impacts.

Frank Sartor MP
Minister for Planning

Sydney 21/8/ 2006 File: S04/01440

Schedule 1

The development by Moolarben Coal Mines Pty Limited for the construction and operation of an open cut and underground mine and associated facilities (known as the "Moolarben Coal Project"), approximately 40 kilometres northeast of Mudgee, NSW.

MOOLARBEN COAL PROJECT

Response to Submissions

APPENDIX A4

Government Issues and Responses

Table of Contents

Issue	Response
1 Department of Primary Industries – Mineral Resources (DPI-MR)(23 Oct 06)	
1.1 Tenure *1.1.1 Mining Lease* The proponent will require a mining lease over the project area, that will necessitate the need for an approved Mine Operations Plan (MOP), and Annual Environmental Management Report.	Moolarben acknowledges the need for a mining lease and the relevant reporting obligations.
1.1.2 Project Application Boundary The Project Application boundary extends outside of the boundary of EL6288, but the proposed mining lease boundary is within the EL boundary	The difference between the Project Application boundary and the EL6288 boundary was deliberate to ensure the complete assessment of the potentially impacted area.
1.1.3 Native Title Native title may exist over any Crown Lands and the Native Title Act will need to be complied with before a ML is granted.	Correspondence with the National Native Title Tribunal Office has been undertaken by DPI-MR to identify any current Native Title Claims over Crown Lands in the Project area. No current claims were identified. However, Moolarben is working with the relevant local Aboriginal groups to understand Native Title issues.
1.2 Safety DPI-MR considers that the proposal will not present any unusual safety issues. Issues of mine safety should be addressed within the relevant management plans approved with the MOP.	Moolarben are committed to providing a safe work environment for its personnel and for the general public compliant with the relevant Acts and Regulations. Moolarben will prepare in conjunction with the MOP appropriate management plans

Issue	Response
	that address mine safety.
1.3 Environmental The proponent will require the following: • Approved MOP; • Environmental Management Plans; • Reporting of monitoring and progress against the MOP in the Annual Environmental Management Report (AEMR); • Rehabilitation security bond; and • Approval under Section 126 (Reject Emplacements) and Section 138 (Longwall approval) of the Coal Mines Regulation Act 1982.	Prior to the commencement of operations Moolarben will prepare a MOP with associated environmental management plans, S126 and 138 applications to the satisfaction of the DPI-MR and the associated inter-agency committee in accordance with the relevant guidelines. An appropriate security bond will be lodged with the DPI-MR to ensure rehabilitation of the mine site. During mining operations an AEMR will be prepared in accordance with the DPI guidelines, reporting progress and monitoring of the project against the approved MOP.
1.3.1 Final Landform and Rehabilitation MCM are to provide additional detail in relation to final voids and rehabilitation measures within the MOP.	Moolarben are committed to excellence and beyond compliance practices, and acknowledge the need for a MOP and associated environmental management plans in defining the detail of the number and geometry of final voids.
1.3.2 Mine Closure MCM are to provide additional detail in relation to mine closure within the MOP in accordance with the latest policy and guidelines.	The MOP and associated management plans will provide greater detail on mine closure. Moolarben would be happy to assist DPI-MR in developing policy for achieving better mine closure outcomes.
1.3.3 Subsidence Prediction An Subsidence Management Plan (SMP) will need to be submitted as part of the MOP.	Moolarben will prepare a SMP for the area known as Underground No. 4 as part of the MOP.

Issue	Response
1.3.3.1 Aquifers The risk of cracking of the Triassic aquifers and potential drawdown of aquifers within the National Park should be assessed.	Further detail on the risk of cracking the Triassic aquifers and the potential impacts of drawdown is assessed within the specialist responses prepared by Peter Dundon and Associates and Strata Engineering (Australia) refer Appendix A10 and A8 respectively in the Response to Submissions Report.
1.3.3.2 Archaeological Sites There is potential for impact to archaeological sites and localized rock falls as a result of mining.	Further detail on the risk to archaeological sites is assessed within the specialist responses prepared by Archaeological Risk Assessment Services (ARAS), Strata Engineering (Australia) and Mine Subsidence Engineering Consultants (MSEC) refer to Appendices A13, A8 and A9 respectively in the Response to Submissions Report.
1.3.3.3 Goulburn River Tributaries Attention should be paid to subsidence impacts on the tributaries of the Goulburn River, with and without alluvial deposits where they will be undermined, particularly where the depth of cover is low.	Potential impacts from subsidence on the tributaries of the Goulburn River above Underground No.4 have been addressed within the Environmental Assessment Report and specialist studies. Further assessment of these is contained within the specialist responses prepared by Peter Dundon and Associates and Strata Engineering (Australia) refer Appendix A10 and A8 respectively in the Response to Submissions Report.
1.4 Geochemical Assessment The geochemical assessment although based on a small number of samples adequately addresses previous issues raised and identifies the need for further strategies to be developed during operations to effectively manage acid and salinity issues.	Moolarben will prepare a Land Rehabilitation Management Plan and a Site Water Management Plan that will detail the necessary steps for the further characterisation of materials and the necessary management and contingency plans that may be required to address acid or salinity issues.
1.5 MCP and Future Land Use Goals and concepts presented within the EA should be progressively translated into management strategies as mining progresses.	Moolarben will translate the goals and concepts presented within the Environmental Assessment Report into management strategies within an appropriate Mine Closure Plan.

Issue	Response
1.6 Fisheries A water monitoring program should be implemented to determine impacts on water quality and quantity and should include monitoring of water volumes and levels in the Goulburn River and Moolarben Creek.	Moolarben accepts a condition for a water monitoring program to be developed for the Goulburn River and Moolarben Creek.
2 Roads and Traffic Authority (RTA) (23 Oct 06)	
2.1 Intersections The proposed intersections (Ulan-Cassilis Road and Ulan-Wollar Road access and the Ulan-Cassilis Road/Ulan Wollar Road) are to be designed to appropriate RTA standards and plans submitted to RTA for approval prior to works commencing.	New intersections and the upgrading of existing intersections will be designed by appropriately qualified engineers to RTA standards and in consultation with Mid Western Regional Council, and with recognition of the existing and proposed traffic volumes and type.
2.2 Lighting The proposed intersections will require street lighting to be installed to Australian Standards.	Appropriately shielded lighting will be installed to Australian Standards at both the Ulan-Cassilis Road and Ulan-Wollar Road intersections.
2.3 Sight Distance Intersections must achieve safe sight distances in accordance with the RTA Road Design Guide.	Intersections constructed for the Moolarben Coal Project and improvements to existing intersections will achieve safe sight distances in accordance with the RTA Road Design Guide.
2.4 Road Structures and Assets The proponent needs to work with the RTA and Council to monitor and address any issues	Blasting and subsidence monitoring of impacts to adjacent structures will be undertaken as a component of the Subsidence Management Plan and the Blast and Vibration Management Plan in consultation with RTA and Mid Western Regional

Issue	Response
affecting road structures and assets at the proponent's cost, with no cost to the RTA. Blasting and subsidence impacts should also be monitored.	Council.
3 Regional Development Committee – Western Region (20-Oct-06)	
3.1 Ulan – Wollar Road / Mine Access Intersection	
3.1.1 Item (i) Ulan - Wollar Road Diversion The diversion should be designed to a minimum 80km/h standard and be signposted in accordance with AS1742.	The Ulan – Wollar Road diversion will be designed to an 80km/h standard and signposted to AS1742.
3.1.2 Item (ii) Fourth leg Clarification required on the fourth leg to the Mine Access and Ulan-Wollar Road Intersection.	There is no fourth leg associated with the intersection of the Mine Access Road and Ulan- Wollar Road. The internal access road is grade separated and follows the path of the conveyor and is to be used for maintenance vehicles associated with the conveyor and for occasional light vehicle movements between the underground and open cut facilities.
3.1.3 Intersection Type A type 'CHR' intersection will be required for mine access to accommodate the largest anticipated vehicle that may enter the mine.	Moolarben will construct a type 'CHR' and 'AUL' intersection for access into the mine in accordance with Australian Standards and in consultation with the RTA and Council.
3.1.4 Signage and Lighting Signage and lighting at the intersections and road diversion will comply with the relevant Australian Standards and RTA guidelines.	Moolarben will erect signage and lighting in accordance with AS1742 and AS1158 respectively as well as any relevant RTA standard.

Issue	Response
3.1.5 Batters and Guard Fences Intersections that have a significant batter will require guard rails.	Moolarben will install guard rails adjacent to the proposed intersections where batter slopes are significant.
3.2 Ulan – Cassilis Road / Ulan Wollar Road Intersection *3.2.1 Intersection* A type 'CHR' and 'AUL' intersection will be required for the intersection of the Ulan-Cassilis Road and Ulan – Wollar Road, of sufficient capacity to cater for expected storage and the largest expected vehicle.	Moolarben will construct a type 'CHR' and 'AUL' intersection for access into the mine in accordance with Australian Standards and in consultation with the RTA and Council.
3.2.2 Signage and Lighting Signage and lighting at the intersections and road diversion will comply with the relevant Australian Standards and RTA guidelines.	Moolarben will erect signage and lighting in accordance with AS1742 and AS1158 respectively as well as any relevant RTA standard.
3.3 Subsidence The proponent should consult with the Mid-Western Regional Council and the RTA with regard to the acceptable deformation limits of the Ulan-Cassilis Road as a result of mine subsidence before remedial works are required. The proponent should be responsible for all associated costs.	Moolarben will liaise with the Council and RTA to determine the deformation limits before remedial action is required. Monitoring of subsidence impacts will be detailed within the Subsidence Management Plan. All remedial costs associated with subsidence related impacts from the Moolarben Coal Project on the Ulan-Cassilis Road will be borne by Moolarben.
3.4 Delivery Vehicles Arrangement of vehicle trips associated with fuel, explosives and general stores should be considered to minimise impacts to school bus routes and peak traffic times.	Moolarben will where feasible arrange for fuel, stores and explosives to be delivered outside of the school bus pick up/drop off and peak traffic times of 8.15 am to 9.00 am and 3.15 pm to 4.00 pm Monday to Friday.

Issue	Response
3.5 Level Crossings The proponent should be responsible for ensuring additional track works are carried out to prevent unacceptable delays at level crossings between the site and the Wallerwang /Mt Piper power stations.	Should Moolarben transport coal west to Wallerwang / Mt Piper, the lessee of the infrastructure (being ARTC) will be responsible for any upgrading works associated with level crossings and associated track.
3.6 Road Safety and Level Crossing Audit The traffic report included a Road Safety Audit and Level Crossing Audit, these studies should be made available to the relevant road and rail authorities for action as deemed necessary.	Moolarben has supplied a copy of the Traffic Safety Report within the Environmental Assessment Report to the RTA, Mid Western Regional Council and the ARTC.
4 Department of Environment and Conservation (DEC) (23- Oct-06)	
4.1 Covering Letter Notes the major issues discussed further within the submission and also notes the need for the proponent to apply for an Environmental Protection Licence (EPL) in a separate application to the DEC.	Moolarben acknowledges the need to apply for an Environmental Protection Licence (EPL) pursuant to the Protection of the Environment Operations Act 1997.
4.2 Consideration of issues *4.2.1 Aboriginal Cultural Heritage* The Statement of Commitments in relation to Aboriginal cultural heritage appears to be adequate.	Moolarben is committed to working with the Department of Environment and Conservation and the local Aboriginal communities to develop an Aboriginal Cultural Heritage Plan for the Project.
4.2.2 Air Quality	Moolarben is committed to developing an environmental management strategy with associated dynamic management plans to ensure the effective real time monitoring and management of potential air quality impacts. The principles applying to the air quality management plans, air quality goals and

Issue	Response
	land purchase obligations will be compatible with current best practice standard and approaches currently exampled in the Bulga and Ashton Mine development consents. Moolarben will establish Air Quality Management Plans that will incorporate the principles contained within the DEC submission. The Air Quality Management Plans will include appropriate monitoring protocols to identify air quality effects including exceedances of air quality goals. Moolarben have also committed in the Statement of Commitments to a land acquisition program.
4.2.2.1 Address adverse dust impacts specified in Table 1 of Attachment 2.	See Response to 4.2.2 above and Appendix B1 for additional detail on air quality modelling, monitoring and mitigation.
4.2.2.2 Real Time Monitoring The DEC recommends the following is added to the Statement of Commitments – "Undertake real time monitoring at locations representative of residences where cumulative 24 hour PM10 concentrations approach or exceed 50ug/m3 as part of a comprehensive strategy to manage dust impacts."	See Response to 4.2.2 above and Appendix B1 for additional detail on air quality modelling, monitoring and mitigation.
4.2.2.3 Weather Station Review the location of the meteorological station and provide justification for these locations in a report to the DEC.	Moolarben will provide to the DEC prior to mining a justification for the location of the meteorological station.
4.2.2.4 Dynamic Dust Management Develop and implement a dynamic dust management plan as part of a comprehensive strategy to manage dust impacts.	See Response to 4.2.2 above and Appendix B1 for additional detail on air quality modelling, monitoring and mitigation.

Issue	Response
4.2.3 Flora and Fauna The draft Statement of Commitments in relation to flora and fauna appears to be adequate.	Moolarben is committed to working with the Department of Environment and Conservation to prepare Flora and Fauna Management Plans as listed in the Environmental Assessment Report.
4.2.4 Groundwater The DEC recommends the addition of the following items in the Statement of Commitments: • Construction Groundwater Management Plan; • Operation Groundwater Management Plan.	The water management plan will be inclusive of groundwater and surface water that will address the issues associated with both construction and operation activities. Surface and groundwater have been compiled into a single management plan to provide consistency and connectivity and negate unnecessary duplication.
4.2.5 Noise and Vibration The DEC recommends that a "Rail Traffic Noise Management Plan" is added to the Statement of Commitments.	Train noise associated with the movement of trains on the Moolarben Coal Project rail loop will be considered within the Noise Management Plan. Noise associated with the movement of trains from the Moolarben Coal Project on the main lines is the responsibility of the track infrastructure lessee (ARTC) and managed under their Environmental Protection Licence No. 3124.
4.2.6 Soil and Land Rehabilitation The draft Statement of Commitments in relation to soil and rehabilitation appears to be adequate.	Moolarben is committed to working with the DEC and other Government Agencies to develop the management plans identified in the Environmental Assessment Report.
4.2.7 Surface Water The DEC recommends the addition of the following items in the Statement of Commitments: • Construction Surface Water Management Plan • Operation Surface Water Management Plan.	The water management plan will be inclusive of groundwater and surface water that will address the issues associated with both construction and operation activities. Surface and groundwater have been compiled into a single management plan to provide consistency and connectivity and negate unnecessary duplication.
4.2.8 Monitoring The DEC recommends that an "Environmental Monitoring Management Plan" is added to the Statement of Commitments.	The requirements for environmental monitoring will be specified within the management plans for each relevant discipline being noise, air quality, water, meteorology and subsidence. This will negate unnecessary duplication between

Issue	Response
	management plans. Moolarben is committed to having a component within each management plan that details the necessary monitoring requirements.
5 Mid Western Regional Council	
5.1 Subsidence Due to the potential for impact at The Drip and other geological features, further investigation should be undertaken to substantiate that adequate protection is afforded to these features. Specific issues include: • Data interchange between coalfields and compatibility; • Impacts on undercut and rock failure due to increased weathering rates as a result of mining; • EAR does not address changes in drainage and associated impacts to groundwater dependent ecosystems (GDE) and The Drip, nor does the EAR detail rehabilitation options; • The EAR does not detail management contingencies in the event of movement identified during monitoring.	Subsidence is a term of reference for the IHAP process and therefore has been addressed in detail in Appendices A8 and A9 of the Response to Submissions Report.
5.2 Water Management Consideration of climatic conditions within the groundwater report and further detailed assessment during the IHAP process.	Groundwater is a term of reference for the IHAP process, additional information addressing the concerns raised has been addressed within Appendix A10 of the Response to Submissions Report.
5.3 Noise Noise generated during bund construction should	Noise is a term of reference for the IHAP process, additional information addressing

Issue	Response
require attenuation at the Ulan Public School and noise Ulan Village generally should be assessed in detail during the IHAP.	the concerns raised has been addressed within Appendices A11 and A12 of the Response to Submissions Report.
5.4 Transportation of Coal Road transportation of coal is not considered acceptable due to safety and road infrastructure impacts and the consent should condition this issue.	Given the relatively remote location (with regard to power stations and the ports) the haulage of coal by road transport would only occur in an extraordinary situation, such as catastrophic event, act of terrorism/war or in the event of a significant failure of the railway system.
6 NSW Heritage Office DoP: Heritage Council Review	
6.1 Determination of the legislative status of Roberts family pre-1950's European burial exhumation (Open Cut 2 area) (Page 4)	Prior to disturbance Moolarben will determine and comply with the applicable legal requirements if the proposed Robert's family burial exhumation is required.
6.2 The Heritage Office are also requesting a standard community consultation process if exhumation of Sites 3 & 4 are proposed.	Moolarben would prefer to avoid Sites 3, and 4 negating the need for exhumation. However in the event of requiring exhumation the relevant consultation processes will be undertaken.
6.3 The Heritage Council has asked if Land Title research was undertaken as part of the heritage assessment.	Moolarben's heritage consultant undertook Land Title research both in Sydney and Bathurst on early leases and land ownership.
6.4 Talbragar Fossil Fish Bed The Heritage Council requests that The Talbragar Fossil Fish Bed site be considered in terms of likely far field subsidence impacts (Page 6).	The Talbragar Fossil Fish Bed site is located 14kms to the north of the study area. It is expected that no far field impacts will occur as a result of Underground No.4.
6.5 Heritage Council Recommendations	Moolarben supports the recommendations of the Heritage Council subject to the archival works being staged with development of each open cut mine.
7 Hunter – Central Rivers Catchment	

Issue	Response
Management Authority (27 October 2006) 7.1 Specific Concerns *7.1.1 Impacts Surface and Groundwater* Adverse impact to surface water and groundwater in upper Goulburn River and tributaries	The Project's impacts upon surface and groundwater associated with the Goulburn River and its tributaries have been documented in the Environmental Assessment Report and Appendix A10 of the Response to Submissions Report.
7.1.2 Clearing of native vegetation, including threatened species and EECs	Refer to Response 11A, 11B, 11C, 11D, 11E and 11F of the Individual and NGO Response in Appendix A6 of the Response to Submissions Report.
7.1.3 Loss of Significant Aboriginal Heritage	Refer to Response 3A, 3B and 9C of the Individual and NGO Response in Appendix A6 of the Response to Submissions Report.
7.1.4 Cumulative impacts on local and regional aquifers and river system health including salinity levels	Refer to Response 8F of the Individual and NGO Response in Appendix A6 of the Response to Submissions Report.
7.1.5 Mine subsidence impacts on sandstone cliffs and gorges.	Refer to response 9A of the Individual and NGO Response in Appendix A6 of the Response to Submissions Report.
7.2 Guidance Principles No. 1 Surface Water Flows – "every precaution should be taken to ensure that surface water flows are not lost or diverted due to subsidence or geological cracking caused by extraction"	Moolarben concurs with Guidance Principles No.'s 1, 2, 3, 4, 14, 16 and 19 detailed in the submissions. Moolarben will prepare and implement an Environmental Management System containing Environmental Management Plans and Mine Operating Plans for the life cycle of the Moolarben Coal Project consistent with the Environmental Assessment Report, Response to Submissions Report and conditions of Project Approval.
7.3 Guidance Principle No. 2 – Groundwater "an aquifer's highest beneficial use or an inter-connected GW dependent ecosystem's requirements should not be significantly reduced"	

Issue	Response
7.4 Guidance Principle No. 3 - Water Management Plan (WMP) "A Water Management Plan (WMP) should be completed and approved before the commencement of mining operations" and "should apply to the full lifespan of the mine including after closure"	
7.5 Guidance Principle No. 4 – Vegetation "Mining should not occur where the alteration of hydrological regimes adversely impacts significant threatened species habitat and where the impact cannot be managed or offset"	
7.6 Guidance Principle No.12 "Adequate buffers should be maintained to protect adjacent surface water, aquifers and significant Aboriginal heritage where negative impact is likely"	
7.7 Guidance Principle No. 14 "Mining should be undertaken so as to minimise the destruction of culture and heritage sites and impacts on culturally significant landscapes"	
7.8 Guidance Principle No. 16 "Where mining activities significantly impact natural resources, offsets should be considered with the intention of improving or maintaining environmental outcomes"	
7.9 Guidance Principle No. 19 "Cumulative impact of mining should be considered during the approval processes"	

Issue	Response
8 Department of Natural Resources (DNR) (31 October 2006)	
8.1 Statutory Assessment The regulation of water related aspects of the project under the Water Act 1912 and Water Management Act 2000 apply to the project.	MCM will seek the relevant licences relating to water for the project as required from the DNR in accordance with the terms of Part 3A.
8.2 Groundwater systems and GDEs Further explanation required on the impact and protection of groundwater systems and groundwater dependant ecosystems. In particular the impacts to Triassic sandstone aquifers and loss of base flows in Moolarben and Wilpinjong Creeks as a result of subsidence.	These issues have been addressed within the response prepared by Peter Dundon & Associates refer to Appendix B2 of this document and Appendix A10 of the Response to Submissions Report. Further detail in relation to GDEs is contained within Appendix B3 of this document.
8.3 Water Management System • Doubts on the ability of the water resource to supply project demands without unacceptable impacts; • The borefield is only assessed in terms of overall impacts, not borefield specific impacts; • Justification for the use of the bore TB52/TB52A • Drainage of the fractured Triassic sandstone as a result of water extraction from the Permian and Marrangaroo Conglomerate; and • More detailed risk assessment and mitigative measures.	These issues have been addressed within the response prepared by Peter Dundon & Associates refer to Appendix B2 of this document and Appendix A10 of the Response to Submissions Report. Further detail in relation to GDEs is contained within Appendix B3 of this document.

Issue	Response
8.4 Impacts on Surface Water • Demonstrate that impacts to watercourses as a result of depressurisation or subsidence induced fracturing can be minimised or prevented; • Impacts to GDEs associated with reduced base flows in Moolarben Creek; • Verification of groundwater conditions across a range of climatic conditions.	These issues have been addressed within the response prepared by Peter Dundon & Associates refer to Appendix B2 of this document and Appendix A10 of the Response to Submissions Report. Further detail in relation to GDEs is contained within Appendix B3 of this document.
8.5 Conflicting detail on stream relocation Impacts to Spring Creek are not consistent through the EA plans, some plans mine beneath Spring Creek while other plans exclude the creek from the open cut.	Moolarben have excluded the mining of coal beneath Spring Creek within the Environmental Assessment Report, a 50m buffer from Spring Creek will be applied to minimise potential impacts.
8.6 Salinity Budget and Groundwater Impacts Assessment of a range of salinity scenarios for the operational and post-mining conditions including: • Salinity increase due to seepage loss in Moolarben Creek; • Increased salt release in the goaf of Underground No.4; • Saline discharge from Open Cut 3 void to Moolarben Creek due to salt mobilisation in backfill; • Leachate generation and migration from tailings in the Open Cut 1 void; • Loss of buffering capacity from Wilpinjong and	These issues have been addressed within the response prepared by Peter Dundon & Associates refer to Appendix B2 of this document and Appendix A10 of the Response to Submissions Report. Further detail in relation to GDEs is contained within Appendix B3 of this document.

Issue	Response
Murragamba Creek from dewatering of perched aquifers. MCM to develop a salinity management procedure for the operational and post-mine life.	
8.7 Impacts on Other Water Users MCM must demonstrate nil impact or propose compensatory mechanisms with regard to the licenced water entitlements of Ulan Coal Mines Ltd from Moolarben Dam.	These issues have been addressed within the response prepared by Peter Dundon & Associates refer to Appendix B2 of this document and Appendix A10 of the Response to Submissions Report. Further detail in relation to GDEs is contained within Appendix B3 of this document.
8.8 Statement of Commitments DNR requires that a commitment be made to protect/restore/improve GDEs associated with Moolarben Creek.	Moolarben propose within its ecological to strategy enhance and improve vegetation in the Moolarben Valley, refer to Project Commitment 13(b) within the Response to Submissions Report. Further Moolarben have made the commitments to have no effect on The Drip and therefore the associated GDEs.
9 Department of Lands (26 October 2006)	
9.1 Crown Public Roads Prior to any works commencing the proponent shall consult with the Department of Lands regarding Crown Roads that will be impacted by the development.	Moolarben acknowledges the need to undertake appropriate consultation prior to the commencement of operations with the Department of Lands and the public regarding any Crown Road closures or diversions required as a result of the Project.
9.2 Crown Reserve The following reserves exist within the proposed development area: • Reserved from Sale – 7010/ 1025345 • Reserve for Public Recreation – 204/ 755442	Moolarben acknowledges the need to undertake appropriate consultation prior to the commencement of operations with the Department of Lands regarding reserves that may be impacted by the Project.

Issue	Response
• Reserve for Trigonometrical purposes – 7007/ 1025321 Consultation with regard to the impact and rehabilitation to these reserves is required prior to the commencement of works.	
9.3 Tenured Land The following tenures exist within the proposed development area: • Perpetual Lease 109087 – Moolarben Coal • PO145660 – Ulan Coal Mines • Licence 328251 – Swords • Licence 198367 – Rayner • Licence PO12214 – Rayner. Consultation with the Department of Lands and the tenure holder is required prior to the commencement of works.	Moolarben acknowledges the need to undertake appropriate consultation prior to the commencement of operations with the Department of Lands and tenure holders regarding tenured lands that may be impacted by the Project.
9.4 Voluntary Conservation Agreements and Dedication Consultation and agreement from the Department of Lands is required for any conservation areas or dedications on Crown Lands.	A condition of any conservation agreement or dedication required as a result of the MCP would require the consent and agreement of the land owner. Reference is also made to the Revised Offset Strategy set out in the Response to Submissions Report whereby no voluntary conservation agreements are proposed. Rather, the strategy will be implemented via a Voluntary Planning Agreement with the Minister for Planning.
10 NSW Health (29 November 2006)	
10.1 Air Quality NSW Health expresses concern in relation to	See Response detailed with in Section 4.2.2 and the subsequent headings on air

Issue	Response
predicted incremental PM_{10} impacts on the Ulan Village and school.	quality.
10.1.1 Background PM10 Levels The predicted background PM_{10} impacts do not include background PM_{10} levels.	See Response detailed with in Section 4.2.2 and the subsequent headings on air quality.
10.1.2 Suggestions Numerous suggestions are detailed for consideration to reduce impacts on the community.	Moolarben concurs with the suggestions put forward by NSW Health.
10.2 Health Risk Assessment Concern is expressed that the Health Risk Assessment tends to underestimate the expected risks from increased exposure to mine dust, and has only applied the assessment to the Ulan Village.	It should be noted that the Health Risk was not identified as a key requirement within the Director General's requirements. Moolarben independently undertook the assessment with regard to the health of the local community, including Ulan Village and the wider community. While the conclusion in the Health Risk Assessment used the Ulan Public School as an example the results could be equally applied to other areas under similar conditions.
10.2.1 Reporting Risk The Health Risk Assessment should include additional risk in terms of a one-in-a-x risk.	Moolarben will supply to the Department of Health these figures prior to commencement.
10.3 Noise and Vibration NSW Health notes that the DEC has assessed the project in terms of noise vibration.	Moolarben notes the comments.
10.4 Groundwater Impact NSW Health provides a brief comment on groundwater and discharge of waters from mine operation.	Moolarben notes and concurs with the comments.

MOOLARBEN COAL PROJECT

Government Issues and Responses

APPENDIX BI

Air Quality Response

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6 November 2006

L & A Wells Property
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Dear Alan,

Response to submissions from DEC and Xstrata

Thank you for the copy of the submissions by the Department of Environment and Conservation (DEC) and Xstrata on the Moolarben Environmental Impact Statement (EIS). This email provides you with comments on the air quality issues raised in these submissions.

As we discussed the DEC's submission appears to include some contradictory statements. While we accept the general points made by the DEC, they do raise some matters that require a response. In the covering letter, the DEC indicates support for the project but in their comments on the air quality assessment (beginning on Page 8 of the letter), they have stated that the EIS was not suitable for public exhibition because there was "insufficient justification for the modifications to the ISC model". I have spoken with Kellie Raab about this and she has explained that the DEC's main concern is that the unmodified ISC model was shown to be reasonably accurate in predicting annual average PM_{10} concentrations and the modified version appears to predict lower values.

It is difficult to find many cases where model prediction can be compared with actual measurements. However in the preparation of the Mt Owen EIS, predictions of annual average PM_{10} concentrations were made using the unmodified ISC model at two locations (HV1 and HV2) (see Figure 1 in the Mt Owen EIS). The model results applied for Year 1 were also provided in the EIS. Year 1 can be approximately related to the situation that would apply at Mt Owen in the 2003/04 period.

Monitoring data for HV1 and HV2 are presented in the EIS for the twelve month period leading up to 29 September. At HV1, only TSP data were available, but at HV2 TSP data were available from 28 September 2002 to 2 April 2003 and PM_{10} measurements were available from 2 April 2003 to 26 September 2003. While the data set is not an ideal, it does provide some indication of the expected performance of the unmodified ISC model when used in EIS assessments.

To use the monitoring data it is necessary to convert the TSP measurements into PM_{10} concentrations. This can be done by noting that typically 40% of the TSP is in the PM_{10} size range. At HV2 there is a limited period (2 April 2002 to 26 September 2003 including 54 measurements of the 24-hour concentration) where both TSP and PM_{10} samples were collected. The PM_{10}:TSP ratio for this period was 34:100 and assuming that the value is 40:100 will be conservative for the current discussion. Th e factor of 0.4 appears to apply reasonably reliably in the Hunter Valley in areas were mining sources contribute a significant fraction of the dust in the air. (It does not apply in urban areas where the percentage of finer particles is higher than 40%). If the TSP concentration at HV1 is converted (assuming a PM_{10}:TSP ratio of 40:100) to an annual average PM_{10}, concentration the value is 32 $\mu g/m^3$. If the same approach is adopted to convert, the TSP data at HV2 and this is averaged with the direct measurements of PM_{10} that are available at HV2 then the estimated measured annual average PM_{10} concentration at HV1 is 21 $\mu g/m^3$.

The predicted and measured concentrations are shown below:

Monitor	**predicted annual average** PM_{10}	**Measured annual average** PM_{10}
HV1	36 $\mu g/m^3$	32 $\mu g/m^3$
HV2	22 $\mu g/m^3$	21 $\mu g/m^3$

In both cases, the predicted values were higher than the measured values, by 12% at HV1 and 5% at HV2. If the actual ratio PM_{10}:TSP, as measured at HV2 of 34:100 was used, then the measured concentrations would be even lower and the over prediction of the model would be greater. Instead of inferring an annual average of concentration of 32 $\mu g/m^3$ at HV1 the value would be 27 $\mu g/m^3$ and the value at HV2 would be 20 $\mu g/m^3$. The over prediction at HV1 and HV2 would be 33% and 10% respectively. Thus if ISCMOD does provide lower concentrations than the unmodified ISC model then this is a desirable outcome.

The DEC notes that there are 15 residences in Year 2 (see the DEC's Table 2) which are predicted (using the unmodified ISC model and with a background of 15.6 $\mu g/m^3$ plus 1 $\mu g/m^3$ to allow for Wipinjong) to exceed the 30 $\mu g/m^3$ annual PM_{10} assessment criterion. These residences are mainly located in Ulan Village. The modelling with the modified model does not identify these residences as exceeding the 30 $\mu g/m^3$ level. The predicted levels with the modified model are below 30 $\mu g/m^3$ but not sufficiently far below to conclude with a high degree of confidence that they would remain below as the mine progressed past the Village. (Note the original mine plan was modified and the mining rate decreased from 8 Mtpa to 7 Mtpa to ensure that the annual average PM_{10} levels in Ulan Village would be protected).

The uncertainty in model predictions coupled with the uncertainty as to background levels in the future, means that there is a risk that the annual average 30 $\mu g/m^3$ concentration level could be exceeded at these residences. However, there is also a real prospect that the mine could pass by Ulan Village and still maintain air quality within the DEC's assessment criterion.

The accuracy of the available models is clearly not sufficient (and never will be) to provide confidence that the annual average might not be exceeded if

unfavourable (i.e. dry windy weather) conditions persist for the three or so years when mining passes close to the village area. The only practical way of resolving uncertainties of this type would be by directly measuring the concentrations and using a protocol, which would specify what mitigating action, would be taken if the annual average PM_{10} concentrations did in fact exceed the 30 $\mu g/m^3$ concentration level.

It is suggested that a continuous particle monitor (TEOM or Beta Attenuation Monitor) be installed at or near the School or Hotel, which are close to most affected area in the village. A second monitor should be installed at the western end of the Village and a third monitor on the eastern side of the mine to determine upwind PM_{10} concentrations whenever winds are such as to blow dust from the mine to the village. A relocatable fourth monitor would be required to measure PM_{10} concentrations at Residences 1 and 16 which are potentially affected in the very early stages of mine development. The locations of the monitors are marked as PM_{10}-1, PM_{10}-2 and PM_{10}-3 on Figure 1. It is not practical to monitor at every residence and so the PM_{10} concentration at any residence (ID) in Ulan Village would be taken to be given by the following:

PM_{10} concentration at Residence ID = PM_{10} concentration at PM_{10}-1 + (PM_{10} concentration at PM_{10}-1 - PM_{10} concentration at PM_{10}-2) x (d1/d2).

If the average PM_{10} concentration in any continuous 12-month period, calculated using the formula above, exceeds the DEC's 30 $\mu g/m^3$ annual average goal then the owner would have the right to request that the property be purchased.

The same monitoring network could also be used to manage short-term dust impacts.

The conditions of consent for the Bulga open cut mine (DoP, DA376-8-2003 Section 23) provides a useful model for the acquisition of land affected by dust emissions from mining. The Bulga conditions are as follows:

Land Acquisition Criteria

23. *If the air pollution generated by the development exceeds the criteria in Tables 6, 7 and 8 at any privately-owned land, the Applicant shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in Conditions 9 – 11 of Schedule 5.*

Pollutant	*Averaging period*	*Criterion*
Total suspended particulate (TSP) matter	*Annual*	*90 $\mu g/m^3$*
Particulate matter < 10 μm (PM_{10})	*Annual*	*30 $\mu g/m^3$*

Table 6: Long term land acquisition criteria for particulate matter

Pollutant	*Averaging period*	*Criterion*	*Percentile[1]*	*Basis*
Particulate matter < μm (PM_{10})	*24 hour*	*150 $\mu g/m^3$*	*99[2]*	*TOTAL[3]*
Particulate matter < μm (PM_{10})	*24 hour*	*50 $\mu g/m^3$*	*98.6*	*INCREMENT[4]*

Table 7: Short term land acquisition criteria for particulate matter

[1]Based on the number of block 24 hour averages in an annual period
[2]Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Director-General in consultation with the DEC.
[3] Background PM_{10} concentrations due to all other sources plus the incremental increase in PM_{10} concentrations due to the development alone.
[4] Incremental increase in PM_{10} concentrations due to the development alone.

Pollutant	*Averaging period*	*Maximum increase in deposited dust level*	*Maximum total deposited dust level*
Deposited dust	*Annual*	*2 g/m²/month*	*4 g/m²/month*

Table 8: Long term land acquisition criteria for deposited dust

Note: deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS.3580.10.1-1991:Methods for Sampling and Analysis of Ambient Air – Determination of Particulates – Deposited Matter – Gravimetric Method.

The 150 μg/m³ 24-hour PM_{10} 99-percentile criterion (see Table 6 of the Bulga Conditions) was based on the US EPA criterion at the time. This has since been revised by the US EPA and now is said to be exceeded if it is exceeded more than once in any year. In practice, the reference to this 150 μg/m³ standard is probably redundant. The second row in Table 6, which specifies that the 24-hour PM_{10} concentration due to emissions from the mine would trigger acquisition (on written application) if the 50 μg/m³ were to be exceeded more than five times per year, provides more than enough control on the mine, and would be triggered before 150 μg/m³ (99-percentile criterion)

It is relevant to note that this allows 24-hour PM_{10} concentrations to exceed the 50 μg/m³ assessment criterion because there will inevitably be PM_{10} present from other sources. However, the 50 μg/m³ is exceeded from time-to-time in most parts of Australia on a few occasions each year depending on the occurrence of bushfires and dust storms. Given that this is the case, it is difficult to see why the 24-hour PM_{10} assessment criterion of 50 μg/m³ should be used as an acquisition criterion. Further, the US EPA's new (2006) 24-hour PM_{10} standard is 150 μg/m³ and the new Victorian EPA assessment criterion in the Draft Protocol for Environmental Management (PEM) for Mining and Extractive Industries has been set at 60 μg/m³ (includes the effect of PM_{10} emissions from all sources). Thus, there is precedence (apart from that set out in the Bulga consent) for assessing mining sources of PM_{10} (and indeed other sources of PM_{10} - see US EPA standard) at higher levels than 50 μg/m³ . It is proposed that acquisition (on written application) would be triggered by five exceedances of a 24-hour PM_{10} concentration due to the mine above 50 μg/m³ .

The general principles set out in the DEC's proposed Dynamic Dust Management Plan (see bottom of Page 11 of the DEC submission) (in relation to monitoring of meteorological and air quality conditions and the development of a dynamic management plant) are accepted. However, the final paragraph labelled 2 requires that a study is to be undertaken by a suitably qualified person to establish a readily identifiable indication that 90% control of dust is being achieved.

The company is prepared to commit to the study, but it is not clear how this might be undertaken. To determine the efficiency of dust controls requires field work. This would need to be undertaken over several weeks during which time the emission levels with and without the controls in place would need to be compared. This would be in the nature of a research program and therefore no outcome could be guaranteed. This is unlikely to fit the DEC requirement of "readily identifiable indication".

As an alternative it is noted that there is general consensus in the air pollution control profession that provided the surface moisture content of the road surface is maintained at approximately 7% then 90% control will be achieved (Buonicore A T and Davis W T, 1992). Thus, a means of testing surface moisture may satisfy the DEC's condition, but it is not clear that this would be the case.

Finally it should be noted that the assessment for Moolarben has been based on the assumption that haul roads achieve 75% control not 90% control. There is conflicting information in Appendix B of the Air Quality study supporting the EIS. Presumably this explains why the DEC has made this assumption. We apologise for this. Control efficiencies of up to 90% are achievable see (Buonicore A T and Davis W T, 1992) and so this means that the model results may be conservative. Total annual TSP emission rates assuming 75% and 90% controls on haul roads are summarised below. This can be used to assess the degree of conservatism built into the model if Moolarben were to operate with 90% control on the haul roads.

Estimated TSP emission for different control efficiencies on haul roads:

	75% control	90% control	
Year 2	2,612 tpa	2,186 tpa	15%
Year 5	3,786	3,127	16%
Year 7	3,068	2,820	7%
Year 9	5,693	3,701	34%.

The estimated net reductions in achieving 90% compared with 75% control on the haul roads are modest. They are 15%, 16%, 7% and 34% for years 2, 5, 7 and 9 respectively.

Ulan Coal Mine Limited (UCML)

UCML operate an open cut and underground mine with approval to produce 10 Mtpa of product coal (approximately 13 Mtpa ROM). The assessment prepared for Moolarben assumed that the effects of emissions from Ulan would be taken into account in the monitoring data. However, the UCLM submission advises that UCML produced 4.7 Mt product coal in 2004 and is estimated to produce only 7.5 Mtpa ROM in 2006. If UCML produced ROM coal at its approved coal production rate of 10 Mtpa (product coal), this would be equivalent to a 13 Mtpa ROM production. Thus, the monitoring data would not have captured the full effects of UCML operating at it approved production level.

The consequences of having assumed that UCML was operating at its approved production level for the Moolarben EIS depends on the fraction of the PM_{10}

measured at UCML that is actually attributable to emissions from UCML. The relatively modest average PM_{10} concentration measured at the PM_{10} monitor in the village (15.6 $\mu g/m^3$) suggests that the influence of UCML emissions in Ulan Village is small. Modelling studies undertaken on the assumption that Ulan is operating at 10 Mtpa (product) suggests that the contribution is of the order of 2 to 3 $\mu g/m^3$ (annual average PM_{10}) at the Village.

Most of the monitoring data used in the EIS was collected in 2006. Thus some of the possible 2 to 3 $\mu g/m^3$ is already accounted for in the existing monitoring because UCML is estimated to produce 7.5 Mtpa ROM in 2006. If this is taken to be 58% of the potential 13 Mtpa ROM then approximately 1.2 to 1.7 $\mu g/m^3$ of the 2 to 3 $\mu g/m^3$ would already be accounted for leaving 0.8 to 1.3 $\mu g/m^3$ not accounted for in the monitoring. This is a relatively modest increment, it would not be unreasonable to deal with this level of uncertainty using the proposed monitoring, and property acquisition plan referred to above.

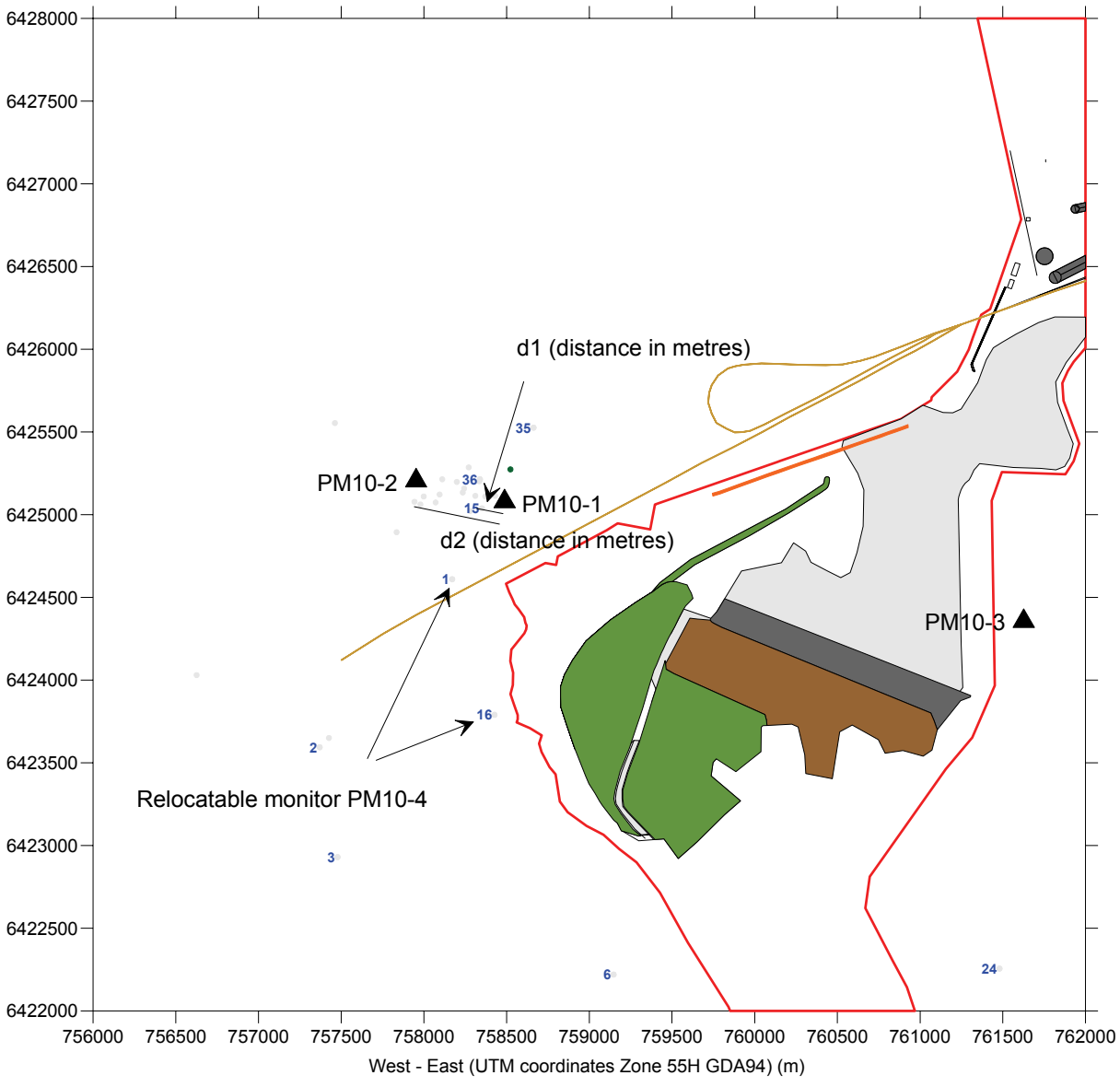
The potentially unaccounted effect from UCML would certainly be less than the reduction that would occur if Moolarben were to operate the haul roads with a control level at 90% rather than the 75% actually assumed.

Yours faithfully
Holmes Air Sciences

Nigel Holmes PhD
Atmospheric Physicist

Reference

(Buonicore A T and Davis W T (1992)
"Air Pollution Engineering Manual" Air and Waste Management Association,
Published by Van Nostrand Reinhold, 115 Fifth Avenue, New York 1003.



Active pit in Year 2

Unshaped spoil in Year 2

Rehabilitated area in Year 2

Suggested locations for PM10 monitors

MOOLARBEN COAL PROJECT

Government Issues and Responses

APPENDIX B2

Groundwater Response to DNR

MOOLARBEN COAL MINES PTY LIMITED

MOOLARBEN COAL PROJECT
GROUNDWATER ASSESSMENT

RESPONSE TO SUBMISSION BY
DEPARTMENT OF NATURAL RESOURCES

BY

PETER DUNDON AND ASSOCIATES PTY LTD

UNIT 9, 1051 PACIFIC HIGHWAY, PYMBLE, NSW 2073

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06 DECEMBER 2006

05-0158-R02B

CONTENTS

1 DEPARTMENT OF NATURAL RESOURCES SUBMISSION

The Department of Natural Resources (DNR) provided initial comments on an early draft of the Moolarben Coal Project Environmental Assessment (EA), in correspondence dated 19 July 2006. These comments were taken into account in preparing the final EA documentation.

The DNR has provided further comments on the final EA by letter addressed to Department of Planning dated 31 October 2006. Some components of the issues raised by DNR relate to surface water or project water management issues, and have been addressed by others. This document sets out our response to the groundwater aspects of the DNR comments.

Further information is provided within the Groundwater Assessment of the Preferred Project Report.

1.1 Issue 1 – The Assessment of Impacts to, and Protection of, High Quality Connected Groundwater Systems and Groundwater-Dependent Ecosystems Requires Further Explanation

Triassic Sandstones

No Triassic outcrops occur within the areas occupied by the proposed Open Cuts 1, 2 and 3.

A small number of springs and seeps were observed emanating from the Triassic sediments. All are located well away from the areas occupied by Open Cuts 1, 2 and 3. The groundwater in these perched aquifer zones within the Triassic is considered to be unconnected to groundwater in the underlying Permian coal measures.

The Triassic does overlie a large part of the Underground 4 (UG4) area, represented by a relatively thin presence at the southwestern corner and thickening towards the northern end of the proposed longwall extraction area. The Triassic is absent from the western end of Longwall 1 (LW1) and from the western third to half of LWs 6 and 7.

Alluvium-Colluvium

The results of drilling, piezometer construction and monitoring in the vicinity of Open Cut 3 has showed that:

- The pit floor will be higher topographically than the groundwater levels in alluvium and colluvium directly connected to Moolarben Creek and Lagoon Creek (Figure 30 of Groundwater Report);
- In most of Open Cut 3, the coal measures and Ulan Seam to be mined are dry, ie above the water table level (Figure 30 of Groundwater Report);

- Dewatering of Open Cut 3 will not lower groundwater levels in the Permian coal measures or other units beneath the alluvium-colluvium associated with Moolarben or Lagoon Creeks – dewatering (if needed at all) will be limited to the coal measures at elevations higher than the pit floor levels, which are above the groundwater levels in the alluvium-colluvium associated with Moolarben and Lagoon Creeks.

Consequently, we have assessed that there will be no impact from mining in Open Cut 3 on the groundwater systems connected to Moolarben Creek.

The pit floor level in Open Cut 2 is also situated above the Moolarben Creek bed level and above groundwater levels in alluvium/colluvium or any hardrock aquifers associated with Moolarben Creek.

We have assessed that mining from Open Cut 2 will not have any impact on connected groundwater systems associated with Moolarben Creek.

The southern part of Open Cut 1 is likewise above the elevations that are potentially in direct connection with Moolarben Creek, and we have assessed that mining from Open Cut 1 will have no impact on the groundwater resources connected to Moolarben Creek.

Inter-strata connectivity induced by subsidence fracturing can have no impact on baseflows in Moolarben Creek. The Underground 4 mine is well downdip and downstream from the Moolarben Creek catchment. Likewise, the Wilpinjong Creek catchment is totally outside the area of potential subsidence impact from Moolarben's Underground 4, and no impact on baseflows is predicted to occur.

1.2 Issue 2 – The EA Presentation of the Proposed Water Management System Requires Further Explanation

The predicted impacts derived using the groundwater model are based on total groundwater extractions that are sufficient to both dewater the open cut and underground workings, and any additional pumping from water supply bores to meet shortfalls from the dewatering discharges.

In years when the predicted dewatering discharge is greater than the project's water demand, then no additional pumping will be made from the water supply bores. These bores are located along the eastern side of the Underground 4 mine, and are proposed to draw water from both the Ulan Seam and the overlying Permian Coal Measures.

The dewatering system is likely to involve both in-mine pumping and external pumping from the bores. However, for the purposes of the modelling, it has been assumed that all dewatering will be achieved by discharging mine inflows. It is only in years that there is a shortfall between dewatering discharge and water demand that the water supply bores have been pumped in the model simulations.

The modelling therefore has assessed the impacts of the total pumping requirement, ie the dewatering discharge plus any additional water supply pumping in years of shortfall. Therefore the impacts predicted are the total impacts that will arise due to

groundwater extraction. There may be local variations as the actual configuration of bores versus in-mine pumping may differ in reality from what was assumed in the model. However, the total extraction rates will be essentially the same as modelled, and the regional water level impacts will be generally as predicted.

The model simulations also assumed that the Moolarben project has to be totally self-sufficient for water supply. However, it would be preferable that any surplus water available from one or other of the Ulan and Wilpinjong projects would be used as the preferred source of make-up water. Pumping additional water from the water supply borefield would then be further minimised.

The proposal to include bore TB52A in the water supply borefield has been made on the basis that there is no direct hydraulic connection between the Permian coal measures which are screened in that bore and the alluvial aquifer system which discharges into the Wilpinjong Creek catchment. The pumping test on TB52A showed no impact on groundwater levels in the overlying Tertiary alluvium (bores TB52B and PZ52).

A detailed monitoring program has been recommended in the EA Groundwater Report. If unacceptable adverse impacts on Wilpinjong Creek are detected, corrective action would be taken, which may include modifying the pumping rate to maintain impacts within acceptable levels.

All the modelling carried out to assess the Moolarben project impacts have included the ongoing Ulan and Wilpinjong projects. The impacts assessed are thus cumulative impacts. In order to isolate the impacts of Moolarben alone, selected model runs were repeated without the Moolarben project, and the two sets of results subtracted one from the other to determine the share of impact attributable to Moolarben alone.

1.3 Issue 3 – The EA Assessment of Impacts on Surface Water Must be Further Explained

DNR has again expressed concern that Moolarben Creek may experience reduced minimum baseflows as a result of open cut mining depressurising the connected floodplain to Moolarben Creek. As stated in the EA Groundwater Report and expanded in Section 1.1 above, we believe that the open cut mining will have a minimal impact on baseflows in Moolarben Creek, principally because the mining will take place almost entirely at elevations higher then the groundwater levels in the Moolarben Creek alluvium, and in large part above the water table, and will not involve the depressurisation of groundwater in the coal measures that underlie that alluvium.

The only reduction in baseflow contribution to Moolarben Creek will arise from the loss of the small number of seeps that lie within the mine footprints and will therefore be mined out. The discharge volumes from individual seeps is very small, so the reduction in baseflow will also be small.

On the basis of this areal calculation, the maximum base flow contribution that would be lost due to the proposed mining would be 5 percent of the total baseflow above Moolarben Dam.

It is estimated that groundwater baseflow represents less than 20 percent of average streamflow. Thus the loss of less than 5 percent of baseflow would represent a loss of less than 1 percent of average streamflow.

Surface flow in Goulburn River is supported by baseflow. However, the contribution to that baseflow from the Moolarben Creek catchment upstream of the confluence with Ryans Creek is extremely small, as there is no apparent residual high salinity effect in Goulburn River from the much more saline baseflow deriving from Moolarben Creek.

As proposed in the EA, a comprehensive ongoing monitoring program will be maintained, so that any adverse impacts that differ from or exceed predictions can be observed and appropriate response actions implemented.

1.4 Issue 4 – The EA Provides Conflicting Details on Proposed Stream Relocation

The outline of Open Cut 3 has been amended to exclude Spring Creek, thus there is no requirement to relocate Spring Creek.

1.5 Issue 5 – The Draft EA Does Not Address Salinity Budget or Groundwater Impacts

DNR has requested additional discussion of potential salinity related impacts of the project.

Salinity Concentration in Surficial Groundwater Resource

It is our assessment that the proposed open cut mining will not cause any significant impact on the groundwater resources associated with Moolarben Creek.

A small number of perched groundwater seepages that will be impacted by the open cut mining.

A conservative estimate based on areal calculations that the loss of 5 percent of the total Moolarben Creek catchment area could be accompanied by a maximum loss of 5 percent of total spring seepage to Moolarben Creek. This represents a small loss of total baseflow.

The salinity of seepages within the footprints of Open Cuts 1 and 2 is variable, with EC values ranging from 220 to 2900 µS/cm, and pH ranging from 3.4 to 7.1. Any reduction of spring seepage would therefore be expected to have a slightly reducing impact on groundwater salinity.

Potential Salt Releases to Underground 4

The majority of groundwater to be pumped from the Underground 4 workings will be derived from the Permian coal measures, with much smaller contributions from the

underlying Marrangaroo Conglomerate and less significantly from the overlying Triassic Narrabeen Group sediments.

On the assumption that groundwater pumped from the Underground 4 mine would be permanently removed from the groundwater system, then over the life of mine, a total of approximately 16,700 ML groundwater would be removed from these aquifers. The initial estimated average salinity of pumped extractions is about 420 mg/L TDS. At this salinity, the total salt removal from the contributing aquifers over the mine life would be 7,000 tonnes, equivalent to 56 g per tonne of coal mined.

Seepage Loss of High Salinity Seepage from Open Cut 3

Open Cut 3 will be separated from Moolarben Creek by the Tertiary paleochannel within which the groundwater has even higher salinity, based on samples from PZ58 (> 7000 mg/L TDS, and pH around 4). The very high salinity of the paleochannel groundwater is believed to reflect the low hydraulic conductivity of the tight clayey sediments within the paleochannel.

During mining, the pit will be a local sink for groundwater. The salinity of water that may accumulate in the pit post mining is not expected to be worse than that already present in the paleochannel, and probably will be less saline than the groundwater currently in the coal measures.

It is therefore considered that any seepage from the pit post mining will not contribute higher salinity to Moolarben Creek or its alluvial groundwater system.

Leachate Generation from Tailings in Open Cut 1

Leachate generation studies have not yet been carried out. MCM has committed to undertake a leachate generation and mitigation study in conjunction with the development of detailed mine plans.

1.6 Issue 6 – The EA Assessment only Partly Addresses Impacts on Other Users

A comparison of surface water salinities from the three catchments contributing to Moolarben Dam indicates that approximately 85 percent of the total baseflow to Moolarben Dam is derived from the Ryans Creek catchment, and 15 percent from the Moolarben Creek and Lagoon Creek catchments.

Thus a loss of 5 percent of Moolarben Creek baseflow would represent a loss of less then 1 percent of the total baseflow above Moolarben Dam. This would represent approximately 0.1 percent of the total catchment yield above the Moolarben Dam.

MOOLARBEN COAL PROJECT

Government Issues and Responses

APPENDIX B3

Response on Groundwater Dependant Ecosystems

Response to the Department of Natural Resources Comments

Moolarben Coal Project, Ulan

1 November 2006

1 GROUNDWATER DEPENDANT ECOSYSTEMS

1.1 What is a Groundwater Dependant Ecosystem?

Shallow groundwater of high water quality can support terrestrial vegetation, such as forests and woodlands, either permanently or seasonally as a Groundwater Dependant Ecosystem (GDE). Typically these GDEs occur in coastal locations either on deep sands, around wetlands or alongside rivers and large creeks. However, examples of inland GDEs may include River Redgum on floodplains, hanging swamps or valleys on the tablelands or artesian mound springs.

A number of different types of GDEs are also described such as:

- Terrestrial;
- Base flow in streams;
- Aquifer and cave ecosystems; and
- Wetlands.

In relation to the floristic assessment of the MCP DA Area, only terrestrial, base flow and wetland GDEs will be considered.

1.2 Assessment of Groundwater Dependant Ecosystems

The eight-step rapid assessment process contained within *The NSW State Groundwater Dependant Ecosystem Policy* (DLWC, 2002) was used to identify and assess terrestrial, base flow and wetland GDEs within the MCP DA area. An assessment of GDE significance primarily involved an examination of plant and animal species composition, with high value GDEs represented by vegetation containing either threatened biodiversity and/or regionally significant species.

Initial GDE identification was done by examining mapped vegetation units (i.e. vegetation associations) against their potential relationship with groundwater. Potential GDEs too small to map were assessed by overlaying the location of all known surface seepages with the native vegetation map for the MCP DA area. Wells Environmental Services supplied the location of known water seepages, which were collected during a field investigation with the relevant landholders using a hand held GPS location aid. Seepages that coincide with native vegetation such as ferns, sedges and other moisture affiliated species represent potential GDEs, which were then analysed to determine their status against the policy. Seepages occurring within disturbed agricultural landscapes were not considered GDEs.

2 GROUNDWATER DEPENDANT ECOSYSTEMS OF THE STUDY AREA

As described and documented in Dundon and Associates (2006) "there is abundant evidence in the large number of springs and seeps that the groundwater discharges to the surface throughout the area. However, with few exceptions, the volumes of individual spring and seep discharges are very small. Many seeps were only visible as patches of dampness or lush grass. The flow rate of the largest spring flow observed in the study area is estimated at less than 0.1 L/s.

Nevertheless, the accumulation of groundwater discharges is sufficient to maintain semi-perennial flow in the major tributaries and virtually permanent flow in the Goulburn River (either visible flow or flow within the sandy stream bed). Landowners report that a number of spring-fed dams are able to maintain permanent water through extended dry periods due to groundwater seepage".

The identification of potential GDEs within the MCP DA area was via the eight-step rapid assessment (DLWC, 2002), with those conforming to this assessment method described below in accordance with its associated broad GDE classification.

2.1 Terrestrial GDEs

No terrestrial GDEs mappable at the vegetation association level were identified within the MCP DA area or impact zone. However, small unmapped plant occurrences that are associated with moist to wet soils occur within the MCP DA may potentially be considered GDEs. The following sections describe these occurrences.

2.1.1 The Drip

North of the MCP DA area and outside the impact area is a series of small vegetated pockets located within the cliff line of The Drip, comprising of coastal wetland species and moisture affiliated ferns such as *Cladium procerum* and Coral Fern respectively. Water discharging at The Drip is derived from perched groundwater in the Triassic sandstone (Peter Dundon and Associates 2006). The water percolating through The Drip supports these vegetated pockets such that the removal of this water would almost certainly result in the loss of this vegetation. Accordingly, much of the vegetation in the cliff face of The Drip is considered a GDE, which is of highly localised and restricted occurrence. The significance of this GDE is high as the species assemblage and topographical characters are unique to the locality.

2.1.2 Underground 4

Identified within the impact area of Underground 4 are terrestrial woodlands and forests of dry sclerophyll character. Located midslope within a series of broad open drainage corridors is vegetation containing a localised occurrence of Parramatta Redgum (*Eucalyptus parramattensis*), a species that is known to be associated with wet soils (Harden, 2002). Also occurring with this canopy dominant is a range of other sclerophyllous shrubs that are also capable of occurring within moist soils such as *Melaleuca thymifolia* and *Melaleuca ericifolia*.

This area of open woodland is approximately 25.7 ha, with the associated topography being relatively flat (i.e. 2-4^0). Broad crests and ephemeral drainage lines predominate this area. Soils are generally poorly drained due to the gentle slope and elevated shale content, which retains soil moisture for prolonged periods after a rainfall event.

The small catchment preceding the mapped occurrence of Parramatta Redgum (*Eucalyptus parramattensis*) covers an area of approximately 42 ha, with the associated topography of this catchment characterised by an isolated elevated plateau, sheer cliff lines and moderately steep foot slopes (8-10^0). Free draining sandy soils characterise this catchment, with deeper free draining soils noted throughout the foot slopes.

The occurrence of the Parramatta Redgum (*Eucalyptus parramattensis*) vegetation appears to be a consequence of locally increased soil moisture levels. While it is possible that groundwater

seepage sourced from the preceding catchment may contribute some of the water for soil uptake, it is considered that surface water flows following storms combined with the gentle slopes and the moisture-trapping shale soils are the main factors contributing to the occurrence of Parramatta Redgum (*Eucalyptus parramattensis*). That is, the Parramatta Redgum vegetation is not considered a GDE.

Also observed within the Underground 4 area are isolated occurrences of ferns and other moisture affiliated species, which are located below rocky outcrops containing shale exposures. While no groundwater was observed at these locations, it is considered that ephemeral groundwater flows may potentially occur. Recent drought conditions are likely to have stopped the flow of localised shallow groundwater resources, indicating that the isolated fern clumps located along the rocky outcrops are adapted to significant temporal changes such as ephemeral water flows. It is considered that the occurrence of these fern clumps is periodically reliant on local shallow groundwater flows. No threatened biodiversity or their habitats occur at these locations.

Whilst the presence of GDEs has not been surveyed in the adjacent Goulburn River National Park, it is considered that their presence will be localised and restricted to scattered occurrences of outcropping shale strata throughout an area that is otherwise dominated by the massive sandstone structure of the Triassic geological formation. This conclusion is consistent with the results of the surveys within the study area as reported above.

2.2 Base flow GDEs

The Groundwater Report (Peter Dundon & Associates 2006) found that groundwater contributes to base flow in Moolarben Creek and the Goulburn River. Accordingly, riparian plus aquatic and fluctuating hyporheic zones may be groundwater dependent. Assessment of riparian vegetation did not indicate any specific riparian plant communities, which could be considered groundwater dependent. Rough-barked Apple forests located along these riparian corridors are common, with their occurrence more associated with the deeper soil profile rather than any potential relationship with groundwater regimes.

2.3 Aquifer and Cave GDEs

Based on a consideration of the MCP DA area geomorphology there is no aquifer or cave GDEs expected in the MCP DA area.

2.4 Wetland GDEs

Aside from the shallow wetland area at the confluence of Lagoon and Moolarben Creeks plus the fringing wetland around the upper margin of Moolarben Dam there are no natural wetland areas in the DA area. The two shallow wetland areas are created as a result of in-stream flow constrictions and consequently are dependent on, and respond to surface water level fluctuations. Neither is dependent on local seepages or spring water. Whilst surface water level is in turn dependent on groundwater base-flow, the fluctuations in water level are mainly governed by water draw down from the dam and by local evaporation. These fringing wetlands are not considered to be GDEs.

2.5 Terrestrial Fauna dependence on GDEs

Threatened fauna species in the study area are not generally distributed according to specific narrow vegetation associations (as is the nature of potential GDEs in the DA area), but are

correlated instead with the broader terrestrial stratification units. The only threatened fauna species recorded from the general locality with a fairly direct dependence on water is the Giant Barred Frog, which was not recorded from the MCP DA area during the surveys undertaken for this project. Of the possible assessed GDEs considered above it is concluded that are no GDEs within the study area that are likely to be of specific importance to any threatened fauna species.

2.6 Summary

The following summaries the assessment of the MCP DA Area in terms of GDEs:

- With regard to GDEs it is concluded that seeps or springs within the study are generally those fed by alluvials, which are located on disturbed agricultural lands. As a consequence, they are generally degraded by agricultural practices including extensive repetitive ploughing and other soil treatments. Shallower alluvial springs and seeps are located on the higher slopes of the creek valleys and are either ploughed under or are associated with in-line dams. Rock fracture seeps and springs are almost all ephemeral with little or no significant GDE plant growth and no aquatic GDE habitats;
- An area supporting Parramatta Redgum occurs in one location above Underground 4. The area is not an area of confined surface groundwater (as in a hanging swamp) but rather an area of enhanced soil water retention within an unconfined broad upper catchment ephemeral creek line and is not considered a GDE;
- Peter Dundon & Associates (2006) state that surface flow in Goulburn River and its tributary streams is supported by groundwater base flow. However, the water quality of the groundwater component in the Moolarben and Lagoon Creeks is poor and probably has an adverse impact on any vegetation reliant on stream flow in those tributary catchments;
- Aside from the shallow wetland area at the confluence of Lagoon and Moolarben Creeks plus the fringing wetland around the upper margin of Moolarben Dam there are no natural areas of wetland in the MCP DA area. The two shallow wetland areas have been created as a result of in-stream flow constrictions and consequently are dependent on, and respond to surface water level fluctuations. Neither is dependent on local seepages or spring water. Whilst surface water level is in turn dependent on groundwater base-flow, the fluctuations in water level are mainly governed by water draw down from the dam and by local evaporation. These fringing wetlands are not considered to be GDEs; and
- Within the main Goulburn River in the northern part of EL6288, the main groundwater base-flow contribution is believed to derive from the Triassic sandstones, not from the Permian coal measures aquifers (Peter Dundon & Associates 2006). It is therefore predicted that the project will not directly impact on stream flows in Goulburn River, and its impact on reducing the base-flow contribution from the Moolarben-Lagoon Creek tributary catchments is likely to be beneficial rather than adverse.

3 LIKELY IMPACTS OF THE PROPOSED MINE

Impacts of the mine would be associated generally with the following five activities:

- Construction and operation of the main infrastructure area on the northern side of the Ulan-Wollar Road, in the vicinity of Bora Creek;

- OC1, just south of the proposed main infrastructure area and south of the existing Ulan Coal Mine facilities;
- OC2, south of OC1 between a prominent vegetated ridgeline to the east and Moolarben Creek to the west;
- OC3, in the far south of the DA area, between Moolarben Creek in the west, and a prominent vegetated ridgeline in the east; and
- Underground No. 4, in the northern part of the DA area, north of the Ulan-Wollar Road and main infrastructure area, between the Goulburn River National Park to the east and the existing Ulan Coal Mines to the west.

3.1 Main Infrastructure Area

Impacts on native vegetation would essentially be limited to clearing of small currently isolated and/or disturbed strips of vegetation and paddock trees. The surface infrastructure would result in the displacement of native vegetation, fauna habitats and some (mostly dry) aquatic environs for in-line water storage. No direct or indirect impact on any GDEs is expected for this area.

3.2 OC1

Impacts on native vegetation would involve clearing of relatively intact native vegetation in the southern part of the proposed OC1 area, and clearing of disturbed regrowth and remnant native vegetation in the northern part of the proposed OC1 area. OC1 and associated infrastructure would result in the displacement of native vegetation, fauna habitats and some low order ephemeral aquatic environs.

There would be no significant loss of aquatic habitat due to the lack of significant aquatic habitat in this part of the DA area. There would be no significant change to the groundwater flow to Moolarben Creek as OC1 does not intercept or contribute to the groundwater aquifer discharging into Moolarben Creek (i.e. groundwater travels to the northeast from OC1). No direct or indirect impact on any GDEs is expected for this area.

3.3 OC2

Impacts on native vegetation would generally be limited to clearing of fringe areas of native vegetation on the mid-slopes to the east of OC2, clearing of small currently isolated and/or disturbed strips or vegetation, and clearing of paddock trees. OC2 and associated infrastructure would result in the displacement of native vegetation, fauna habitats and some low order ephemeral and disturbed aquatic environs.

There would be no significant loss of aquatic habitat due to the lack of significant aquatic habitat in this part of the DA area. There would be no significant change to the groundwater flow to Moolarben Creek as OC2 does not intercept or contribute to the groundwater aquifer discharging into Moolarben Creek (i.e. groundwater travels to the northeast from OC 2). No direct or indirect impact on any GDEs is expected for this area.

3.4 OC3

Impacts on native vegetation would generally be limited to clearing of fringe areas of native vegetation on the mid-slopes to the west of OC3, clearing of small currently isolated and/or disturbed strips or vegetation, and clearing of paddock trees. OC3 and associated infrastructure would result in the displacement of native vegetation and fauna habitats, with aquatic/riparian

environs other than some low order ephemeral and disturbed drainage lines generally excluded from the proposed mining footprint. The Moolarben Creek riparian corridor is excluded from the mining footprint as is Spring Creek.

Aside from the culverts and earth works for the haul road across Moolarben Creek, and any road easement requirements for the Moolarben Road diversion, OC3 and associated facilities are located well away from Moolarben Creek and its riparian habitats, and there are thus no direct impacts on Moolarben Creek aquatic habitats or biota. Indirect impacts can be mitigated to insignificance by suitable construction methods to limit sediment transport to the creek.

There would be no significant loss of aquatic habitat due to the lack of significant aquatic habitat in this part of the DA area. There would be no significant change to the groundwater flow to Moolarben Creek as OC2 does not intercept or contribute to the groundwater aquifer discharging into Moolarben Creek (i.e. groundwater travels to the northeast from OC 2). No direct or indirect impact on any GDEs is expected for this area.

There are no significant impacts predicted for base flows into Moolarben Creek as a consequence of developing OC 3. Potential GDEs that are associated with Moolarben Creek rely on a deeper aquifer located below OC 3, which will remain unaffected post mining. Groundwater associated with the aquifer contained within OC 3 has a surface discharge somewhere between Moolarben Creek and the eastern margin of OC 3. The water quality associated with this discharge is considered highly saline, which after mining will be reduced by the removal of its source (i.e. the marine sediments that form the coal strata).

3.5 Underground No. 4

Underground No. 4 area is situated adjacent to the western boundary of the Goulburn River National Park. The design of the underground mine incorporates adequate setbacks to ensure no impacts on the Goulburn River National Park. The entrance to Underground No. 4 would be located on currently cleared land near the main CHPP infrastructure area and rail loop. Almost no native vegetation would be cleared or removed for the operation of Underground No. 4. There would be a need to maintain existing tracks and potentially construct additional access pathways for the purposes of subsidence monitoring and implementation of various works such as erosion control and fire management.

Strata Engineering (2006) predict almost no potential interaction between continuous and surface cracking events resulting from the underground mining, thereby indicating a very low potential for surface waters entering the underground void. However, based on conservative estimates, Strata Engineering (2006) predicts some potential for continuous cracking above underground panel 1 to interact with surface cracking. Vegetation located above this portion of the mining operation is cleared disturbed grasslands, which are of limited ecological value and are not considered a GDE. Based on the conservative estimates prepared by Strata Engineering (2006) there would be no significant loss of surface or ground water to mining operations in the Underground No. 4 area. Based on the subsidence modelling prepared by Strata Engineering (2006), no major upsidence is expected on the creek lines throughout the area.

Subsidence impacts are to be expected to affect the cliff-lines, with the resultant change being isolated rock falls from overhangs and increased cracking. No closures in existing cliff face cracks are expected during the operation, rather the cracking is expected to enlarge momentarily during the movement of mining under the cliff areas.

The ephemeral creeks of the underground 4 area flow from east to west into the Goulburn River and not directly into the Goulburn River National Park. There are three minor creek systems draining west from the Goulburn River National Park to the Goulburn River, which have little or no capacity to intercept and store flood waters for any length of time and consequently there is little or no permanent aquatic habitat, no fish passage requirements and no significant aquatic GDEs. Possible subsidence impacts could introduce some ponding into the lower sections of these creek systems, which may increase the presence of aquatic habitats. Given the present low capacity for permanent or semi-permanent aquatic habitat formation in these creeks additional ponding is on balance considered a beneficial impact.

Parramatta Redgum was identified within the area located above he proposed Underground 4, a species that is known to be associated with moist soils. The extent of Parramatta Redgum is situated within an area of enhanced soil moisture arising from a broad, shallow drainage line containing elevated shale material within the soil profile. The shale content often permits moisture retention through prolonged dry periods, hence enabling the growth of species reliant on moist soils. However, field observations indicate the predominantly sclerophyllous shrub and groundcover vegetation throughout this drainage area is largely indifferent to drainage lines with sandier soils, indicating that the localised elevated soil moisture levels are more constant at depth. This drainage line is not dependent on groundwater flows, rather periodic surface water flows from the limited preceding catchment. Consequently, it has been determined that this vegetation is not a GDE, is not significant and will not be significantly impacted by underground mining.

Located elsewhere throughout the Underground 4 area are small isolated occurrences of ferns and other moisture affiliated plant species, particularly below rocky outcrops and along creek side cliff lines. These unmapped areas of moisture affiliated plant species are common to Triassic sandstone formations throughout the Sydney Basin Bioregion, with large expanses of this vegetation type often referred to as 'Hanging Swamps'. Within the study area, these isolated occurrences of terrestrial moisture affiliated plant species generally cover less than 5 m^2 in area and do not constitute the classic characteristics of a Hanging Swamp. These isolated plant assemblages are not significant to the local area or region. Further, there are substantial amounts of this vegetation type located within existing conservation reserves including Goulburn River National Park. While these small isolated plant assemblages may be considered reliant on groundwater occurrences, their significance is negligible due to their frequent occurrence within conservation reserves and limited contribution to biological processes.

4 CONCLUSIONS

The following is a response to GDE matters raised by the Department of Natural Resources (DNR) based on the information provided in the Environmental Assessment Report, as summarised in the preceding sections.

1. The assessment of impacts to, and protection of, high quality connected groundwater systems and groundwater-dependant ecosystems requires further explanation.

The EA report clearly identifies the existence of groundwater aquifers throughout the study area, both within and outside the identified impact areas. For areas contained within the infrastructure

area, OC1, OC2 and OC3, groundwater resources are considered limited and inconsequential in terms of a positive significant base flow contribution to the Goulburn River, Wilpinjong and Moolarben Creeks (Peter Dundon and Associates, 2006). The area of surface mining impacts is limited to coal seams that are predominantly dry. Further, the water quality of the affected aquifer within OC3 has been identified as highly saline, which is likely to be a contributor to the saline water quality contained within Moolarben Creek.

Detailed ecological studies throughout the study area have determined that there are no significant GDEs located within the impact area. While there are isolated occurrences of plant species that may form small GDEs (i.e. ferns and the like) within the impact area, it is considered that none of these plant assemblages constitute a 'hanging swamp' or any other terrestrial GDE that is of local or regional significance. Conversely, 'The Drip', which is located outside the area of impact on the northern side of the Goulburn River, contains larger expanses of plant life reliant on groundwater resources. These plant assemblages are considered locally and regionally important and will not be deleteriously impacted by underground mining. Sufficient monitoring is proposed to ensure no impact on the Goulburn River, which will prevent any impact on vegetation located to the north.

7. The Statement of Commitments to the project must include management of riparian buffer areas, and groundwater dependent ecosystems.

The EA report clearly identifies actions supporting riparian buffer management, particularly along the section of Moolarben Creek that fronts proposed OC3. There are substantial areas of proposed revegetation works that are designed to restore a more natural riparian corridor along this drainage line, hence prospectively improve its health. Accordingly, it is considered that any GDEs located along this riparian corridor will be appropriately managed in the long term.

In relation to riparian buffers and GDE management along the Goulburn River, where it adjoins Underground 4, it is considered that the proposed monitoring and associated underground mine management will be sufficient to deliver the predicted no significant impact outcome on these environmental features of importance. Further management is considered irrelevant given the commitment to a no significant impact outcome.

MOOLARBEN COAL PROJECT

Response to Submissions

APPENDIX A5

Register of Individual and NGO Issues

Appendix A5 – Register of Individual and NGO Submissions

The following table lists all submission makers and corresponding issues raised in the submission. For details of each issue and the corresponding response from Moolarben to the issue see **Appendix A6**.

Name	Date	Identified Issues
Abbott, G	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Adams, L	5 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Adams, L	23-October-2006	Notice of appearance at IHAP
Adams, M	5/10/2006	19A
Adler, N&A (Pyramid Hill Wines)	17-October-2006	8K 8A, 8B, 9A, 19A, 19A, 19A
Aiton, A	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Allan, M	5 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Allen, G	12/10/2006	8B, 9A, 8E, 19A, 9A, 8A, 2A, 2B, 2C
Andersen, J	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Anderson, D	23-October-2006	17A, 19A,19A,19A
Anderson, D	13/10/2006	2J, 4A, 8A, 8B, 9A, 11B, 19A, 19A
Anderson, R	Rec: 16 Oct.06	17A, 19A,19A,19A
Anthis, M	23-October-2006	11A, 11G, 19A, 8A, 8B, 3A, 3B
Arnold, J	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Arnott, W & Pavich, C	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Ashbolt, S	19-Oct-06	3C, 8A, 8B, 9A,14A, 17A
Atkinson, B	21-October-2006	17A, 4B, 16A
Audietsch, T	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Austen, K	Rec 27/10/06	11A, 11G, 19A, 8A, 8B, 3A, 3B
Australian Conservation Foundation-Central Coast Branch	23-October-2006	8A, 19A, 8B, 8D, 3A, 3C, 9A
Azzopardi, M	16/10/2006	9A, 9B, 8B. 8A, 2C, 3A, 3C
B???, N	Rec 23/10/06	17A, 19A,19A,19A
Barlow, H		3C, 8A, 8B, 9A, 14A, 17A
Barrass, W	09-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Barrett, W	20 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Barrett, W	12/10/2006	8A, 8C, 8E, 19A
Barton, D	5 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Bateman, B & G	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Batey, L	26-October-2006	4A, 4B, 8A, 2C, 2K, 5A, 4A, 2J, 10B
Behrens, W	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Bennetto, P	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Best, A	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Best, B & H	20-October-2006	21A
Biddle, J	6 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Billing, S	7 Oct.06	17A, 19A,19A,19A
Billing, S	14 Oct.06	17A, 19A,19A,19A

Name	Date	Identified Issues
Binns, B	23-October-2006	3A, 3C, 2A, 11A, 8E, 19A, 11B, 5A, 4A
Bird, T	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Birt, S		21A
Blackman, J	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Blanco, F	16/10/2006	2C
Boland, T	16-Oct-06	3C, 8A, 8B, 9A,14A, 17A
Boland, T	18-October-2006	2C, 4A, 4B, 5A, 8A, 8B, 6A, 6C
Borrowdale, T	18-October-2006	21A
Bourne, C	21-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Bowes, D	21-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Bowman, A	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Boyd, F	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Boyd, F	20-October-2006	2B, 5A, 4A, 5C, 6A
Boyd, P	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Boyle, L	15/10/2006	2G, 3C, 9A
Breaden, A	25/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Bridges, A	Rec: 16 Oct.06	17A, 19A,19A,19A
Briggs, F	7 Oct.06	17A, 19A,19A,19A
Brissis, B	4 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Bromley, T	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Brooke, V	22-October-2006	19A, 19A, 8B, 8D, 8E, 19A
Brooks, P	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Brown, J	19-October-2006	3C, 8A, 8B, 9A, 14A, 17A
Brown, J	19-October-2006	Cover Letter Only
Bruce, C	16-October-2006	3A, 8A, 8B, 9A, 19A, 19A
Buggle, N	19-October-2006	20A, 5A, 4B
Buggle, N	26-October-2006	6A
Burke, M	27/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Burley, S	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Burns, M	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Burns, R & L	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Burrell, P & H		3A, 8A, 8B, 9A, 19A, 19A
Bush, D	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Camilleri, R	Rec 23/10/06	17A, 19A,19A,19A
Carlin, G & J	9/10/2006	2G, 3C, 9A
Carlisle, M		21A
Carroll, R	23-October-2006	2B, 6A, 4A, 4F, 5A, 6D, 8E, 11A
Casey, H	06-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Casey, J	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Cashel, W V	10/10/2006	8A, 4A, 5A, 5B
Cattunar Family	22-October-2006	19A
Central West Environment Council Inc	16-October-2006	14A, 8B, 8A, 8C, 13A, 5A, 20A, 4A, 9A, 1F, 3A, 3B, 11D, 11A, 11F, 6A, 14A, 17C, 17A, 2L, 19A, 2A, 2C, 8A, 8B, 2B, 2J, 14A, 1A
Chapman, N	4 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Chatterton, M	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A

Name	Date	Identified Issues
Christian, J	14 Oct.06	17A, 19A,19A,19A
Christiansen, K	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Christiansen, V	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Cirulis, E	17/10/2006	14A, 8A, 8B, 9A, 3A, 3C, 2A, 2C
Clark, D	Rec 23/10/06	17A, 19A,19A,19A
Clayton, J	11-October-2006	14A, 8A, 9A, 9B, 3B, 19A
Cloonan, M & A	17/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Cluff, K	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Cockerill, A		11B, 11C, 1A
Cole, R	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Condon, B	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Confederation of Bushwalking Clubs	21-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Connor, B	20-October-2006	19A, 8B
Coombes, D	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Cosgrove, F	23-October-2006	1I, 3A, 3C
Cox, G	19-Sep-06	3C, 8A, 8B, 9A, 14A, 17A
Cox, J	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Cox, M & B	19-October-2006	2D, 5A, 8C
Craney, V	23-October-2006	3C, 9A
Crawford, H	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Creighton, M	25-October-2006	2D, 8A, 2K
Crew, M	23-October-2006	19A, 19A, 8D, 8E, 9A, 8A, 8N
Cross, M	14 Oct.06	17A, 19A,19A,19A
Cruttenden, S	Rec: 16 Oct.06	17A, 19A,19A,19A
Cunningham, J	01-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Cuthbert, C	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Cuthbert, J	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Daniel, N	20-October-2006	8K, 8B, 8N, 3C, 19A, 19A
Daniels, T	6/10/2006	8C, 8A, 9A, 9B, 3B. 19A
Davis, G	09-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Department of Natural Resources	31/10/2006	See Appendix A4 Government Submission Responses
Dept of Environment & Conservation	23-October-2006	See Appendix A4 Government Submission Responses
Dept of Lands	26-October-2006	See Appendix A4 Government Submission Responses
Dikkenberg, D	14 Oct.06	17A, 19A,19A,19A
Do, S	16/10/2006	2G, 3C, 9A
Dodson, R	5 Oct. 06	3C, 8A, 8B, 9A, 14A, 17A
Downs, N	23-October-2006	13C, 8A, 8B, 17A
Dowsett, B	21-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Druitt, M	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Dumbrell, F. R.	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Dumbrell, L. A.	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Dunphy, K	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Dutoitcook, K	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Edwards, C	16-Oct-06	3C, 8A, 8B, 9A, 14A, 17A

Name	Date	Identified Issues
Edwards, M	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Ekin, L	14 Oct.06	17A, 19A,19A,19A
Elaine Gallagher	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Elmslie, R	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Elward, E	18-October-2006	8A, 9A, 8B
Endicott, D	12/10/2006	4B, 2D, 2L, 19A, 19A
Enrlaar, H	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Enrlaar, S	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Evans, G	Undated	8A, 8B, 8C, 3A, 19A, 9A,9B
Everett, C	11/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Everett, C	11/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Everett, C	11/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Everett, C	11/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Everett, C	11/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Everett, C	11/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Everett, C	11/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Everett, C	11/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Fark, J	Rec: 16 Oct.06	17A, 19A,19A,19A
Farrelly, B	Rec 23/10/06	17A, 19A,19A,19A
Ferguson, B	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Ferrier, G	Rec: 9 Oct.06	17A, 19A,19A,19A
Fitzsimmons, T	09-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Flack, P	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Flynn, P	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Forster, J	01-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Foster, C	11 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Foster, C	11/10/2006	2G, 3C, 9A
Foyd, M	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Frazer, G	Rec: 9 Oct.06	17A, 19A,19A,19A
Freebody, J	Undated	14A, 8A, 8B, 9A, 9B, 3B, 19A, 19A, 8E
Friend, J	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Furlong, S	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Fyfe	10 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Gant, L	16-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Garland, L	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Garwood, B	20-October-2006	5A, 2A, 6B
Gibbons, B	15-October-2006	8A, 8B, 8E, 2B, 9A, 19A, 11B
Gibbons, J	13 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Gilbert, D	16/10/2006	14A, 8A, 8B, 9A, 9B, 3B, 19A
Gilbert, V	16-October-2006	3A, 8A, 8B, 9A, 19A, 19A
Gillies, B	20-October-2006	11C, 19A, 8A, 8B, 8E, 17A, 9A, 3A, 2C, 4A, 5A, 6A, 10C,
Ginns, A	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Ginns, P	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Gleeson, C	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Glover M & H, Tomlinson J & B	17-October-2006	8A, 6A, 6B, 9A, 17A, 19A, 8E, 1A, 2H, 5A, 4A, 14A, 13A, 6A, 1E

Name	Date	Identified Issues
Glover, M	18-October-2006	Cover Letter Only
Goniman, G	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Goninan, J	16-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Graham, I	16-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Grant, M	25/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Grant, P	21-October-2006	17A, 19A,19A,19A
Grasselli, D	11/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Grease, A	Rec 24/10/06	11A, 11G, 19A, 8A, 8B, 3A, 3B
Green, L	23-October-2006	5A, 4A, 17A, 8A, 7A
Grigg, G	Rec: 9 Oct.06	17A, 19A,19A,19A
Griggioli, E	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Guelleberg, H	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Gulgong-Mudgee-Rylstone Branch of the National Trust of Australia (NSW)	18-October-2006	3A, 9C, 3B, 8A, 9B, 8B , 8E, 2A, 19A, 17C, 9A, 3B, 2A
Haaring, L & J	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Haaring, L & J	18-October-2006	4A, 6C, 6B, 6A, 5A, 8E, 8I, 2D
Hadley, F	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hails, K	15-October-2006	8A, 11A, 11B, 11C, 8B
Hails, L	15-October-2006	8E, 8A, 9A, 8D, 11A, 11B, 11C 9B. 3A. 3B, 3C
Hall, T	13/10/2006	8A, 8B
Hallett, H & M	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hallett, I	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hallett, I	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hallett, I	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hamm, V	4 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Hamm, V	12/10/2006	2O, 17A, 2J 2A, 8K
Hansen, M	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hanson, M & A	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hardy, P	13-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Harref, M	6 Oct.06	17A, 19A,19A,19A
Hartas, D	17-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hartas, M	17-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Harths, W	17-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hayward, J	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Healey, J	10 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Heinrich, A & Ralston, H		3A, 8A, 8B, 9A, 19A, 19A
Heinrich, A & Ralston, H	11/10/2006	19A, 19A, 8B, 8A, 3A, 9A, 9B
Henderson, A & S	13-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Herbert, G	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Herbert, M	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Heritage Office - Department of Planning		See Appendix A4 Government Submission Responses
Herring, D	20-October-2006	21A
Higgins, I	22-October-2006	19A, 8A, 8B, 9A, 9B, 2A, 2C, 11B, 3A, 3C,
Higgins, I	23-October-2006	3C, 8A, 8B, 9B, 14A, 19A, 19A

Name	Date	Identified Issues
Higgins, P	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hill, M	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hillyer, A	15 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Hoare, L&K	19/10/2006	3B, 5G, 6A, 6B,
Hobbs, B	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hodges, S	Rec 23/10/06	17A, 19A,19A,19A
Hodgson, G	17-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Holi, G	13 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Holland, G	20-October-2006	8I, 20A, 2I
Holland, T	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hollister, V		3C, 8A, 8B, 9A, 14A, 17A
Holmes, R	5 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Holmewood, A	13-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Holmewood, M	28-Sep-06	3C, 8A, 8B, 9A, 14A, 17A
Hope, M	23-October-2006	1A, 9A, 3A, 8B, 3C
Horat, E	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hornibrook, J & J	21-October-2006	9A, 17C, 8A, 8B, 19A, 19A, 2A, 2B, 2C
Howe, B	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Huber, F	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hudson, D	Rec 23/10/06	17A, 19A,19A,19A
Hughes, B	07-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hughes, B	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Hulme, J	14-October-2006	8A, 8B, 17C, 8E, 19A, 19A, 19A, 9A, 9B, 2A, 2B 2C, 3A, 11A, 11B, 11C, 16A
Hunt, A	14 Oct.06	17A, 19A,19A,19A
Hunter Catchment Management Authority	27/10/2006	See Appendix A4 Government Submission Responses
Hunter Environment Lobby Inc.	20-October-2006	17A, 19A, 1A, 19A, 11A, 8D, 8A, 9A, 16A, 1E, 11B
Imrie, A	10-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Imrie, C & J	23-Oct-06	1A,1H, 2B, 2I, 2J, 2L, 3A, 3B, 3C, 3D, 4A, 5A, 8A, 8B, 8C, 8D, 8I, 8F, 9A, 9B, 9C, 11A, 11B, 11C, 11D, 11E, 11F, 11H, 11I, 14A, 16A, 16B, 19A
Imrie, J	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Imrie, J	24/09/2006	3B
Imrie, J	17/09/2006	1C
Imrie, K		3A, 8A, 8B, 9A, 19A, 19A
Imrie, P		3A, 8A, 8B, 9A, 19A, 19A
Imrie, P	8/10/2006	9A, 9B
Imrie, T	04-October-2006	3A, 8A, 8B, 9A, 19A, 19A
Imrie, T	04-October-2006	3A, 8A, 8B, 9A, 19A, 19A
Imrie, T	04-October-2006	3A, 8A, 8B, 9A, 19A, 19A
Imrie, T	04-October-2006	3A, 8A, 8B, 9A, 19A, 19A
Imrie, T	04-October-2006	3A, 8A, 8B, 9A, 19A, 19A
Imrie, T	04-October-2006	3A, 8A, 8B, 9A, 19A, 19A
Imrie, T	04-October-2006	3A, 8A, 8B, 9A, 19A, 19A

Name	Date	Identified Issues
Imrie, T	04-October-2006	3A, 8A, 8B, 9A, 19A, 19A
Jan, B	5 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Jo Kutz, S	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Johnson, B	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Johnson, G	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Johnson, K	13-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Johnson, L	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Johnsons Creek Conservation Committee Inc	22-October-2006	14A, 8A, 8B, 8C, 9A, 3A, 19A, 2A, 2C
Jones, C	Rec: 9 Oct.06	17A, 19A,19A,19A
Jones, N	12 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
K??, D	Rec 23/10/06	17A, 19A,19A,19A
Kears, D	20/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Keeling, S	7 Oct.06	17A, 19A,19A,19A
Kemp, A	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Kimber, A & T	11-October-2006	1H
Kimber, T	19-October-2006	1H, 5A. 4A, 4B, 14A, 6A, 5C, 10C, 6C, 8A, 8B, 3A, 3C, 9A, 9A, 9B, 19A, 17A, 14A, 2A, 2C, 2B
King Cain Solicitors	23-October-2006	Cover Letter for Meryl Miller
King, B	Rec 23/10/06	17A, 19A,19A,19A
Knight, P	11 Oct. 06	3C, 8A, 8B, 9A, 14A, 17A
Knox, D	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Knox, G	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Koernig, N	Rec: 16 Oct.06	17A, 19A,19A,19A
Kowal, C	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Lamerton, M	16/10/2006	2G, 3C, 9A
Lawsen, J	16-October-2006	3A, 8A, 8B, 9A, 19A, 19A
Lawson, N	Rec 23/10/06	17A, 19A,19A,19A
Lecke, G	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Leven, L	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Lewis, C	Rec 23/10/06	17A, 19A,19A,19A
Lewis, S	23-October-2006	17A, 19A,19A,19A
Lewis, S	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Lewis, S	21-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Lithgow Environment Group	23-October-2006	1A, 2D, 8A, 8N, 9A, 9C, 11A, 14A
Lloyd, A	25/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Logan, D	15 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Lonsdale A, & Ngumbaay W	21-October-2006	8A, 8B, 9A, 1A, 9B, 5A, 5C, 4A, 14A, 2C, 3A, 3B, 2E, 2F, 3D
Lorant, E	10Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Loughrey, R	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Loughrey, S	18-October-2006	5B, 8A, 13A, 6B
Mackey, M	18/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Macris, J	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Maddalona, N	5 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Magick, F	23-October-2006	8B, 3A, 2N
Maguire, P	6 Oct.06	17A, 19A,19A,19A

Name	Date	Identified Issues
Maitland Greens	23-October-2006	2G, 3B, 3C, 8A, 8D, 11B, 11C
Makim, C	15-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Makin, J	15-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Makood, S	Rec: 16 Oct.06	17A, 19A,19A,19A
Marek, R	25/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Mars??, C	17-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Maskill-Hardy, H	13-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Mayberry, K	23-October-2006	2A, 8A, 5A, 5C, 2K
Mayberry, R & L	21-October-2006	3A, 3B, 3C, 8A, 8B, 9A, 2J, 16A, 2A, 5E, 4A, 4B, 1A
McCann, M	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
McCarney, B	17-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
McCarthy, W	21-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
McClure, A	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
McCulloch, C	19-October-2006	14A, 5A, 4A, 6A, 2B
McCulloch, E	19-October-2006	4A, 5A, 5C, 8A, 7A, 2D
McElroy, J & T	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
McGowan, R	7 Oct.06	17A, 19A,19A,19A
McGregor, S	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
McGregor, S	22-October-2006	8J, 5A, 8I, 9A, 8A, 8E
McGuire, G	23-October-2006	21A, 4A, 2E, 9A, 8E, 3A
McGuire, P	rec 25/10/06	17A, 19A,19A,19A
McIntyre, B	5/10/2006	14A, 19A, 3A
McKenzie, I		3C, 8A, 8B, 9A, 14A, 17A
McKeown, W & R	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
McLennan, A	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
McNulty, R	7 Oct.06	17A, 19A,19A,19A
McPhee, D	02-November-2006	14A, 9A, 3C, 8B
McPhee, K	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
McPhee, M	6 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Meeth, E	23-October-2006	14A, 8B, 8A, 9A, 6A
Mid Western Regional Council	27/10/2006	See Appendix A4 Government Submission Responses
Miller, M	20-October-2006	2B, 11C, 8A, 14A, 2A, 5A, 5C, 4A, 19A, 19A, 19A, 17A, 1A
Miller, S	20-October-2006	8A, 17A, 19A, 3A, 9A, 9C, 2B, 2C, 6A, 10C
Mitchell, S	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Moolarben Coal Mines Pty Ltd	28/09/2006	Cover Letter Only
Moolarben Consultative Committee (Cox, Imrie, Mayberry, Swords)	20-October-2006	2B, 2D,8A, 2G, 14A, 16A
Moon, E & K	Rec: 9 Oct.06	17A, 19A,19A,19A
Moore, D - Western Region RTA	24-October-2006	See Appendix A4 Government Submission Responses
More, J & Nutting, J	10 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Morgan, E	13-Oct-06	3C, 8A, 8B, 9A, 14A, 17A

Name	Date	Identified Issues
Morley, S	27/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Morrison, J	21-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Moylan, L	17-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Moylan, T	17-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Mrs A Sauerbier	5 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Mudgee District Environment Group Inc	22-October-2006	1C, 8L, 1D, 1A, 1F, 19A, 14A, 8L, 19A, 17C, 3A, 3B, 9A, 3C, 1E, 8A, 8B, 8E, 8D, 11F, 11C, 10C, 10D, 6A, 17C, 19A, 19A, 16D, 16A
Munro, S	11/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Murong Gialinga Aboriginal & Torres Strait Islander Corporation	11-July-2006	3A, 8A, 9A,
Nagle, J	13-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Nagle, P	12-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Nagle, S	12-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
National Parks Association of NSW	23-October-2006	3C, 8A, 8B, 19A, 19A
National Parks Association of NSW	18-October-2006	1A, 14A, 9A, 11G, 8A, 8C, 8B, 11D
National Trust	23-October-2006	8A, 8B, 9A, 8D
Nature Conservation Council of NSW	18-October-2006	8A, 8B, 3A, 3C, 9A, 19A, 11C, 8E, 9B, 11C, 19A, 19A, 19A
Neale, B & J	17-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Nelson, P	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Neville, W. M. & H. N.	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
New, L	4/10/2006	8B, 9A, 1C, 9A, 9B
Newman-Lever, S	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Nicholson, M & M	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Noonan, L	7 Oct.06	17A, 19A,19A,19A
Noring, M	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Norris, B	06-Oct-02	3C, 8A, 8B, 9A, 14A, 17A
North East Forest Alliance (NEFA)	23-October-2006	19A, 11A, 11B, 11C, 8A, 8B, 1A, 2B, 2C, 2G, 11H, 16A, 11D, 11I, 11E
Novak, J	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
NSW Dept of Primary Industries	23-October-2006	See Appendix A4 Government Submission Responses
Nutting, G	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Nutting, G	6 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
O'Mara, D	21-October-2006	14A, 5A, 6A, 8A, 8B, 17A, 3A, 3C, 11G, 19A, 8E, 9A
O'Neill, S & R	21-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
O'Sullivan, J & J	16-October-2006	8A,8B, 2A
Paine, L	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Palmer, E	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Paris, E	6 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Parker, H	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Parker, N	09-Oct-06	3C, 8A, 8B, 9A, 14A, 17A

Name	Date	Identified Issues
Parker, R	16 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Parker, T	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Partelli, K	15-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Peabody Pacific Pty Ltd	27/10/2006	10A, 17A
Pearce, K	15-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Pegg, M		8A, 8B, 9A, 9A, 14A,
Peters, A	21-October-2006	17A, 19A,19A,19A
Peters, A	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Peters, S	Rec 23/10/06	17A, 19A,19A,19A
Pettett, D		1A, 2C, 2E, 2I, 2K, 2L, 2M, 3A, 4A, 4B, 4D, 5C, 8A, 8B, 9B, 10C, 11B, 11C, 16D, 17A, 17C, 19A, 19A, 19A, 20A
Pettett, E		1A, 2C, 2E, 2I, 2K, 2L, 2M, 3A, 4A, 4B, 4D, 5C, 8A, 8B, 9B, 10C, 11B, 11C, 16D, 17A, 17C, 19A, 19A, 19A, 20A
Pettett, G		1A, 2C, 2E, 2I, 2K, 2L, 2M, 3A, 4A, 4B, 4D, 5C, 8A, 8B, 9B, 10C, 11B, 11C, 16D, 17A, 17C, 19A, 19A, 19A, 20A
Pettett, J		1A, 2C, 2E, 2I, 2K, 2L, 2M, 3A, 4A, 4B, 4D, 5C, 8A, 8B, 9B, 10C, 11B, 11C, 16D, 17A, 17C, 19A, 19A, 19A, 20A
Pettett, J		1A, 2C, 2E, 2I, 2K, 2L, 2M, 3A, 4A, 4B, 4D, 5C, 8A, 8B, 9B, 10C, 11B, 11C, 16D, 17A, 17C, 19A, 19A, 19A, 20A
Pettett, M		1A, 2C, 2E, 2I, 2K, 2L, 2M, 3A, 4A, 4B, 4D, 5C, 8A, 8B, 9B, 10C, 11B, 11C, 16D, 17A, 17C, 19A, 19A, 19A, 20A
Pettett, R		1A, 2C, 2E, 2I, 2K, 2L, 2M, 3A, 4A, 4B, 4D, 5C, 8A, 8B, 9B, 10C, 11B, 11C, 16D, 17A, 17C, 19A, 19A, 19A, 20A
Phillipson, K	18-October-2006	19A, 19A, 8E, 11C, 8A, 8B, 9A, 3A, 9B, 14A, 2C, 2A
Picton-Barnes, A	06-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Picton-Barnes, C	06-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Pinchin, R	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Plate, C	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Poolman, C	26-October-2006	8A, 8B, 8E, 2B, 9A, 19A, 11B
Potter, A	10/10/2006	17A, 19A, 17C, 19A, 8B
Power, C & B	4 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Power, M	3/08/2006	21A
Priester, K	17-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Purdue, B	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Pyramid Hill Wines	17/10/2006	8K, 8A, 8B, 9A, 19A, 19A
Ramm, G	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Ramsey, S	09-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Ranclaud, H		3C, 8A, 8B, 9A, 14A, 17A
Rangi, N	11 Oct. 06	3C, 8A, 8B, 9A, 14A, 17A
Rayner, C	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A

Name	Date	Identified Issues
Rayner, D	18-October-2006	2A, 3C
Rayner, D	18-October-2006	REPEAT
Red Hill Environmenal Education Centre (EEC)	23-October-2006	9A, 3A, 9B,
Red Hill Environment Centre	23-October-2006	REPEAT
Regan, O	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Regional Development Committee Western Region	20-October-2006	See Appendix A4 Government Submission Responses
Reid, S	21-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Retter, C	16-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Rice, K	21-October-2006	17A, 19A, 2G
Richter, H	23-October-2006	5A, 8A, 17C, 2D
Ricketts, M	25-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Rickman, L	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Rising Tide		11A, 11C, 8A, 9A,16D, 17C, 19A, 19A, 1J
Rivers SOS	20-October-2006	16A, 8A, 8B, 9A, 8F, 14A, 9A, 3A, 8D, 8E
Riverstone, G	21-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Road Safety & Traffic Manager	23-October-2006	See Appendix A4 Government Submission Responses
Roberts, H	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Roberts, W & T	10-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Robinson, D	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Robinson, J	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Robinson, J	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Robinson, P	8/10/2006	9A, 8A, 11G, 8B
Roche, M	3/10/2006	14A, 8A, 9A, 9B, 3B, 19A
Rojas, Y	22-October-2006	14A, 8A, 8B, 9A, 9B, 3A, 3B, 19A, 2D, 11A, 8L, 2G
Rose, J	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Rose, P	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Ross, T	23-October-2006	17A, 19A,19A,19A
Rubinstein, G	Rec: 9 Oct.06	17A, 19A,19A,19A
Ryan, J	09-October-2006	3A, 8A, 8B, 9A, 19A, 19A
Ryan, S	16-October-2006	8E, 8A, 2G
Rylstone District Environment Society	16-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Schultz, B	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Searle, C	22-October-2006	8B, 8N, 19A
Sellers, C	Rec: 16 Oct.06	17A, 19A,19A,19A
Sellers, C	11 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Sellers, C	25-October-2006	3C, 19A, 19A
Setchell, P	12/10/2006	2G, 3A, 3C, 9B, 9C, 2C, 2B, 4B, 6A, 10C, 8A, 8B, 8C, 11A, 11B, 11C, 14A, 17A, 19A
Sheppard, L	9 Oct. 06	3C, 8A, 8B, 9A, 14A, 17A
Sheppard, P	9 Oct. 06	3C, 8A, 8B, 9A, 14A, 17A

Name	Date	Identified Issues
Shields, M	11/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Simkins, R	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Simkins, R	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Skinner, J	16-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Smajlov, B	23-October-2006	17A, 19A,19A,19A
Smiles, B	23-October-2006	2B, 3A, 3B, 6A, 9A, 13A, 14A, 17A
Smiles, S	11 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Smiles, S	11/10/2006	2C, 9A 9A, 8E, 3B, 10D, 10C, 11A, 19A, 8A
Smith, B & L	10 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Smith, C	Rec: 9 Oct.06	17A, 19A,19A,19A
Smith, G	16-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Smith, I & A	17-October-2006	21A
Smith, L	15/10/2006	19A, 9B
Smith, S	21-October-2006	17A, 19A,19A,19A
Spencer, R & K	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Spiers, S	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Spilsted, Z	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Sprigg, R & D	19-October-2006	8J
Stafford, A	24-October-2006	11A, 11G, 19A, 8A, 8B, 3A, 3B
Stammers, B & Elphick, B	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Stanton, J	Rec: 16 Oct.06	17A, 19A,19A,19A
Steele, R	Rec 23/10/06	17A, 19A,19A,19A
Steve (Starpaws)	21/09/2006	2I, 2J
Stevens, D	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Stevens, L	15-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Stewart, A & S	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Stewart, A & S	19-October-2006	8I, 19A, 17A, 6A, 6B, 6C, 2I, 5A, 4A, 2B, 19A, 9A, 11G, 8A, 8B,
Stewart, G	13-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Stockbridge, M	11 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Stodart, G	11/10/2006	8A, 8B, 9A, 3A, 9C, 9B, 4A, 5A, 10C, 6A, 2J
Strachan, F	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Stromskag, A	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Stromskag, A	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Stromskag, A	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Stromskag, A	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Sullivan, N	23-October-2006	2B, 2I, 4A, 19A, 19A
Suwald, R	9/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Swords, M & H	23-October-2006	2A, 8A, 6A, 5A, 4A, 13A, 5C, 9A
Sydney Speleological Society	17-October-2006	1A, 3C, 8A, 8B, 9A
Symons, S	23-October-2006	1A, 8F, 11C, 6A, 6B, 6C, 2B
Szymkarczuk, G	22-October-2006	14A, 8A, 8B, 9A, 17A, 5A, 4A, 6A, 10B, 11B, 2A, 3A, 2C, 8C, 9A
Szymkarczuk, J	22-October-2006	1E, 2D, 5B
Tamburini, J	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Taranto, C	Rec: 16 Oct.06	17A, 19A,19A,19A

Name	Date	Identified Issues
Taverner, S	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
The Lamerton Family	11-October-2006	3A, 8A, 8B, 9A, 19A, 19A
Thompson, K & S	8/10/2006	8I, 8F, 5F, 8G
Thompson, K & S	08-October-2006	1H, 5F, 8I, 4A, 7C
Thompson, T	15-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Thomson, B	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Thomson, B	15-October-2006	4A, 2B, 4C, 19A, 19A
Throwden, K	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Tinker, E	20-October-2006	21A, 8B, 6A
Tinker, R	20-October-2006	21A
Towerton, K	13 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Townsend, R	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Transgrid	27-October-2006	17A, 17B
Tuck-Lee, G	23-October-2006	1A
Turnbull, D	19-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Turnbull, L	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Tyler-Olsen, L	21-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Ulan Coal Mines Ltd	23-October-2006	15C, 15D, 5D, 4E, 10A, 14A, 17B
Ulan P&C Association	18-October-2006	REPEAT
Ulan Public School P & C	18-October-2006	13A, 13B, 13C, 13D
Ungaro, H	15-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Unknown_illegible	25/10/2006	3A, 8A, 8B, 9A, 19A, 19A
Unknown_illegible	20-October-2006	21A
Unknown_illegible	22-October-2006	8B, 9A, 11A
Unknown_illegible	Rec 23/10/06	17A, 19A,19A,19A
Unknown_illegible	Rec 23/10/06	17A, 19A,19A,19A
Unknown_illegible	rec 24/10/06	17A, 19A,19A,19A
Unknown_illegible	rec 24/10/06	17A, 19A,19A,19A
Unknown_illegible, A	Rec 23/10/06	17A, 19A,19A,19A
Unknown_illegible, J	Rec 23/10/06	17A, 19A,19A,19A
Urban Loft Development LLC	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Valsey, M	10-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Van de Burgh, C		14A, 2J, 9A, 9B, 8A, 8B, 17A, 2C, 19A, 17C, 3A, 2J
van Putten, S	23-October-2006	8A, 8N, 19A
Vander???, L	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Verbeek, H	20-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Vwozniak, S	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Wales, W	13-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Walker, A	14-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Wall, C	18 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Wallace, J; McEwen, M, R & E		3C, 9A, 3A, 8A, 19A, 8B, 11B
Walter, I M	10/10/2006	19A
Warton-Jones, P	23-October-2006	19A, 8A, 8B, 3C, 19A, 19A
Washington, H	22-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Waterton, L		3C, 8A, 8B, 9A, 14A, 17A
Watson, S & K	20-October-2006	9A, 19A, 2G

Name	Date	Identified Issues
Watt, J		8A, 8E, 8K, 9A, 9B, 3A, 16C, 19A
Watters Gallery		3A, 8A, 8B, 9A, 19A, 19A
Watters, F	11/10/2006	19A, 4F, 8A, 8B, 9A
Watts, P & J	9/10/2006	3A, 3C, 8A, 8B, 9A, 9B, 14A,
Webb, J	20-October-2006	2A, 6A, 6B, 2C, 2K, 9A, 10D, 2J
Webster, B	6 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Wellfare, D	9 Oct.06	3C, 8A, 8B, 9A, 14A, 17A
Wells, J	7 Oct.06	17A, 19A,19A,19A
Wernick, A	Rec: 16 Oct.06	17A, 19A,19A,19A
Wernick, C	Rec: 16 Oct.06	17A, 19A,19A,19A
Westwood, Mr & Mrs	3/08/2006	21A
Wheat, Z	29/09/2006	9A, 3A, 8A, 10C, 17A, 19A
White J & Hope, M	23-October-2006	9A
White, N	15/10/2006	1G
White, W	23-October-2006	8A, 8D, 8E, 9A, 11B, 11C, 14A, 19A, 19A
Williams, A	14 Oct.06	17A, 19A,19A,19A
Williams, D	18-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Williams, Mr & Mrs	15-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Williams, W	21-October-2006	17A, 19A,19A,19A
Wilson, B		3A, 8A, 8B, 9A, 19A, 19A
Wilson, L	15-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Withington, B & Bowen, K	17-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Wooby, D	26-October-2006	2K
Woodhead, A & E	29/09/2006	1B, 2B, 6A 7A
Wooster, R	11-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Wordmann, A	08-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Wright, D	23-Oct-06	3C, 8A, 8B, 9A, 14A, 17A
Xuereb, T	17-Oct-06	3C, 8A, 8B, 9A, 14A, 17A

MOOLARBEN COAL PROJECT

Response to Submissions

APPENDIX A6

Individual and NGO Submission Responses

Table of Contents

Issue Heading	Issue Description	Response
1 Concerns relating to the Project Approval process.		
1A	Concerns were raised that the Environmental Assessment for MCP is: • Insufficient; • Does not deal with relevant aspects; • Provides an insufficient project justification; • Provides no neutral or positive benefit.	The Environmental Assessment Report and the Response to Submissions Report complies with the Director-General's requirements and the Government Agencies input into that process. The Moolarben Coal Project justification is detailed in the Environmental Assessment Report and includes the significant economic benefits which will flow from the Project. When the Minister considers the project application he will have before him all assessments including as to the existing environment, the project, the effects of the Project and its justification in the context of impacts and ESD and benefits that will be required for him to determine the application.
1B	IHAP terms of reference are too narrow.	Terms of Reference have been set by the Director-General and approved by the Minister for Planning.
1C	The 5 week exhibition period and overall approval period is inadequate.	The exhibition period associated with the Environmental Assessment Report was a longer period than that prescribed by the EP&A Act. Additionally, the Minister for Planning ordered an IHAP for the issues of noise, subsidence and groundwater.
1D	Differences in the information used by Moolarben and that used by Wilpinjong.	The Moolarben Coal Project environmental studies have been undertaken in relation to lands associated within and around EL 6288 and that landscape. The lands are different to that considered by the Wilpinjong Project. In relation to the two projects, the projects are different in that the Moolarben Coal Project also incorporates an underground mining area. All environmental studies have been undertaken in accordance with appropriate guidelines and associated impacts assessed as a consequence of the Moolarben Coal Project.

Issue Heading	Issue Description	Response
1E	Limited consultation with certain parties including Ulan Coal Mines Limited ("UCML").	Stakeholder and community consultation undertaken in relation to the Moolarben Coal Project is set out within the Environmental Assessment Report. The community consultation process included and incorporated the Moolarben Coal Exploration Community Consultative Committee. It also involved the development of land access protocols, the undertaking of community information sessions on three separate occasions during the course of the Project, the distribution of newsletters, one-on-one discussions and newspaper notifications. As a consequence of the stakeholder and community consultation, the Moolarben Coal Project was modified on a number of occasions to capture issues and concerns raised by the community. In conjunction with that consultation, there was also consultation undertaken with the Government Authorities by the Proponent. Moolarben expects that the Department of Planning will impose a condition on any Project Approval requiring the establishment of a Community Consultative Committee within 3 months of the Approval.
1F	The current Project Application is part of a 'super mine'.	The project application is for three open cut coal mines, one underground mine and associated infrastructure as described in the Environmental Assessment Report.
1G	General objection to the MCP - no reasons stated.	For those members of the public that made a general objection to the Moolarben Coal Project not stating any reasons, it is noted that the public notice associated with the advertising of the Environmental Assessment Report did require people to state whether they object or support the Moolarben Coal Project and to provide the reasons why they supported or objected to the proposal. It is therefore difficult to respond to a blanket objection when no reasons associated with that objection have been detailed in the submission.

Issue Heading	Issue Description	Response
1H	The following properties / buildings where excluded from the EA: • Thompson's (Property 6) contains a weekend residence that was not included; • Hoare's (Property 24) contains a brick building that was not included; • Kimber's at 1008 Ridge Road, Cooks Gap; • Richter's at Willow Park off Toole Road, Ulan; and • Tourist accommodation.	• In compiling the Environmental Assessment Report due regard was given to field survey and information obtained from various statutory authorities including Mid Western Regional Council. The Environmental Assessment Report publicly exhibited did not show Property Number 6 or 24 as having dwelling entitlements. Buildings were noted on the properties. They were not considered to be approved dwelling houses and as such they were not considered to constitute a residence. Since the compilation of the Environmental Assessment Report, we are aware that Mid Western Regional Council have issued dwelling entitlements in relation to Property No. 6 and Moolarben Coal Mines have also entered into arrangements to acquire Property No. 24 where it has been confirmed by Mid Western Regional Council that a dwelling entitlement exists. • In relation to the Kimber and Richter properties both were outside the assessed noise and dust criteria and, as such, were not considered to be impacted by the Moolarben Coal Project. • In relation to tourist accommodation these were excluded from plans within the Environmental Assessment Report. The purpose of the plans in the Environmental Assessment Report was to show principal dwelling houses, not tourist accommodation. • Since the Environmental Assessment Report was placed on public exhibition, submissions were received by Moolarben Coal Project in relation to Kimber and Richter's properties and further studies in relation to noise for both properties have been undertaken. The outcome of those studies have confirmed that both properties are outside the area of impact of the Moolarben Coal Project.
1J	No assessment of cumulative impacts of coal industry across the Hunter Valley.	The Moolarben Coal Project involves the development of a coal mine as detailed in the Major Project Application. The Environmental Assessment Report undertook cumulative impact assessment of specific environmental issues associated with that project. The Environmental Assessment Report in terms of cumulative impact assessment has been undertaken in accordance with the Environmental Assessment Requirements prepared by the Director-General. The

Issue Heading	Issue Description	Response
		Director-General's requirements are specific in relation to cumulative impacts for the Moolarben Coal Project requiring it to assess its impacts in relation to existing or approved impacts on the nearby area resulting from the operations of Ulan Coal Mine and Wilpinjong Coal Mine.
2 Social, economic and other general Impacts on residents and community		
2A	Impacts on farming including loss of farming land, land salinisation, movement of stock and machinery across busy roads, reduction in land productivity.	The Moolarben Coal Project has been designed to ensure the continuation of farming during and at the conclusion of mining and to ensure that productive agricultural properties are utilised and retained. Lands that are under the control of Moolarben will be managed in accordance with an Environmental Management System, associated Environmental Management Plan and conditions of consent.
2B	Amenity impacts on local property owners and residents.	The amenity impacts of the Moolarben Coal Project on local property owners and residents have been considered in regard to the assessment criteria for air quality, water, noise, blasting, vibration, traffic and lighting impacts.
2C	Community impacts including: • loss of RFS personnel; • loss of sense of community; • loss of enrolment at Ulan Public School.	There will be more people living in the Mid Western Regional Council local government area so that it is more than likely that there will be sufficient people to draw upon to undertake a role in the Rural Fire Service. There is no evidence to suggest that the Moolarben Coal Project will adversely impact children enrolment at Ulan Public School nor will there be a sense of “lost” community given the retention of Ulan Village.
2D	Impact on property values.	The Moolarben Coal Project has been designed to limit its impact outside its boundaries. Where impacts have been assessed to be above the relevant established amenity criteria, Moolarben has agreed to acquire at the request of the owner or to put in place management procedures to mitigate that impact on that particular property and, as such, property values should not decline as a consequence of the project proceeding.

Issue Heading	Issue Description	Response
2E	Local employment and traineeships.	All efforts will be made to employ local people and to offer traineeships to local residents for the Moolarben Coal Project.
2F	EA does not assess impacts on community.	The Environmental Assessment Report shows that the Moolarben Coal Project will have a positive economic impact on the local community, the Mid Western Regional Council local government area, New South Wales and Australia as described in the Environmental Assessment Report.
2G	Impact of MCP on future generations.	The Environmental Assessment Report details that the Moolarben Coal Project will not adversely impact on future generations use of the local area. The Project has been refined as detailed in the Response to Submissions Report to minimise the potential impacts of the Project on the environment. While greenhouse gases emitted from the production and burning of the coal have been linked to global warming, the greenhouse gas assessment as presented in the Response to Submissions Report Appendix A14 has shown that the contribution from the Moolarben Coal Project is a very small component of Australia's and worldwide emissions. Further the Proponent has a commitment as part of the conditions of EL 6288 to further develop the Ultra Clean Coal technology that could reduce greenhouse gases from coal fired power stations by up to 25% compared to conventional best practice coal fired systems. Moolarben Coal Mines Pty Limited is owned by Felix Resources Limited (FRL) which is a publicly listed company on the Australian Stock Exchange. FRL has entered into an agreement with the Australian Greenhouse Office with respect to greenhouse gas emissions. The agreement reflects the contents of the Greenhouse Challenge Plus Programme Framework, whereby FRL undertakes to put in place appropriate, practical and cost effective actions to reduce its own greenhouse gas emissions and to encourage its staff and other external stakeholders to implement similar measures.
2H	Effect on local honey producers	The Moolarben Coal Project is not expected to have any adverse impact on local honey producers.

Issue Heading	Issue Description	Response
2I	Night lighting and its impacts on amenity and activities such as astronomy.	The Moolarben Coal Project has been designed with consideration of night lighting and its potential impacts on the amenity of the local area and especially those people in the local area who study astronomy. The Environmental Assessment Report details those controls and mitigation measures that will be implemented as a consequence of the Moolarben Coal Project's operations to ensure that adverse effects associated with night lighting and sky glow do not occur. The issue of night time lighting and sky glow has been raised in a number of submissions including those of the Department of Planning. The Department of Planning has requested that the Moolarben Coal Project have regard to the Project's potential impacts on the Siding Springs Observatories. The Orana Regional Environmental Plan No. 1 – Siding Springs does not specifically apply to the project application for the Moolaren Coal Project. However, the design of the Moolarben Coal Project has been cognisant of not adding to sky glow or adversely impacting the observatories at Siding Springs. The night lighting mitigation measures as described in the Environmental Assessment Report will be implemented. The Project will not adversely impact the observatories at Siding Springs.
2J	Tourism impacts.	The Moolarben Coal Project will have a positive economic impact in relation to tourism. As a consequence of the Project proceeding, accommodation for construction workers will be required and they will take up mid-week vacancies within the tourism sector. As a consequence of the Project in operational phase, visitors and supply representatives to the mine may utilise tourism accommodation facilities mid-week. The mid-week period is traditionally the time when the tourism sector has difficulty in obtaining a high occupancy rate and, as such, the overall tourism sector will benefit from the Project. No adverse impacts associated with The Drip or the Goulburn River Gorge or the national parks will occur as a consequence of the Project proceeding and as such tourist visitation should continue unhindered.
2K	Compensation of affected landowners and acquisition criteria.	Moolarben have agreed to acquire properties where the Moolarben Coal Project will materially impact a property and where the development cannot meet the prescribed environmental amenity criteria.

Issue Heading	Issue Description	Response
2L	Employment and economic benefits are not likely.	The employment and economic benefits associated with the Moolarben Coal Project are described within the Environmental Assessment Report. The Project will benefit the local, regional, state and national economies by way of employment, royalties and their flow-on effects.
2M	No allocation of funding to local Landcare group.	Moolarben is committed to the Landcare principles. The issue of funding, however, for local groups such as Landcare is a matter that will be taken up in due course.
2N	Protection of the educational value of the Drip and area.	See Response 9A.
2O	Impacts to other aspects of the economy such as horse breeding and viticulture.	The Moolarben Coal Project will have no adverse impact upon the horse breeding or viticultural sectors.
3 Heritage and Archaeology		
3A	Impacts on aboriginal heritage.	Extensive consultation has been undertaken with the local Aboriginal communities. The local Aboriginal communities have participated in the design of field studies for the Moolarben Coal Project and have undertaken extensive field works. Significant modifications to the Moolarben Coal Project have been undertaken, for example, the revised layout of Underground Mine No. 4 has occurred via the Response to Submissions Report to ensure that impacts on Aboriginal heritage from the Moolarben Coal Project are significantly reduced and where possible, Aboriginal sites are retained intact.
3B	Adequacy of heritage studies, no regional context, cumulative impacts and misinterpretation of Murong Gailinga ATSIC Letter.	The Aboriginal studies have been undertaken consistent with the Department of Environment & Conservation/National Parks & Wildlife Service guidelines and in conjunction with the local Aboriginal communities.

Issue Heading	Issue Description	Response
3C	Impacts on European heritage being the regional significance of the area, the uniqueness of The Drip and Gorge.	The Moolarben Coal Project was designed to have no impact upon Hands on Rock, The Drip and the Gorge. The Moolarben Coal Project has been further refined having regard to the precautionary principle to set back the long wall panels of Underground No. 4 to ensure that the uniqueness of The Drip and the Gorge is maintained consistent with a commitment from Moolarben to not impact The Drip or the Gorge. The area, the subject of the Major Project Application, has been studied. A specialist study has been undertaken in relation to European heritage. Moolarben, as a consequence of the Moolarben Coal Project being approved, will implement the recommendations from the specialist European heritage study undertaken.
3D	Impacts to the Women's Birthing Cave and associated art work near the Drip.	These issues have been investigated – please refer to correspondence from the Department of Environment and Conservation dated 17 October 2006 – refer Appendix C1.
4 Air Quality Impacts		
4A	Dust impacts from MCP.	Dust impacts have been assessed for the Project to industry best practice standards and guidelines. Impacts will be monitored via a series of real time PM10 monitoring stations that collect particulate concentrations and relate these to an area of potentially impacted residences. Further, to minimise the exposure of residences a monitoring program with associated acquisition criteria has been established as specified above and in Government Responses – Appendix B1.
4B	Health effects of dust levels.	A Health Risk Assessment was undertaken for the project by Holmes Air Sciences and is presented within the Environmental Assessment Report. Further, to minimise the exposure of residences a monitoring program with associated acquisition criteria has been established as specified above and in Government Responses – Appendix B1.

Issue Heading	Issue Description	Response
4C	Effect of dust levels on vegetation.	The Moolarben Coal Project will have no adverse impacts on vegetation as a consequence of dust generated by the Project.
4D	Control of spontaneous combustion.	The Moolarben Coal Project Environmental Assessment Report in relation to spontaneous combustion states that a Spontaneous Combustion Management Plan will be prepared and implemented in conjunction with the Mine Operating Plan prior to operations commencing. The plan will describe the management measures that will be implemented to minimise the potential for spontaneous combustion to occur at the operating mine site.
4E	Incorporation of UCML production levels in MCP air quality assessment.	Refer to the response prepared by Holmes Air Sciences contained in Government Responses Appendix B1.
4F	Impacts from diesel fumes.	Refer to the response provided by Holmes Air Sciences within Response 4B in that a Health Risk Assessment has been undertaken and there will be no adverse impacts from diesel fumes upon the local community as a consequence of the Project proceeding.
5 Noise and blasting issues		
5A	Effect of predicted noise levels from operation of MCP.	The effects of noise, blasting and vibration on the local area have been assessed within the Environmental Assessment Report, further an amended report addressing noise, vibration and blasting is presented in Appendix A11 of the Response to Submissions Report.
5B	Traffic noise impacts.	Refer to Response 5A.
5C	Effect of blasting and vibration on local area.	The effects of noise, blasting and vibration on the local area have been assessed within the Environmental Assessment Report. An amended report addressing noise, vibration and blasting is presented in at Appendix A11 of the Response to Submissions Report.

Issue Heading	Issue Description	Response
5D	Incorporation of anticipated noise levels from UCML in MCP noise assessment.	Refer to Response 5A.
5E	Effect of noise and blasting on fauna.	It is not anticipated that the operations of the Moolarben Coal Project will adversely affect fauna in the local area.
5F	Noise and blasting impacts have not been assessed at the following residences: • Thompson's property (Property 6) located south of the Williams residence. • Hoare's property (Property 24) that has a brick building. • Kimber's property (1008 Ridge Road). • Richter's at Willow Park off Toole Road, Ulan.	Property 6 is owned by the Thompsons and Property 24 which is owned by the Hoares. Both properties have a dwelling entitlement (see Response 1H) and both properties have been identified by Moolarben for potential acquisition at the owners request as mining approaches these residences. In relation to the Kimber property and the Richter property both properties are not considered to be impacted as a result of noise and blasting associated with the Moolarben Coal Project.
6 Traffic		
6A	Impacts of increased traffic.	In relation to traffic issues, Moolarben commissioned Sinclair Knight Merz Pty Limited to undertake an assessment of road and rail transport associated with the Moolarben Coal Project. In summary, the findings of that study are that Main Road 214 and Main Road 598 having regard to the Wilpinjong Coal Project, the Ulan Coal Mine operations and existing growth in other traffic, have the capacity to cater for the additional traffic generated by the Moolarben Coal Project. Some modifications are required to enhance traffic safety. The modifications include guide posts and certain road pavement edge works. Other modifications include some line marking and removal of some trees south-west of the Ulan-Wollar and Ulan-Cassilis intersection so as to provide good sight distances for motorists.

Issue Heading	Issue Description	Response
		Additionally, Moolarben has made a commitment to ensure that major shift changes do not occur between 8.15 and 9.00am Monday to Friday and 3.15 to 4.00pm Monday to Friday so as to ensure that there is reduced conflict with school bus services. Moolarben has entered into a Voluntary Planning Agreement with the Mid Western Regional Council to contribute monies towards roads servicing the local area. These monies and the spending of those monies will be the responsibility of Council.
6B	Ability of road network to accommodate anticipated traffic, the need for an upgrade of Cassilis Road and request for a Ulan village heavy vehicle bypass.	Refer to Response 6A. The issue of constructing a Ulan Village heavy vehicle bypass is a matter for the Roads & Traffic Authority and Mid Western Regional Council.
6C	Effect of increased traffic on school bus and its set down and pick up including issue of shift changeover times.	Refer to response 6A and the revised Statement of Commitment made by Moolarben in relation to shift changes.
6D	Effect of increased traffic on flora and fauna.	There is not anticipated to be a significant adverse impact as a consequence of traffic generated by the Project on flora. However, there is the possibility that road kill as a consequence of increased traffic will increase. This maybe offset by putting appropriately placed warning signs along the roads servicing the Project to advise and caution motorists of fauna.
7 Visual impacts		
7A	Visual impact of mining operations.	The visual impacts associated with the Moolarben Coal Project have been the subject of a Visual Impact Assessment which is contained within the Environmental Assessment Report. The mitigation measures proposed to ameliorate mining operations are contained within the Environmental Assessment Report.
7B	Visual impact post cessation of mining.	In relation to the post mining landscape the Project within the Open Cut 2 and

Issue Heading	Issue Description	Response
		Open Cut 3 areas will continue to be a mix of agricultural lands similar to what exists presently but with enhanced native vegetation corridors stretching in an east-west and north-south direction providing linkages towards Dexter Mountain and the Munghorn Gap Nature Reserve and along the ridge line located immediately to the east of Open Cuts 1, 2 and 3. Within the Open Cut 1 area it is proposed to re-vegetate essentially all the disturbed area and contain that in a Voluntary Planning Agreement. In relation to the Underground No. 4 area, these areas will continue to be predominantly timbered and as such from public viewing areas the Underground No. 4 area will present no differently post mining to what it is presently. The revegetation programme proposes to embellish each of the mining areas. The visual impact post cessation of mining should be one of a greater integration of landscape areas in respect to the Underground No. 4 area and in respect of Open Cut 1 area and the linkage between Goulburn River National Park and the Munghorn Gap Nature Reserve to the south. Those areas immediately to the east of Open Cuts 2 and 3 will be further enhanced via the revegetation and regeneration program.
7C	Specific visual impacts at the following residences: • Property 6 and 23 due a direct line of sight with the hills associated with Open Cuts 1 and 2. • McGregor's visual line of site to the Open Cut 3 facilities from Ruwenzori.	Property 6 is owned by Thompsons and this property will be acquired. It is anticipated that Property No. 23 will not be visually impacted as a consequence of Open Cuts 2 and 3 proceeding. In relation to Ruwenzori, Scott McGregor's property at Ridge Road the Response to Submissions Report involves the establishment of a environmental bund 6m high around the western and southern sides of facilities located at Open Cut 3. The bund to be established around the western and southern sides will be landscaped and as such there will be no long term visual impact associated with those facilities on Ruwenzori.
8 Water		
8A	Effect of MCP on groundwater - including reduction in levels, effect on quality,	Groundwater impacts have been assessed within the Environmental Assessment Report, and further within the Response to Submissions Report at Appendix A10

Issue Heading	Issue Description	Response
	possible contamination and post mining recovery.	and Government Responses Appendix B2 prepared by Peter Dundon & Associates.
8B	Effect on Goulburn River including reduction in base flows, water quality and possible contamination.	The Environmental Assessment Report assesses the potential impacts to base-flow, water quality and contamination in the Goulburn River. Further an assessment has been undertaken by Peter Dundon & Associates and is presented within the Response to Submissions Report at Appendix A10 and Government Responses at Appendix B2. The assessment has concluded that there will be a negligible impact to both surface water flows that may contribute to base flows and also to the underlying aquifers. The assessment has also concluded that any reduction in baseflow is likely to be a reduction in the saline water contribution to the Moolarben Creek and consequently the Goulburn River flows.
8C	Sufficiency of studies undertaken by Moolarben Coal Project in relation to surface and groundwater - whether model is adequate.	Groundwater and surface water studies have been undertaken in accordance with the relevant criteria and in consultation with government departments. Further, groundwater, is the subject of the IHAP and is further assessed within the Response to Submissions Report at Appendix A10 and Government Responses at Appendix B2. The potential for impacts to occur from a mining project depends on many factors, including site-specific factors such as the geology, the nature of aquifers, mechanisms of recharge and discharge and project-specific factors such as the scale of mining, proposed mine depths, proposed mining rate. Accordingly, the impacts that occur for a particular mining project are very site-specific and project-specific. The predictions of impact that have been made for the Moolarben project are based on conditions prevailing in the vicinity of the project and the specific mining proposals.
8D	Impact to riparian vegetation and groundwater dependant ecosystems.	Impacts to riparian vegetation and groundwater dependant ecosystems (GDE) have been assessed within the Environmental Assessment Report. Further the Response to Submissions Report at Appendix A10 and Government Responses at Appendix B2 prepared by Peter Dundon & Associates and Appendix B3 prepared by Moolarben Biota further document the potential impact to GDEs.

Issue Heading	Issue Description	Response
8E	Use of large amount of water in the MCP mining operations and sustainability of water usage.	Water is an essential component of every mining operation and used for dust suppression, washing of coal, ablutions and rehabilitation. The Moolarben Coal Project has been designed to incorporate a washery that screens reject and reclaims a significant portion of water to be recycled within the wash plant. The use and sourcing of water has been assessed within the Environmental Assessment Report and with Appendix A10 of the Response to Submissions Report. Not withstanding the water usage, the Project is consistent with the principles of ecologically sustainable development and substantial economic benefit will accrue to the local, state and National economies from the Project.
8F	Effect on Goulburn River Tributaries (including Ryans Creek and Moolarben Creek).	Minor unnamed tributaries of the Goulburn River above Underground No. 4 will be impacted as a result of underground mining. It is expected that impacts may include cracking, ponding and re-routing of surface flows. These impacts would be monitored and mitigated as detailed within the subsidence management plan to be prepared prior to mining for Underground No. 4. Impacts to Ryans Creek, Moolarben Creek and other creeks have been assessed within the Environmental Assessment Report and further in an assessment undertaken by Peter Dundon & Associates which is presented within the Response to Submissions Report at Appendix A10 and Government Responses at Appendix B2. The assessments concluded that there will be a small impact to both surface water flows that may contribute to base flows and also to the underlying aquifers (less than 1 percent of total flow from Moolarben Creek. The assessment has also concluded that any reduction in baseflow is likely to lead to a reduction in the saline water contribution to the Moolarben Creek and consequently the Goulburn River.
8G	Effect on Moolarben Dam (structure, water levels and associated entitlements).	Moolarben Dam has been considered within the blasting assessment presented in the Environmental Assessment Report, where blast and vibration levels are below levels that would cause damage. Further, during the preparation of a blast management plan for Open Cut 1, Moolarben Dam would be incorporated to ensure nil impact. Impacts to catchment yields of Moolarben Dam would be a result of reduced flows within Moolarben, Lagoon and Ryans Creeks. Impacts to these creeks

Issue Heading	Issue Description	Response
		were assessed within the Environmental Assessment Report and also calculated by Peter Dundon & Associates to represent about 0.1% of total catchment yield. The assessments concluded that there will be a small impact to both surface water flows that may contribute to base flows and also to the underlying aquifers (less than 1 percent of total flow from Moolarben Creek). The assessment has also concluded that any reduction in baseflow is likely to lead to a reduction in the saline water contribution to the Moolarben Creek and consequently the Moolarben Dam. Should water flows and therefore entitlements within Moolarben Dam be adversely impacted by the proposed development, consideration would be given (subject to regulatory approval) to alter the discharge location proposed from Bora Creek to Moolarben Creek, upstream of Moolarben Dam.
8H	Effect on UCML water supply.	See Appendix A16 of the Response to Submissions Report.
8I	Concerned about the impacts mining will have on the groundwaters at the following properties: • Property 6 (Thompson) has a 40 acre soak that was not assessed; • Property 154 (Cashel), all his water drawn from bore due to insufficient rain; • Stewart's at 907 Ridge Road, Cooks Gap; • McGuire Property at 97 Winchester Crescent; • Property 48 (O'Sullivan's) Moolarben Road south of Open Cut 3; • K Hails (location unknown); • Haaring at 203 Winchester Crescent,	Groundwater at these properties will be investigated by Moolarben in consultation with the landholder prior to the commencement of mining or extraction of groundwater to identify the source, quality and levels of groundwater at the property. Properties situated, near Ridge Road, Winchester Crescent and the western extent of Lagoon Road are situated outside the margins of the sedimentary basin, and are therefore outside the area of potential impact from the Moolarben Coal Project dewatering. The entire catchment of Ryans Creek is outside the region of potential impact from the Project, and the Project is predicted to have no impact on stream flow in Ryans Creek, and its contribution to Moolarben Dam. Properties in Ulan Village and along Cope Road are outside the area of impact from dewatering of the Moolarben Coal Project. Local farmers, residents and businesses that have their water source directly impacted by the Moolarben Coal Project will be appropriately compensated with water of a similar quality and quantity to meet the needs of the property.

Issue Heading	Issue Description	Response
	Cooks Gap; • Property 11 (C & J Imrie), east of Underground No.4, water at principal dwelling and in Stone Cottages tourist accommodation; and • McCulloch Property (Cope Road).	
8J	Regular monitoring of groundwater is requested at the following properties: • Holland's property at 95 Ridge Road, Cooks Gap. • Sprigg's property at 4 Moolarben Road, Cooks Gap.	Moolarben have commenced liaison with these property owners to establish appropriate monitoring commensurate with the potential impact from the Moolarben Coal Project.
8K	Effect on local and downstream users including grape growers and farmers.	The Moolarben Project is predicted to have only a very small impact on baseflows in Goulburn River (refer Appendix A10). The current impact of the Ulan operation on baseflows in Goulburn River is not known. However, since the aquifer system that contributes most baseflow to the Goulburn River in the vicinity of Ulan and Moolarben is the Triassic Narrabeen Group, which has experienced negligible impact from Ulan's dewatering to date, it is likely that any impact of the Moolarben Coal Project on Goulburn River baseflows is likewise small. Wilpinjong dewatering has been active for only a short period of time as the mine is not yet in production, and it is most unlikely that it would have had any impact on Goulburn River flows. The alluvial aquifers associated with Goulburn River in the vicinity of the Glenesk Vineyard are believed to be recharged locally by infiltration of local rainfall, and are believed to be discharging to the Goulburn River. They would therefore not be affected by any reduction in surface flow from upstream in Goulburn River. In addition Moolarben are proposing to discharge water in accordance with ANZECC guidelines and licensed by the DEC, these discharges are predicted to increase the average base flow by approximately 5%, impacts to downstream

Issue Heading	Issue Description	Response
		users should therefore be positive. Local farmers and residents that have their water source directly impacted by the Moolarben Coal Project will be appropriately compensated with water of a similar quality and quantity to meet the needs of the property (as specified in Commitment 3 in the Response to Submissions Report).
8L	A regional water study should be prepared.	Moolarben are committed to the preparation of a regional water study in conjunction with adjoining coal mining operations.
8M	A detailed water management plan should be prepared.	Moolarben will prepare a water management plan prior to the commencement of operations that will detail the operational procedures, mitigation measures and contingency plans to ensure water is appropriately managed.
9 Subsidence		
9A	Subsidence impacts including cracking, fracturing, destruction, land collapse to river beds, The Drip, Goulburn River Gorge and cliff lines and an inadequate setback distance to the Goulburn River.	As a result of the IHAP process and submissions received Moolarben have developed a Preferred Mine Layout for the Underground No. 4 that adopts the precautionary principle by shortening the length of longwalls. Consequently, there will be a reduction in potential subsidence impacts to cliff lines and overhangs, the Goulburn River, The Drip and Goulburn River Gorge. The impacts associated with the Preferred Mine Layout have been further assessed by Strata Engineering (Australia) Pty Limited (refer Response to Submissions Report at Appendix A8) and Mine Subsidence Engineering Consultants (MSEC) (refer Response to Submissions Report at Appendix A9). No adverse impacts to The Drip and Goulburn River Gorge have been predicted and in addition Moolarben has made the commitment that no impact to The Drip or Goulburn River Gorge will occur.
9B	Public safety issues and reduction in public access to The Drip and Gorge.	Refer to Response 9A. No public safety issues or reduction of access to The Drip or Gorge are expected.

Issue Heading	Issue Description	Response
9C	Effect on aboriginal heritage.	Impacts associated with Aboriginal Heritage was assessed in the Environmental Assessment Report. Further, the Response to Submissions has adopted a precautionary approach and has shortened the longwalls to ensure that there will be no impact to The Drip and has also re-configured and shortened the underground mining layout to minimise impacts to items of Aboriginal Heritage. This has been assessed further within the Response to Submissions Report Subsidence Assessments in Appendices A8 and A9 and the Response to Submissions Report Archaeology Assessment in Appendix A13.
10 Rail transportation		
10A	Capacity of rail network to accommodate MCP's coal.	Correspondence from Australian Rail Track Corporation (ARTC) (refer Response to Submissions Report at Appendix A15) has identified that there will be ample capacity within the rail network from Ulan to Muswellbrook to accommodate coal from the Moolarben Coal Project. Transport of coal west towards Lithgow from the Moolarben Coal Project will require additional track work to upgrade the railway to a suitable standard.
10B	Noise impacts.	Refer to the Spectrum Acoustics report in the Response to Submissions Report at Appendix A11.
10C	Road safety and traffic delays from rail traffic increase.	Moolarben commissioned Sinclair Knight Merz Pty Limited to undertake an assessment of road and rail transport associated with the Moolarben Coal Project. The findings of that report concluded that the protection arrangement for crossings and the additional volume of rail traffic generated by the Moolarben Coal Project is considered to be minor and as such the existing protection arrangements are adequate and should remain even taking into account the consideration of likely increase in coal haulage. Refer to the Environmental Assessment Report for the Sinclair Knight Merz Report.

Issue Heading	Issue Description	Response
10D	Increased rail movement impact on towns (such as Gulgong and Mudgee).	Rail haulage of product coal once the trains have left the Moolarben Coal Project are the responsibility of ARTC who holds an Environmental Protection Licence that regulates noise. The economical and safe movement of coal west from the Moolarben Coal Project will require various track works. The low frequency of trains proposed to travel through Mudgee and Gulgong is not expected to have an adverse impact on the character of the towns.
10E	Rail haulage of coal.	Given the relatively remote location (with regard to power stations and the ports) the haulage of coal by road transport would be in an extraordinary situation only, such as a catastrophic event, act of terrorism/war or in the event of a failure of the railway system.
11 Flora and fauna impacts.		
11A	Clearing of native vegetation.	Clearing of native vegetation was addressed within the Environmental Assessment Report. A specific response to this issue has been prepared and is included within Appendix C2 of this Response.
11B	Loss of biodiversity and habitat.	The loss of biodiversity and habitat was addressed within the Environmental Assessment Report. A specific response to this issue has been prepared and is included within Appendix C2 of this Response.
11C	Effect on threatened flora and fauna and Endangered Ecological Communities.	The affect on threatened flora, fauna and endangered ecological communities was addressed within the Environmental Assessment Report. A specific response to this issue has been prepared and is included within Appendix C2 of this Response.
11D	Inadequate assessment of the White Box, Yellow Box, Blakely's Redgum Woodland.	The flora and fauna assessment was undertaken in consultation and in accordance with the Department of Environment and Conservation and associated guidelines. A detailed response in included within Appendix C2 of this Response.

Issue Heading	Issue Description	Response
11E	Inadequate assessment of the Diuris Tricolour impacts in the study area.	The flora and fauna assessment was undertaken in consultation and in accordance with the Department of Environment and Conservation and associated guidelines. A detailed response in included within Appendix C2 of this Response.
11F	Vegetation offset ratio is inadequate.	The total area of White Box Yellow Box Blakely's Redgum Woodland EEC (WBYBBRW EEC) being disturbed by the proposed mine has been accurately determined through detailed assessment as 64.68 ha. Estimates exceeding 162.84 ha in various submissions are incorrect with these alternative estimates assuming that Shrubby White Box Woodland is part of the WBYBBRW EEC classification. Consultation with DEC resulted in the development of the 'Like for Like' offset mitigation strategy, with the ratio of 2:1 specified by DEC as their requirement for the immediate mitigation of impacts on WBYBBRW EEC. The addition of 130 ha of WBYBBRW EEC to the conservation reserve network is considered a long term proactive mitigation measure that is appropriate. The assertion that DEC often stipulate offset ratios at 3:1 or more is inconsistent with the negotiations between Moolarben and DEC for this Project.
11G	Effect on the national park estate (Goulburn River and Munghorn Gap Nature Reserve) and a request for the Drip to be incorporated in the GRNP.	Potential impact sources on the adjoining DEC estate (*ie* Goulburn River National Park and Munghorn Gap Nature Reserve) will be restricted to operations associated with Underground No. 4 and Open Cut 3. However, mining impacts on the DEC estate from these sources will be negligible for the following reasons: • Underground mining has been designed to minimise the occurrence of subsidence along the eastern boundary of Underground No. 4, such that no subsidence impact is expected on Goulburn River National Park; • The disturbance footprint of Open Cut 3 will range from 200 – 1400 m from Munghorn Gap Nature Reserve, with no water drainage capable of entering the reserve. Further, revegetation works associated with the preferred mitigation strategy will substantially improve the buffering qualities between open cut operations and the biodiversity values of Munghorn Gap Nature Reserve; and

Issue Heading	Issue Description	Response
		• There are no significant impacts on river or creek flow or water quality and there are no significant impacts on off-site groundwater flows. Consequently there are no significant impacts on offsite aquatic environs or groundwater dependant ecosystems.
11H	No assessment of the cumulative impact on flora and fauna associated with future Stages in EL6288.	The cumulative assessment of the impact on flora and fauna was not assessed in relation to future stages of mining within EL 6288 as the level of impacts are yet to be determined and is the subject of further geological and environmental investigation. The Environmental Assessment Report was cognisant of potential future stages of mining within EL 6288 and broad linkages between the Goulburn River National Park and Munghorn Gap Nature Reserve.
11I	Flawed test of significance on flora and fauna.	The survey and assessment of flora and fauna within the Moolarben Coal Project study area was completed in accordance with the Director Generals requirements and the *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004). Consultation with DEC prior to and during the assessment process provided adequate opportunity for this specialist government agency to comment on any inadequacies in the flora and fauna assessment. DEC have accepted the survey approach, data analysis and assessment as adequate and have consequently issued support for the proposed offset, mitigation and management strategy devised for the Project.
12 Not Used		
13 Effects on Ulan Public School		
13A	Effects of dust, blasting and noise.	The Moolarben Coal Project will be operated in accordance with consent conditions, established amenity criteria, the Statement of Commitments and the

Issue Heading	Issue Description	Response
		adopted Environmental Management System.
13B	Mitigation measures.	Moolarben has made a commitment to implement works to ameliorate potential noise and dust impacts upon school operations.
13C	Location of bus stop.	Moolarben has made a commitment to contribute monies towards the local road system via a Voluntary Planning Agreement with the Mid Western Regional Council. Moolarben has also made a commitment to schedule its major employee shift changes to times outside the hours of 8.15 to 9.00 am and 3.15 to 4.00 pm Monday to Friday to seek to reduce overlap of employee traffic and school transport. Further mine employees will be appropriately inducted to further educate on the importance of safe and responsible driving on public roads. The location of bus stops is the responsibility of Council and /or the RTA.
13D	Monitoring.	Monitoring of construction and operational performance of the Moolarben Coal Project will be undertaken in accordance with conditions of consent and will include environmental monitoring at the Ulan Public School.
14 Cumulative Impacts		
14A	Cumulative Impact of UCML, WCM and MCP.	Cumulative impacts were assessed within the Environmental Assessment Report. The assessment of cumulative impacts with respect to noise and dust are undertaken through the collection of baseline air and noise data collected from the local area in addition to those predicted for the Moolarben Coal Project, Ulan and Wilpinjong dust and noise levels. Further detail of the cumulative impacts in relation to noise and blasting and air quality is presented within the Response to Submissions Report at Appendix A11 and Government Responses Appendix B1 respectively. The groundwater assessment accounted for the cumulative impacts through the

Issue Heading	Issue Description	Response
		inclusion of the groundwater levels in the area as a result of the Ulan Coal Mine operations and incorporation of the modelling undertaken for the Wilpinjong Coal Project. Cumulative traffic impacts have been assessed and included traffic from the three mines using Ulan-Mudgee Road, Ulan-Gulgong Road and Ulan-Wollar Road.
15 Effects on Ulan Coal Mine		
15A	Effect on Ulan Coal Mine airstrip.	The Moolarben Coal Project will not inhibit the use (with regard to CASA regulation) of the existing and approved operation of the UCM Air Strip.
15B	Salinity offsets	Ulan Coal Mine has commissioned several studies in conjunction with the Department of Natural Resources to determine suitable lands to offset salinity generated from the Ulan Coal Mine. A portion of these lands are located within the footprint of Open Cut 1. Moolarben accepts its obligations to replace appropriate areas in respect of any area presently allocated under the EPL and which may be unavailable to UCML due to the Moolarben Coal Project by modification to Ulan Coal Mine's EPL.
15C	Consent to mining lease application will not be granted by UCML.	Consultation with UCML will continue to ensure a fair and equitable outcome for both companies.
16 Rehabilitation		
16A	Whether mine rehabilitation plans are achievable	The rehabilitation of open cut mining is a progressive operation that starts with general concepts as presented in the Environmental Assessment Report and are developed into detailed management procedures prior to mining commencing consistent with an approved Mine Operations Plan. Further security bonds are

Issue Heading	Issue Description	Response
		placed with the Department of Primary Industries to provide certainty on the level of rehabilitation that will occur as a consequence of mining operations.
16B	Contamination of water in final voids.	Contamination of water in final voids can occur as a result of the mobilisation of salts and acid from the overburden and reject material. As the mine progresses a geochemical sampling program is undertaken to identify potentially problematic strata. This material is then managed through addition of ameliorant or containment during in pit filling.
16C	Poor remedial outcome of previous activities undertaken by White Mining at Ulan including the Goulburn River diversion.	The Goulburn River diversion was undertaken in the early 1980's by Ulan Coal Mines Limited. The diversion was done to best practice at the time and was approved by the various government authorities of the day. The maintenance and additional remediation of the diversion since the mid to late 1980's is the responsibility of other parties.
16D	Implications of acid content in reject and overburden material	Some reject and overburden has been identified as potentially acid producing requiring additional geochemical studies (see Response to Submissions Report at Appendix A17) to further characterise potential leachate and remedial measures that should be undertaken during operations. These studies will be undertaken during operations as detailed within the Land Rehabilitation Management Plan prepared prior to the commencement of operations.
17 Construction of Power Station and UCC		
17A	Concerns relating to the construction of a power station and its impacts.	The conditions of EL 6288 require Moolarben to investigate the feasibility of a new power station. This is only a feasibility study. Should a power station be feasible, it must be consistent with the State Government strategic direction and would be subject to a new and separate application for approval and environmental assessment.
17B	No commitment to UCC plant, despite EL	The conditions of EL 6288 requires Moolarben to carry out demonstration trials in

Issue Heading	Issue Description	Response
	being granted on this basis	the Ultra Clean Coal Plant built in Cessnock. The trials will use processed coal obtained from within the licence area.
17C	Concerns relating to Ultra Clean Coal technology.	The environmental assessment for the Moolarben Coal Project does refer to the Ultra Clean Coal ("UCC") technology owned by Felix and which is presently undergoing trials in a test plant at Cessnock. The commitment of Felix to best available technology economically achievable and to the minimisation of environmental impacts and optimisation of economic benefits from coal mining is demonstrated via the investment by Felix in UCC. Whilst trialling is progressing satisfactorily and a positive outcome is hoped the UCC technology is yet to be proven. The environmental assessment for the Moolarben Coal Project specifically states that the application being assessed does not include seeking approval for the construction of a UCC plant.
18 Services		
18A	Electricity Capacity.	Correspondence with Country Energy (refer to Appendix C3 of this document) has identified that there is sufficient capacity within the local electricity infrastructure to accommodate the needs of the Moolarben Coal Project.
18B	Impacts on Transgrid infrastructure.	The proposed Transgrid 330kV infrastructure traverses the Moolarben Coal Project area between Open Cut 1 and the Main Infrastructure Area. The design of the mine has been cognisant of the proposed infrastructure and liaison with representatives of Transgrid has occurred to ensure that potential impacts to the proposed 330kV line are appropriately managed.

Issue Heading	Issue Description	Response
19 Greenhouse gas and climate change		
19A	Impacts of climate change associated with direct greenhouse gas emissions from mining operations (including diesel and liberated methane) and from coal burnt from the MCP and fuel required for transport.	The development, operation and burning of coal associated with this project will cause a negligible increase in global greenhouse gas emissions. Refer to the Response to Submissions Report in Appendix A14.
20 Compliance and Enforcement of DA conditions and EPL		
20A	Compliance with Major Project and Environmental Protection Licence (EPL) conditions, monitoring requirements and the regulation and enforcement of these conditions.	Compliance with conditions of development consent for a project is the responsibility of the proponent and associated statutory regulators. The proponent is typically required to have regular independent audits undertaken at its own cost to examine the operations in comparison to that stated within the Environmental Assessment Report and detailed within the Statement of Commitments and consent conditions. Various government departments, in particularly the Department of Planning and Department of Environment and Conservation undertake regular site inspections and audits of the development to ensure compliance. Enforcement of conditions and monitoring is legislated in the EP&A Act, *Protection of the Environment Operations Act, 1997* and administered by the Department of Planning and DEC respectively.

Issue Heading	Issue Description	Response
21 Support for MCP		
21A	Support for MCP.	These letters are in support of the Moolarben Coal Project stating the obvious benefits to the economy and long coal mining history in the area

MOOLARBEN COAL PROJECT

Individual and NGO Submission Resonses

APPENDIX CI

DEC Artwork Correspondance

Investigation of the Aboriginal Women's Sacred Art Site, "The Drip", near Ulan

Introduction

On the 11th October 2006, Glen Morris, Aboriginal Heritage Conservation Officer, Central Aboriginal Heritage Region, Cultural Heritage Division and Dave Lambert, Rock Art Conservator/Specialists, investigated "The Drip" Aboriginal Women's art, to authenticate the art as being traditional Aboriginal art.

Recent photographs taken by staff from the Environment Protection Regulations Division, of the Department of Environment & Conservation NSW, suggested the art at "The Drip" women's art site, appeared to have been made by non-Aboriginal people, using non-Aboriginal methods when painting the site.

Close Inspection of the Art

Upon close inspection of the art site and artwork, the artwork appears to be stylised mixture between the western desert and Northern Territory Aboriginal art styles.

The artwork is definitely not that of the local Aboriginal art style of the region or that of the art styles of NSW.

The figures are more European like style than that of the Aboriginal traditional art styles for NSW.

The location of the artwork at "The Drip" is in the wrong location, given the location of traditional art sites in the Region and in NSW. The location of traditional art sites is most likely found above the high-level watermark during floodwaters and not on sandstone overhangs in the riverbed.

The artwork was painted on the sandstone overhang with a European style brush. thus causing the art work to drip from its original outline, which is evident in several places of the artwork (traditional ochres when painted onto sandstone using traditional methods do not drip or run from their original outline).

The paint used to paint the artwork appears to be that used by Europeans when painting a house or something.

Some of the artwork at the site is painted with a dark (black) undercoat to highlight the artwork done in white.

There are three figures in white paint that are definitely European also painted with a brush and the same paint used to paint the stylised Aboriginal figures at the art site. The first 2 figures are TWO TOO and the third is a figure of a smiley round face.

The erosion of the stylised so called Aboriginal figures and the European figures have the same erosion time-line. They were painted at the same time.

European History of the Art Site

According to the property owner of the "Stone Cottages" opposite "The Drip", the art site has only been known to them for approximately 30 yrs and according to the previous owner the art site has been known to them since 1970.

Conclusion

From the evidence it appears that the art site was painted sometime during the 1960s by a non-Aboriginal person/s and that the art is not traditional Aboriginal art.

Glen Morris,

Aboriginal Heritage Conservation Officer,
Central Aboriginal Heritage Region,
Cultural Heritage Division

Date: 17th October 2006.

MOOLARBEN COAL PROJECT

Individual and NGO Submission Responses

APPENDIX C2

Flora and Fauna Response

Flora and Fauna Response

Prepared by Moolarben Biota

11A Clearing of native vegetation.

The loss of biodiversity from remnant vegetation located within areas of open cut mining was identified as a key issue to the Department of Planning for the assessment of this project. Accordingly, comprehensive survey and assessment was conducted, including comprehensive consultation with DEC throughout the duration of the impact assessment, to ensure compliance with the Director Generals requirements and the Principles of Ecologically Sustainable Development.

The loss of remnant vegetation arising from open cut mining as a detrimental aspect of the project has been considered in terms of the following mitigation strategies:

- Avoidance of ecologically important values;
- Dedication of significant ecological values to the conservation reserve network;
- Increasing the net native vegetation cover within the locality;
- Enhancing the contained ecological values within existing native vegetation;
- Conservation of important ecological habitats through the salvage of fauna habitats contained within the open cuts and consequential emplacement throughout rehabilitated/ revegetated landscapes; and
- Staged establishment of Voluntary Conservation Areas to provide a secure long term beneficial outcome for local biodiversity.

The mitigation package prepared in response to the impact is summarised as follows:

Mitigation Strategy	Area (ha)
Avoidance of White Box Yellow Box Blakely's Redgum Woodland EEC	19
Dedication of 2:1 White Box Yellow Box Blakely's Redgum Woodland EEC to conservation network	130
Avoidance of non-EEC native vegetation	24
Dedication of non-EEC native vegetation to the conservation reserve network	143
Dedication of potential revegetated lands to conservation reserve network	38
Revegetation of currently cleared lands	144
Rehabilitation of mined landscapes	370
Extent of native vegetation excluded from the MCP	1262
Likely extent of Voluntary Conservation Areas	1726

The total extent of mitigation represented by the dedication to the conservation reserve network and establishment of managed conservation areas is estimated to be 2037 ha, representing a mitigation ratio of nearly 5:1. While DEC have expressed concerns regarding the loss of biodiversity from coal mining they have acknowledged the extent of proposed mitigation as being an appropriate response that achieves a net 'maintain and enhance' outcome that is sustainable and equitable for future generations.

11B Loss of biodiversity and habitat.

The MCP will result in the loss of 416 ha of intact native vegetation and associated fauna habitats from the local area, compared with 2,124 ha located within the MCP DA area and 5,976 ha within the study area (Exploration License 6288). Vegetation communities formed on Triassic Sandstones will be left

intact after mining, with subsidence being the main impact on vegetation north of Bora Creek. The biodiversity contained within these areas is predicted to remain largely unaffected by mining.

Open cut operations will predominantly impact vegetation formed on Permian geological formations comprising of Box –Gum Woodlands and Ironbark Woodlands. The direct impact on the Box-Gum Woodlands will result in the loss of local biodiversity, which is to be mitigated by:

- The dedication of 'like for like' vegetation to the conservation reserve network;
- Revegetation works on currently cleared lands to restore local vegetation cover and wildlife linkages; and
- Enhancement works to improve the condition of residual vegetation.

Rehabilitation works are proposed for the entire open cut 1 operation focusing on the re-establishment of native vegetation cover consistent with existing conditions within this area. While not regarded as sufficient mitigation over the short term, it is generally acknowledged that future generations will benefit from these actions.

Proposed rehabilitation and revegetation works will substantially improve the extent of native cover within the local area (i.e. net increase of 98 ha). Appropriate measures are proposed to ensure these areas are retained and conserved as native vegetation through a planning agreement with the Minister for Planning. Conservation agreements proposed under this planning agreement will be enacted via a Property Vegetation Plan under the Native Vegetation Act, 2003.

Enhancement works such as the management of weeds, feral animals, fire and erosion will all be undertaken throughout rehabilitated, revegetated and existing remnant vegetation to maximize the value of this local native vegetation cover for biodiversity and water management. These initiatives are unlikely to eventuate throughout this locality in the absence of mining, with mining representing a substantial opportunity to implement sustainable proactive environmental management regimes that will improve, over time, the net biological values throughout the locality.

11C Effect on threatened flora and fauna and Endangered Ecological Communities.

It has been acknowledged in the EA report that the MCP will have a detrimental impact on local threatened flora and fauna communities in the absence of mitigation. The key issues identified were White Box Yellow Box Blakely's Redgum Woodland EEC and Woodland Birds (both threatened and declining), which have been assessed in terms of the impact and the proposed mitigation. The goal has been to identify and quantify the impacts on a landscape level to enable the development of a meaningful longterm mitigation strategy that secures sustainable outcomes and intergenerational equity.

DEC has been consulted on numerous occasions as a key stakeholder, with their specialist expertise in assessing and managing impacts cornerstone to the development of the proposed mitigation strategy. The overall strategy developed for the MCP has been a combined initiative of DEC and MCMs to an extent where DEC has accepted the proposed mitigation outcomes as having a 'maintain and improve' outcome. Integral to this strategy is the dedication of White Box Yellow Box Blakely's Redgum Woodland EEC and its assocaited woodland bird habitat to the conservation reserve network in a ratio of 2:1, hence providing a long-term secured outcome for this sensitive ecosystem.

The fauna assessment took into serious consideration the various habitat features and specific resources required for each threatened species known to occur, or considered likely to occur, in the study area. Fauna habitat values were determined independently to the vegetation status and significance, and were given relative importances on an individual basis for each threatened species. Some species require specific floristic characteristics, some particular features, and some specific structural characteristics.

In most cases the species of concern as identified by the objectors have been woodland birds plus other bats utilising woodlands As detailed in Appendix 11, the recent industry concern over the decline in many woodland bird species has been generally attributed to a gradual long term loss and degradation of woodland habitats. Until recently there has been no specific attempt made to mitigate impacts upon these woodland bird species, as they were considered widespread and common. The decline in

woodland bird species conveys a warning that woodland habitat loss must also be assessed and mitigated, as for other threatened species. It does not convey a warning that mitigation doesn't work. To this extent extensive survey work was undertaken throughout all habitat types over a range of seasons. From this multi-resource approach, areas of important habitat were identified both through consideration of the availability of the various identified structural features, and through recorded abundance and diversity of fauna species.

The fauna assessment concluded that for most woodland birds (plus bats) in the study area, the impact of the proposed works would not be significant. This conclusion was contingent upon implementation of a staged mitigation package, whereby new habitat would be created before existing habitat is cleared, which in some cases, could be up to 10 years before clearing occurs. New habitat would be enhanced through placement of hollow logs and nesting features *etc*, to address, according to current best practise, the issue of timing.

It is acknowledged that some local populations could decline or even be lost in the short term, but it is considered that the combined timing of the project plus the timing of a staged mitigation package would ensure that sufficient individuals/populations would survive to be able to naturally expand into the new habitats over time. The critical point to be determined for the staged mitigation package is that enough of a species survives to be locally viable such that it can re-colonise new habitats when the opportunity arises. The ebb and flow of species in response to habitat and resource availability due to impacts from natural disasters is a natural phenomenon, which has been occurring for millions of years. It is this phenomenon that gives reason to protect biodiversity rather than just monotypic greenness.

It should also be noted that the assumption that a species will colonise new habitat (as long as it contains necessary features, and is accessible) is not wild speculation. It is the basis of many species recovery programs.

It should also be noted that the extent of habitat to be cleared for each species was provided as a total number of hectares, calculated using a GIS package to include every bit of mapped habitat unit for the species – the number quoted is not a single large area of habitat, but in most cases, a collection of small fragments fringing larger areas of habitat, and small isolated remnants in paddocks. The proposed works are generally located on previously cleared land in the valleys, with the larger and more intact areas of remnant vegetation occurring on surrounding hills.

The loss of hollows can be offset – through removing hollow trees and logs intact and placing them into regenerating woodlands. It should also be noted that the presence of abundant hollows does not automatically result in abundant fauna. Fauna also need suitable foraging and watering resources, and in many cases, suitable structure for foraging, whether it be open grassland or dense shrubs for shelter. To this extent extensive survey work was undertaken throughout all habitat types over a range of seasons so that areas of important habitat could be identified partly through availability of features, and partly through recorded abundance and diversity of fauna species. These data would be used to design the comprehensive staged mitigation package in concert with the detailed staged mine plan.

11D Inadequate assessment of the White Box, Yellow Box, Blakely's Redgum Woodland

The Final Determination gazetted by the Scientific Committee for White Box Yellow Box Blakely's Redgum Woodland represents a legal definition that defines this ecological community as endangered under the *Threatened Species Conservation Act 1995*. According to the Act, the definition of an ecological community is *'an assemblage of species occupying a particular area*' with the term '*endangered*' indicating that it is listed on Part 3 of Schedule 1 of the Act. Submissions presenting alternative definitions such as an Endangered Ecological Community is "*an artificial construct identified strictly by the information provided in the Final Determination*", are inconsistent with the definitions presented in the Act and should be disregarded.

The 'Identification Guidelines for Box – Gum Woodlands' used in the identification of WBYBBRW EEC was prepared by the National Parks and Wildlife Service (2002) (now DEC) to provide a clear and simple identification methodology for the consistent interpretation of the legal definition for WBYBBRW EEC. The identification and assessment of EECs within the EA report using the 'Identification Guidelines for Box – Gum Woodlands' (NPWS, 2002) is a DEC accepted methodology for classifying WBYBBRW EEC.

A statistical analysis (i.e. TWINSPAN) was also used to categorise quadrat data, hence compliment/ support the 'Identification Guidelines for Box – Gum Woodlands'. The TWINSPAN analysis involved both mathematical (i.e. statistics) and subjective interpretation (i.e. consideration of sampling constraints and disturbance factors) to allow an appropriate balanced comparison of the results against the legal definition.

Submissions stating that the aerial extent of WBYBBRW EEC was underestimated have been based on simplistic reviews. For instance, independent data presented in one submission used to discredit the ecological assessment was not collected in accordance with a suitably randomized, stratified replicated survey methodology, as specified in the MCP flora survey methodology and industry accepted *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004). The independent data used to challenge the EA report failed to adequately consider the influence of disturbance regimes on vegetation structure and floristics such as those commonly experienced in roadside environment such as Moolarben Road.

Independently collected data used for comparison with the Moolarben Biota impact assessment was collected from a 20 m wide roadside corridor that is highly disturbed by numerous direct and indirect impacts. Interestingly, the submission reliant on this independent data openly acknowledged the inadequacy of the sampling design, where it is stated that:

> "*This field survey involved the random placement (limited to areas with access) ……*" and
>
> "*While it is accepted that this survey was limited ….*"

Conclusions based on independent data from the Moolarben Road corridor have inappropriately weighted the value of this data by relying on a routinely disturbed environment subjected to disturbances such as roadside slashing to control shrub growth and increased availability of surface water and nutrients from the road surface. The data was not collected using random placement within the MCP DA area and was significantly biased by roadside impacts experienced within the Moolarben Road corridor.

Failure to understand the importance of disturbance regimes in survey design and impacts on native vegetation floristics and structure has substantially undermined the independent vegetation analysis such that no confidence can be placed on the conclusions implying a wider extent of EEC vegetation. The DEC, an expert government agency on biodiversity management and conservation, has provided reviewed and supported the technical information contained within the EA report and supports the EEC offset strategy proposed in the 'Statement of Commitments'.

The EA report and the accompanying Ecological Assessment have appropriately applied the *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004) and various guidelines for the interpretation of matters such as White Box Yellow Box Blakely's Redgum Woodland EEC (WBYBBRW EEC). There is certainty regarding the information collected during the field investigation and the interpretation of vegetation using the Identification Guidelines for Box-Gum Woodlands. The area impacted has been accurately measured, with the resultant mitigation compliant with DECs expected mitigation response. Refer to Attachment ? for a more detailed response to this issue.

11E Inadequate assessment of the *Diuris tricolor* impacts in the study area

General Response

Targeted survey and assessment was completed in accordance with the *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004) for a minimum four seasons during 2004 and 2005. Weather conditions throughout this period were within expected seasonal variation and were substantially better than the current record drought conditions.

The DEC has accepted as adequate the survey approach and its extent. The survey has adequately addressed the Director Generals requirements, as it complies with the *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004). At least three meetings with DEC were conducted to discuss this issue, with the subsequent reviews of the Environmental Assessment Report (i.e. adequacy and final reviews) confirming DECs stated position. Accordingly, it is considered that the ensuing assessment of the MCP development application was adequate.

Accordingly, views indicating that the ecological survey and assessment were inadequate are themselves in conflict with the industry accepted *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004) and do not accord with DECs acceptance of the field survey and assessment.

The assessment of threatened flora species within the EA report, has been based on adequate survey and habitat assessment, with the proposed mitigation package consistent with the DEC's 'maintain and enhance' outcome. Extensive transparent consultation with DEC provided sufficient opportunity for this expert government agency to identify any deficiencies contained within the assessment. DEC concurred with conclusions of the EA report and is supportive of MCMs proposed 'Statement of Commitments'.

Assessment of Diuris tricolor

Diuris tricolor observations within the MCP DA area do not form a viable local population even when considering the nearest historical observation in the Cooyal catchment (DEC, 2006). The known extent of this species within the MCP DA area is insufficient for the maintenance of a viable local population. The claim that the three reported locations combine to form a 'local population' has ignored the affects of a heavily fragmented agricultural landscape on the population viability and potential habitat condition and availability. Fragmented landscapes subjected to continuous agricultural activities substantially impact genetic flow, particularly between individuals separated by substantial distances (i.e. 7 km between the two known specimens observed within the MCP DA area). The historical record from the Cooyal catchment is equally fragmented being at least 12 km from the nearest known plant within the MCP DA area.

Given the extent of fragmentation, ongoing farming practices and extremely low individual count (i.e. two plants) it is considered that *Diuris tricolor* specimens identified within the locality form isolated separate populations that are not viable. As stated in the EA report, the extent of *Diuris tricolor* potential habitat within the MCP DA area has been comprehensively surveyed with the two observations representing distinct isolated unviable populations.

Potential habitat throughout the MCP DA area has been extensively and continuously grazed through a range of climatic events including drought, with this impact alone having a substantial affect on the viability of remaining potential habitats. Targeted surveys within potential habitat failed to identify any further populations within the MCP DA area. The survey was comprehensive and adequate, with the results being reliable for use in the impact assessment.

The statement "*The retention of genetic diversity and variation within a species is important to the longterm survival of the species...*" with the occurrence of this species within the locality *"... important to the species survival"* is irrelevant to *Diuris tricolor* occurrences within the MCP DA. The loss of one *Diuris tricolor* plant will not significantly impact the genetic diversity and variation within this species. *Diuris tricolor* is widely distributed throughout the NSW western slopes where there are numerous populations comprising large colonies. The MCP will not compromise the longterm survival of this species by destroying one plant.

The assessment presented within the EA report was based on an accurate understanding of the habitats surrounding the two observations, with the derived conclusions consistent with the distribution of potential habitat throughout the MCP DA area. No assessment of the developments impact on the wider study area was provided, as it was demonstrated through field survey and habitat assessment that the observed specimens within the MCP DA area represent the likely extent of this species habitat within the study area. Mine impacts are well understood, with the assessment of these impacts provided in the context that the local population is unviable. Refer to Appendix ? for further technical discussion on the assessment of *Diuris tricolor*.

11F Vegetation offset ratio is inadequate

The total area of White Box Yellow Box Blakely's Redgum Woodland EEC (WBYBBRW EEC) being disturbed by the proposed mine has been accurately determined through detailed assessment as 64.68 ha. Estimates exceeding 162.84 ha in various submissions are incorrect with these alternative estimates assuming that Shrubby White Box Woodland is part of the WBYBBRW EEC classification.

Consultation with DEC resulted in the development of the 'Like for Like' offset mitigation strategy, with the ratio of 2:1 specified by DEC as their requirement for the immediate mitigation of impacts on WBYBBRW EEC. The addition of 130 ha of WBYBBRW EEC to the conservation reserve network is considered a long term proactive mitigation measure that is appropriate for this project. The assertion that DEC often stipulate offset ratios at 3:1 or more is inconsistent with the agreed negotiations arising between Moolarben Coal Mines Pty Limited and DEC for this project.

11G Effect on the national park estate (Goulburn River and Munghorn Gap Nature Reserve) and a request for the Drip to be incorporated in the GRNP.

Potential impact sources on the adjoining DEC estate (*ie* Goulburn River National Park and Munghorn River Nature Reserve) will be restricted to operations associated with Underground 4 and OC3. However, mining impacts emanating from these sources will be negligible for the following reasons:

- Underground mining has been designed to minimise the occurrence of subsidence along the eastern boundary of Underground No. 4, such that no subsidence impact is expected on Goulburn River National Park;
- The disturbance footprint of OC3 will range from 200 – 1400 m from Munghorn Gap Nature Reserve, with no water drainage capable of entering the reserve. Further, revegetation works assocaited with the preferred mitigation strategy will substantially improve the buffering qualities between open cut operations and the biodiversity values of Munghorn Gap Nature Reserve; and
- There are no significant impacts on river or creek flow or water quality and there are no significant impacts on off-site groundwater flows. Consequently there are no significant impacts on offsite aquatic environs or groundwater dependant ecosystems.

11H No assessment of the cumulative impact on flora and fauna associated with future Stages in EL6288

The cumulative assessment of the impact on flora and fauna was not assessed in relation to future stages of mining within EL6288 as the level of impacts is yet to be determined and is the subject of further geological and environmental investigation. The Environmental Assessment was cognisant of the potential of future stages in EL6288 and proposed future linkages between vegetated tracts of DEC Estate.

11I Flawed test of significance on flora and fauna

The survey and assessment of flora and fauna within the MCP DA area was completed in accordance with the Director Generals requirements and the *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004). Consultation with DEC prior to and during the assessment process provided adequate opportunity for this specialist government agency to comment on any inadequacies in the flora and fauna assessment. DEC have accepted the survey approach, data analysis and assessment as adequate and have consequently issued support for the proposed offset, mitigation and management.

Detailed Response

Submission prepared by Alex Cockerill objecting to the Moolarben Coal Project (MCP).

RE: Objection to the Moolarben Coal Mine on the grounds of significant ecological impacts

The objection submitted by Alex Cockerill relates to significant ecological impacts on threatened flora and endangered ecological communities (EEC). The submission identified the following 'substantial deficiencies' in the Moolarben Biota Ecological Assessment:

- Inadequate targeted survey and assessment of threatened flora
- Incorrect interpretation of the scientific committee's final determination for the EEC White Box Yellow Box Blakely's Redgum Woodland (WBYBBRW)
- A substantial underestimate of the EEC, WBYBBRW being impacted by the proposal
- Inadequacies in the impact assessment and offsetting for direct loss of WBYBBRW EEC and threatened flora species.

A response has been prepared as follows to address these issues.

Corrections to the Submission
An accurate reference to the legal status of *Leucochrysum albicans* var. *tricolor* is that it is solely listed as endangered on the *Environment Protection and Biodiversity Conservation Act 1999*. As implied by the submission this species is not listed on the *Threatened Species Conservation Act 1995*. Similarly, there was no mention of the remaining three species being listed as vulnerable on the *Environment Protection and Biodiversity Conservation Act 1999*.

Inadequate targeted survey and assessment of threatened flora
Targeted survey and assessment was completed in accordance with the *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004) for a minimum four seasons during 2004 and 2005. Weather conditions throughout this period were within expected seasonal variation and were substantially better than the current record drought conditions. Department of Environment and Conservation (DEC) have been consulted on three separated occasions to comment on survey approach and its extent, with their considered view being that the survey was adequately conducted and is sufficient for the purposes of assessing the MCP development application.

The view presented in the submission that the ecological assessment was inadequate as it was based on an inadequate survey is in conflict with the industry accepted *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004) and DECs acceptance of the field survey. As already stated in the EA report, the survey was conducted in accordance with *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004) and has appropriately considered seasonality in its targeted survey regime for various threatened species.

The DEC has accepted as adequate the survey approach and its extent, which included targeted seasonal surveys during favourable weather conditions. The survey has adequately addressed the Director Generals requirements as it complies with the *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004). At least three meetings with DEC were conducted to discuss this issue, with the subsequent reviews of the Environmental Assessment Report (i.e. adequacy and final reviews) confirming DECs stated position.

In relation to technical comments made regarding *Diuris tricolor,* the following is offered in response.

Diuris tricolor observations within the MCP DA area do not form a viable local population even after considering the historical observation in the Cooyal catchment (DEC, 2006). The known extent of this species within the MCP DA area is insufficient for the maintenance of a viable local population. The claim that the three reported locations combine to form a 'local population' has ignored the affects of a heavily

fragmented agricultural landscape on the population viability and potential habitat condition and availability. Fragmented landscapes subjected to continuous agricultural activities substantially impact genetic flow, particularly between individuals separated by substantial distances (i.e. 7 km between the two known specimens observed within the MCP DA area). The historical record from the Cooyal catchment is equally fragmented being at least 12 km from the nearest known plant within the MCP DA area.

Given the extent of fragmentation, ongoing farming practices and extremely low individual count (i.e. two plants) it is considered that *Diuris tricolor* specimens identified within the locality form isolated separate populations that are not viable. As stated in the EA report, the extent of *Diuris tricolor* potential habitat within the MCP DA area has been comprehensively surveyed with the two observations representing distinct isolated unviable populations.

Potential habitat throughout the MCP DA area has been extensively and continuously grazed through a range of climatic events including drought, with this impact alone having a substantial affect on the viability of remaining potential habitats. Targeted surveys within potential habitat failed to identify any further populations within the MCP DA area. The survey was comprehensive and adequate, with the results being reliable for use in the impact assessment.

The statement "*The retention of genetic diversity and variation within a species is important to the longterm survival of the species...*" with the occurrence of this species within the locality *"... important to the species survival"* is invalid for *Diuris tricolor* occurrences within the MCP DA. The loss of one *Diuris tricolor* plant will not significantly impact the genetic diversity and variation within this species. *Diuris tricolor* is widely distributed throughout the NSW western slopes where there are numerous populations comprising large colonies. The MCP will not compromise the longterm survival of this species by destroying one plant.

The assessment presented within the EA report was based on an accurate understanding of the habitats surrounding the two observations, with the derived conclusions consistent with the distribution of potential habitat throughout the MCP DA area. No assessment of the developments impact on the wider study area was provided, as it was demonstrated through field survey and habitat assessment that the observed specimens within the MCP DA area represent the likely extent of this species habitat within the study area. Mine impacts are well understood, with the assessment of these impacts provided in the context that the local population is unviable.

While development will result in the loss of at least one known plant specimen from the locality, it is reasonable to assume that previous and existing disturbance regimes represent the causal factors leading to the decline of this local population. Sufficient survey compliant with the *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004) was completed for this species during an exceptionally good flowering period, as evidenced by the Muswellbrook *Diuris tricolor* population and flowering activity of other *Diuris* spp. within the MCP DA area during the survey period. Survey adequately covered important habitat, particularly areas impacted by the proposed development. The assessment is justified in its assumption that past and current disturbances within the MCP DA area represent the casual factor leading to a local extinction.

The following discussion on habitat preference, life cycles, habitat availability and connectivity provide additional context for this response, hence establishing that local habitats are not vital to the survival of this species.

Habitat Preference

Habitat preferences exhibited by this species is well understood with the resultant assessment being appropriate, particularly when considering the heavily fragmented, disturbed extent of potential and known habitat. Known habitat is restricted to two sites located 7km apart, with both localities notably excluded from ongoing farming activities for lengthy periods (i.e. at least 25 years). The absence of grazing throughout agriculturally suitable lands within the MCP DA area is rare, with areas excluded from grazing targeted during the field survey explore for the presence of remnant threatened species populations.

The submission applied a very broad habitat preference definition for *Diuris tricolor*. The result was a simplistic assessment that substantially over estimated the extent of potential habitat. Geology is an

important habitat determinant, but was inaccurately applied in the submission leading to an erroneous understanding of local habitat preferences. There was no consideration of past and existing agricultural land uses and its influence on population viability, nor was there any consideration of the presence and distribution of potential pollinators and mimicked plant species critical to successful reproductive lifecycles.

Diuris tricolor habitat is restricted to valley floor and adjoining lower midslope landscapes, a general habitat model confirmed by DECs *Diuris tricolor* species profile. DEC identify habitat as "sclerophyll forest among grass, often with native Cypress Pine (*Callitris spp.*). It is found in sandy soils, either on flats or small rises. Also recorded from a red earth soil in a Bimble Box community in western NSW. Usually recorded as common and locally frequent in populations, however only one or two plants have also been observed at sites. The species has been noted as growing in large colonies in disturbed areas" (http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/ profile.aspx?id=10243).

Personal observations from the Hunter and Upper Goulburn River catchments support this general habitat model, with *Diuris tricolor* appearing to preferentially occupy landscapes containing gravelly soils derived from the Permian geological formation on gentle slopes adjoining the valley floor (i.e. observations from monitored populations at Wybong, Muswellbrook and Ulan during the last three seasons). The occurrence of these populations also appears to coincide with conglomerate geological strata situated immediately below the outcropping coal seam. Also noted during the October 2005 monitoring of the Muswellbrook population was an abundant flowering event that coincided with targeted surveys for *Diuris tricolor* within the MCP DA area.

An analysis of *Diuris tricolor* location data against the Dubbo 1: 250 000 geological map sheet positioned all herbaria records within 500 m of a geological boundary (most within 300 m). Most herbaria records (i.e. 5 of 7 records) are located nearby Quaternary Alluviums, a geological formation associated with landscapes that are flat to gently undulating. No herbaria records occur on the Triassic Sandstone geological formation. This spatial analysis confirms *Diuris tricolor* to preferentially occupy habitats formed on geologies containing shales, claystones, mudstones and siltstones (i.e. Permian and Jurassic geological formations) on relatively flat landscapes nearby quaternary alluviums.

Based on the simplistic habitat definition presented in the submission, it was claimed that potential *Diuris tricolor* habitat occurred within vegetation associations 20, 21, 22, 23, 24, 25, 30, 31, 33, 34, 35, 36, 37, 39, 40 and 41. Conversely, it was noted that vegetation associations contained within TSUs 10, 50 and 60 were not considered potential habitat.

It is clear from the habitat model presented in the EA report and this response that the identification of vegetation associations 20, 21, 22, 23 and 37 by the submission as 'potential habitat' is incorrect. The mapped occurrence of these vegetation associations occurs on geological/ topographical environs inconsistent with the habitat preferences presented within this response, the EA report and the submission (i.e. reference to Permian conglomerates). Elevated Triassic Narrabeen sandstone plateaus or the adjoining steep upper slopes consisting of Permian Illawarra claystones do not constitute potential habitat for this species. Further, there are few or no occurrences of 'egg and bacon' plants within these landscapes, indicating a likely absence of potential pollinators.

Interestingly, the submission considers vegetation associations within TSU 50 as not representing potential habitat. However, similar geological and topographic conditions exist for vegetation associations contained within TSUs 20 and 50, with the former nominated in the submission as potential habitat. This is indicative of an inconsistency application of the stated habitat preferences. Similarly, there was no discussion on potential habitat contained within disturbed vegetation associations (i.e. TSU 10), which coincidently represents the only vegetation type containing known specimens within the MCP DA area.

Vegetation classified as White Box Yellow Box Blakely's Redgum Woodlands (i.e. vegetation associations 30, 31, 33, 36, 40 and 60) provide potential habitat for a variety of *Diuris spp.* but not *Diuris tricolor*. The species list published by the Department of Environment and Heritage (DEH) for the critically endangered ecological community *White Box Yellow Box Blakely's Redgum Grassy Woodlands and derived grasslands* confirms that *Diuris tricolor* is not known to occur within this community.

The submission subsequently overestimates potential *Diuris tricolor* habitat (i.e. < 1000 ha), from which it was claimed that there was insufficient survey conducted to quantify population size and impacts. From

the above discussion, it has been shown that the area of potential habitat was incorrectly determined. A more accurate estimate of potential habitat, as guided by the EA report and this response, is restricted to vegetation associations 10, 24, 25, 34, 39, 62, 63 (i.e. total area of 326 ha), which was adequately surveyed.

As stated in the EA report there were 4 quadrats (0.16 ha) and 130 separate orchid observations (i.e. 0.84 ha using 5m radius for each observation) completed during the *Diuris tricolor* flowering period throughout the entire area of potential habitat. The distanced traverse during these targeted biodiversity searches was not reported in the EA report, but has been subsequently calculated to be approximately 3.4 km representing an effective sampling area of 8.4 ha (i.e. 5m transect width). This represents approximately 2.6 % of the total 'potential habitat' area, with the majority of this survey within the impact area, which is considered adequate survey coverage for this species.

Life Cycles

The flowers of *Diuris* spp. mimic other plant species having similar flower structure and flowering periods to attract unsuspecting pollinators, hence facilitating its reproductive lifecycle. Known pollinators are principally native bees preferentially targeting 'egg and bacon' plant species (Fabaceae tribes Bossiaeae and Mirbelieae). Known habitat for *Diuris tricolor* often coincides with 'egg and bacon' species throughout the Hunter and Upper Goulburn River catchments.

Plants of the 'egg and bacon' tribe occur sporadically throughout the study area, principally within vegetation remnants on the valley floor and adjoining lower slopes. Two 'egg and bacon' plant species observed within the impact area (i.e. *Bossiaea buxifolia* and *Templetonia stenophylla*) were regularly seen near *Diuris* spp.. *B. buxifolia* was commonly encountered in scattered vegetation remnants on gently sloping lands formed on Permian geological formations, where it was consistently found growing in association with large populations of *Diuris goonooensis* (i.e. in open cuts 2 and 3). Conversely, *T. stenophylla* was consistently observed near creeklines on sandier soils (e.g. Quaternary Alluviums), where it was found growing with *Diuris sulphurea*.

Despite a thorough targeted search of all vegetation associations within the study area, including a comprehensive search of the impact areas, *Diuris tricolor* was only observed twice in disturbed vegetation located on the valley floor landscape. Furthermore, *B. buxifolia* was observed in association with *Diuris tricolor* located southwest of open cut 3, hence strengthening this symbiotic plant relationship and relevance to the distribution of *Diuris tricolor.*

Habitat Availability within the MCP DA Area

Landscapes conforming to the *Diuris tricolor* general habitat model occur along the western half of the MCP development application area (excluding lands north of Bora Creek). This area is generally flat to gently undulating with the underlying geology being the Permian geological formation, its transition with the adjoining Carboniferous Quartz Monzonites to the west and Quaternary Alluviums. This area is also predominantly cleared of its historical native vegetation cover due to past agricultural activity, with small vegetation remnants in the farmed valley floor being separated by grazed/ cropped lands of widths between 400 – 700 m.

In contrast, the eastern and northern parts of the MCP DA area substantially differ in terms of their topographic/ geological characteristics. Triassic Narabeen sandstones characterise the elevated plateaus while the adjoining steep sloping lands consist of Permian Illawarra claystones. Both these topographic/ geological combinations substantially conflict with DECs habitat profile, habitat observations of populations within the Hunter and Upper Goulburn River catchments and geological preferences exhibited within the Dubbo 1: 250, 000 map sheet area.

Habitat Connectivity

Single plant specimens separated by 7-12 km of highly disturbed agricultural lands is prohibitive to pollen exchange by native bees, hence genetic flow. Distance separation and past/ existing disturbance histories have and will continue to sever genetic flow between these two identified *Diuris tricolor* individuals (i.e. approximately 7 km). It is almost certain that the area and quality of known *Diuris tricolor* habitat within the MCP will continue to decline without influence from the MCP. The two observed individuals not only represent distinct separate populations, they are also highly likely to experience local extinction as a consequence of ongoing disturbances and/ or stochastic events such as the current record drought conditions.

Conclusions
In relation to the remaining threatened flora species assessed within the EA report, it may be similarly argued that adequate survey, habitat and impact assessment was provided, with the proposed mitigation package consistent with the DECs 'maintain and enhance' outcome. It should also be noted that DEC were consulted with on three occasions regarding survey extent and assessment methods, with the adequacy review providing sufficient opportunity for this expert government agency to identify deficiencies contained within the assessment. DEC concurred with conclusions of the EA report and is supportive of MCMs proposed 'Statement of Commitments'.

Incorrect interpretation of the scientific committee's final determination for the EEC White Box Yellow Box Blakely's Redgum Woodland (WBYBBRW)

A Final Determination issued by the Scientific Committee for an Endangered Ecological Community (EEC) is a legal definition that defines an ecological community as endangered under the *Threatened Species Conservation Act 1995*. According to the Act, the definition of an ecological community is *'an assemblage of species occupying a particular area*' with the term '*endangered*' indicating that it is listed on Part 3 of Schedule 1 of the Act. The definition applied by the submission, this being "*an artificial construct identified strictly by the information provided in the Final Determination*", appears inconsistent with the definitions of the Act.

Irrespective, the 'Identification Guidelines for Box – Gum Woodlands' prepared by the National Parks and Wildlife Service (2002) (now DEC) provides a clear and simple identification methodology for the consistent interpretation of the legal definition for WBYBBRW EEC. The identification and assessment of EECs within the EA report was completing using the 'Identification Guidelines for Box – Gum Woodlands' (NPWS, 2002), a DEC accepted methodology for classifying WBYBBRW EEC. A statistical analysis (i.e. TWINSPAN) was also used to categorise quadrat data, hence compliment/ support the Box-Gum identification guideline assessment. The TWINSPAN analysis involved both mathematical (i.e. statistics) and subjective interpretation (i.e. consideration of sampling constraints and disturbance factors) to allow an appropriate balanced comparison of the results against the legal definition.

Response to Submission
It is unclear from the submission how it could be interpreted that the use of the 'Identification Guidelines for Box – Gum Woodlands' (NPWS, 2002) in the MCP EA report was considered inadequate for the identification of WBYBBRW EEC. This assertion is contrary to the intent of these identification guidelines, DECs support for its use and DECs acceptance of the ecological impact assessment contained within the MCP EA report. DEC have twice accepted the identification and assessment methodology for the MCP impact assessment.

The TWINSPAN statistical analysis was included in the assessment to compliment the classification of WBYBBRW established by the Identification Guidelines for Box-Gum Woodlands. It was not relied on as the primary method for identifying WBYBBRW EEC. In the main, this statistical analysis confirmed the validity of the guideline assessment, with the majority of quadrats being correctly grouped relative to the Scientific Committees final determination for WBYBBRW. However, as predicted the statistical analysis also identified vegetation that was neither WBYBBRW or other vegetation. The statistics identified quadrats with floristics transitional between WBYBBRW vegetation and adjoining vegetation types, such as shrubby Ironbark/ Scribbly Gum forests. A subjective interpretation that considered disturbance and survey constraints provided clarity for these inconclusive results. **Table 1** tabulates the results of the TWINSPAN analysis for midslope vegetation dominated by White Box (i.e. Shrubby White Box Woodland) to demonstrate this point.

Table 1: Quadrats sampled within Map Unit 37 – Shrubby White Box Woodland

Quadrat Number	Figure 3.4 Colour Code and TWINSPAN Output	Discussion
28	Blue – Moderately dissimilar to WBYBBRW (shrubby understorey)	Accurate reflection of floristics and structure. Quadrat placed in suitable location that avoids the influence of disturbed vegetation boundaries.
35	Pink – Dissimilar to WBYBRW	Accurate reflection of floristics and structure. Quadrat placed in suitable location that avoids the influence of disturbed vegetation boundaries.

38	Green – Similar to WBYBBRW (grassy understorey)	Inaccurate reflection of floristics and structure. Understorey shrubby without grassy appearance. Located on infertile steep slopes that are inconsistent with WBYBBRW vegetation.
48	Blue – Moderately dissimilar to WBYBBRW (shrubby understorey)	Accurate reflection of floristics and structure. Quadrat placed in suitable location that avoids the influence of disturbed vegetation boundaries.
61	Pink – Dissimilar to WBYBRW	Accurate reflection of floristics and structure. Quadrat placed in suitable location that avoids the influence of disturbed vegetation boundaries.
63	Blue – Moderately dissimilar to WBYBBRW (shrubby understorey)	Accurate reflection of floristics and structure. Quadrat placed in suitable location that avoids the influence of disturbed vegetation boundaries.
77	Green – Similar to WBYBBRW (grassy understorey)	Inaccurate reflection of floristics, structure and. Quadrat placed in unsuitable location that has been influenced by disturbances including sheep grazing and edge impacts. Located on infertile steep slopes that are inconsistent with WBYBBRW vegetation.
86	Pink – Dissimilar to WBYBRW	Accurate reflection of floristics and structure. Quadrat placed in suitable location that avoids the influence of disturbed vegetation boundaries.
130	Green – Similar to WBYBBRW (grassy understorey)	Inaccurate reflection of floristics and structure. Understorey shrubby without grassy appearance. Located on infertile steep slopes that are inconsistent with WBYBBRW vegetation.
131	Pink – Dissimilar to WBYBRW	Accurate reflection of floristics and structure. Quadrat placed in suitable location that avoids the influence of disturbed vegetation boundaries.
139	Red – Similar to WBYBRW	Inaccurate reflection of floristics and structure. Quadrat placed in unsuitable location (narrow linear vegetation) that has been influenced by various disturbances such as repetitive roadside slashing events to control shrub growth.

Vegetation structure is critically important in identifying WBYBBRW EEC vegetation. DEC (2005) clearly differentiates examples of 'Western Slopes Dry Sclerophyll Forest' vegetation containing White Box as being different to 'Western Slopes Grassy Woodlands' that are more characteristic of the WBYBBRW EEC definition. White Box woodlands within the 'Western Slopes Dry Sclerophyll Forest' vegetation type are generally found on steep slopes characterized by a distinctive shrub stratum and discontinuous patchy grass coverage. This vegetation community has been mapped by DEC within the MCP DA area, with the description of vegetation association 37 – Shrubby White Box Woodland being relatively consistent with the 'Western Slopes Dry Sclerophyll Forest' description. The 'Identification Guidelines for Box – Gum Woodlands' and TWINSPAN analysis both support this vegetation classification and its divergence from the WBYBBRW EEC definition.

The TWINSPAN analysis identified eight quadrats from the 12 completed within map unit 37 – Shrubby White Box Woodland as being either 'moderately dissimilar' or 'dissimilar' to WBYBBRW. Common themes throughout map unit 37 – Shrubby White Box supporting this classification include a shrubby understorey, discontinuous patchy grass coverage, limited to no floristic similarity with WBYBBRW and midslope terrain (mostly steep). These characteristics are inconsistent with the WBYBBRW EEC legal definition.

Interpreting a statistical analysis such as TWINSPAN, in isolation of the surrounding disturbance factors, is an inappropriate treatment of this analytical method. Disturbance factors such as grazing, slashing, fire (or absence of), altered hydrological regimes etc have varying and often substantial influences on systematically collected flora data, particularly quadrats sampled in areas prone to these influences (i.e. vegetation boundaries, road corridors etc).

Quadrat 139, for example, was classified by the TWINSPAN analysis as being consistent with known WBYBBRW quadrat samples, despite the presence of a shrubby understorey formed on infertile Permian claystones. This quadrat was deliberately placed in the narrow 20 m wide Moolarben Road corridor to examine the influence of disturbances on White Box dominated vegetation, with the TWINSPAN results clearly showing that factors such as disturbance can significantly influence a classification analysis.

Consideration of these factors is not evident in the submission, as there was no comment or allowance for limitations placed on quadrat data procured from disturbed landscapes. The main detrimental disturbances observed in the Moolarben Road corridor that were not duly considered include:

- Edge impacts arising from the adjoining modified grazing lands and the Moolarben road surface;
- Repetitive roadside management activities such as shrub understorey slashing and table drain construction; and
- Altered surface water regimes arising from roadside drainage.

In light of the disturbance regimes within the Moolarben Road Corridor and its propensity to modify native vegetation, it has been concluded that the data of quadrat 139 is sufficiently distorted for it to be excluded from the TWINSPAN analysis. The quadrat data was purposely collected in a manner inconsistent with the flora survey methodology stated in the ecological assessment report to examine the influence of disturbance. TWINSPAN consequently identified this anomaly, with quadrat data from narrow disturbed vegetation remnants being unsuitable for statistical analysis. This conclusion is directly applicable to the independently sampled flora quadrats provided in the submission, with the resultant dataset being unsuitable for comparison with systematically collected data for the MCP DA area.

The submission failed to conclusively demonstrate the claim that WBYBBRW is more widespread throughout the MCP DA area than indicated in the EA report by inaccurately asserting that Shrubby White Box Woodlands is part of WBYBBRW vegetation formation. Conclusions were based on comparisons between the two independently sampled quadrats and quadrat 139, all of which were located within a disturbed environment (i.e. Moolarben Road corridor) deemed unsuitable for vegetation classifications on the grounds of disturbance, as discussed with the *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004).

The submission failed to consider the influence of the Moolarben Road disturbance regime on these quadrats and its substantial influence on understorey structure and floristics (e.g. the roadside slashing). Photographs depicting a 'grassy appearance' are misleading as the road reserve is annually slashed as part of local roadside maintenance programs. The data was not collected in accordance with a suitably randomized, stratified replicated survey methodology, as specified in the MCP flora survey methodology and industry accepted *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004), further confirming the incompatibility of these quadrats for comparison with the Moolarben Biota floristic dataset. The submission alludes to inadequacy of the independently collected quadrat data by stating on page 14 the following:

> "*This field survey involved the random placement (limited to areas with access) ……*" and
>
> "*While it is accepted that this survey was limited ….*"

The conclusions presented in the submission have placed great weight on quadrat data collected by survey "*limited to areas with access*" which was consequently accepted as a limitation. The conclusions resulting from two independently sampled flora quadrats against the Moolarben Biota floristic dataset is, for the above mentioned reasons, inaccurate and misleading based on:

- insufficient poorly collected independent data;
- survey design inconsistent with the Moolarben Biota survey and *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004); and
- disregard of the disturbed roadside corridor and its impact on vegetation structure and floristics.

The conclusions presented in the submission are of insufficient substance to discredit the Shrubby White Box Woodlands classification. Midslope vegetation formed on the infertile Permian claystones within the MCP DA area has been accurately identified and mapped as Shrubby White Box Woodlands by use of the Identification Guidelines for Box-Gum Woodlands and supported by an appropriate interpretation of the TWINSPAN analysis. The Shrubby White Box Woodlands described for the MCP DA area is more consistent with the description for 'Western Slopes Dry Sclerophyll Forest' vegetation, not the Scientific Committees Final Determination for the WBYBBRW EEC.

Failure to understand the importance of disturbance regimes in survey design and impacts on native vegetation floristics and structure has substantially undermined the vegetation analysis presented within the submission such that no confidence can be placed on the conclusions indicating a wider extent of EEC vegetation. The DEC, an expert government agency on biodiversity management and conservation, has provided their support for the technical information contained within the EA report and supports the EEC offset strategy proposed in the 'Statement of Commitments'.

Other vegetation types considered WBYBBRW EEC

It is common for different vegetation types to share similar floristic qualities but differ substantially in other descriptive matters such as canopy dominants, cover abundance, vegetation structure, landscape position and soil conditions. This is the case for some vegetation types occurring within the MCP DA area such as those defined by quadrats 66, 36, 113, 62, 83 and 13 relative to WBYBBRW. An important distinction for these quadrats, relative to others similarly grouped by the TWINSPAN analysis, is that none are consistent with the Scientific Committees final determination for WBYBBRW EEC. The Identification Guidelines for Box-Gum Woodlands rejects these quadrats as conforming to WBYBBRW EEC vegetation, as none of the canopy dominants White Box, Yellow Box or Blakely's Redgum have occurred or previously occurred within these vegetation map units. Biodiversity searches conducted throughout these vegetation associations have confirmed this conclusion.

A substantial underestimate of the EEC, WBYBBRW being impacted by the proposal and Inadequacies in the impact assessment and offsetting for direct loss of WBYBBRW EEC and threatened flora species.

The Identification Guidelines for Box-Gum Woodlands provides clarity for the interpretation of the Scientific Committees final determination for WBYBBRW EEC. A correct interpretation of the paragraph stated in the Final Determination:

> "*Woodlands including Eucalyptus crebra, Eucalyptus dawsonii and Eucalyptus moluccana (and intergrades with Eucalyptus albens), for example in the Merriwa plateau, Goulburn River National Park and Western Wollemi National Park, are included*"

has been applied in this assessment through the use of the Identification Guidelines for Box-Gum Woodlands, which clearly states that vegetation must contain or have previously contained at least one or more of the characterstic canopy dominants for it to be considered part of the WBYBBRW EEC. Quadrats and biodiversity searches conducted within vegetation associations:

- 34 – Grey Box/ Slaty Gum/ Ironbark Forest;
- 35 – Grey Box/ Ironbark; and
- 39 – Slaty Gum Open Forest

failed to identify the occurrence of the canopy dominants, or any evidence thereof, thus eliminating these vegetation types from the WBYBBRW EEC definition. The submission inaccurately incorporated these vegetation types in its area statement for WBYBBRW EEC vegetation (i.e. 162.84 ha). To reiterate, a correct application of the Identification Guidelines for Box-Gum Woodlands identified 64.68 ha of vegetation consistent with WBYBBRW, a position supported by DEC, not 162.84 ha as stated in the submission.

Reference to the intergrade between *Eucalyptus moluccana* and *Eucalyptus albens* are irrelevant to the assessment of WBYBBRW EEC within the MCP DA area. This intergrade occurs in the northern parts of the study area on Jurassic Sandstone geological formations influenced by weathered Tertiary basalts belonging to the Merriwa Plateau. This hybrid zone is located outside the MCP DA area and will not be impacted by the development. No *Eucalyptus moluccana*/ *Eucalyptus albens* hybrids occur within the impact area.

Inadequate 'Like for Like' Offset Mitigation
The total area of WBYBBRW EEC being disturbed by the proposed mine is 64.68 ha, not 162.84 ha as specified by the submission. Consultation with DEC resulted in the development of the 'Like for Like' offset mitigation at a ratio of 2:1, which was specified by DEC as their requirement for the immediate mitigation of impacts on WBYBBRW EEC. The assertion that DEC often stipulate offset ratios at 3:1 or more is inconsistent with the agreed negotiations arising between Moolarben Coal Mines Pty Limited and DEC for this project.

Doubt over the classification of WBYBBRW EEC
The EA report and the accompanying Ecological Assessment have appropriately applied the *Draft Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004) and various guidelines for interpretation of matters such as WBYBBRW EEC. There is certainty regarding the information collected during the field investigation and the interpretation of vegetation using Identification Guidelines for Box-Gum Woodlands. The area impacted has been accurately measured, with the resultant mitigation compliant with DECs expected mitigation response.

References
DEC (2004) *Threatened Species Survey and Assessment: Guidelines for developments and activities* (working draft), New South Wales Department of Environment and Conservation, Hurstville, NSW.

DEC (2006) Wildlife Alas Database Search of the Gulgong 1:100,000 Map Sheet, New South Wales Department of Environment and Conservation, Hurstville, NSW.

National Parks and Wildlife Service (2002) Identification Guidelines for Endangered Ecological Communities: White Box Yellow Box Blakely's Redgum Woodland (Box – Gum Woodland). New South Wales National Parks And Wildife Service, Hurstville, NSW.

MOOLARBEN COAL PROJECT

Individual and NGO Submission Responses

APPENDIX C3

Electricty
Capacity

2 November 2006

Mr. Malcolm Burling
Engineering Manager
Moolarben Coal Mines Pty Ltd
PO Box 1320
NORTH SYDNEY NSW 2059

Dear Malcolm,

RE: Power Capability to Mooolarben Coal Mine

As discussed yesterday, Country Energy would like to confirm its position in relation to load capability in the Ulan area. Country Energy would like to reassure Moolarben that Country Energy has adequately considered the additional load requirements in allowing the connection of Ulan, Wilpinjong and Moolarben Coal Mines.

The total demand on the Ulan 66kV switching station will be approximately 50MVA. The proposed loads connected are as follows:

- Ulan mine: approx 25MVA - from meter records and allowing increase with new long wall miner which is to be commissioned very shortly
- Wilpinjong: indicated connected maximum demand of 6-7 MVA
- Moolarben: initial request for 18MVA capacity - connected load schedule not yet provided

The total load is well within the thermal and voltage regulation rating of the 80R (132 constructed) line which has a summer rating of 64MVA and 30/7/3.00 SCA (Lemon) conductor.

Regarding the alternate 80U line - The loads exceed the rating of this line which is a 50^{o}C design construction using 19/083 copper conductor (thermal rating 15MVA). This constrains the network operation and requires that the load be supplied normally from the 80R line with essential supply picked up by the 80U line in the event of a permanent fault.

The limits of the 80U line have been explained to each of the mining operations, with proposed limits to be included in the connection agreements for each mine.

Country Energy understands its obligations to provide connections to customers as requested and ensure the adequacy of the supply capacity to meet the resulting needs. As required, this may result in network augmentation needs from time to time with capital contribution by customers.

Please contact me on 02 6589 8635 if you wish to discuss this matter further.

Yours faithfully

Karen Carcary
Manager Network Commercial
Country Energy
Tel 02 6589 8635
Fax 02 6589 8654
e-mail karen.carcary@countryenergy.com.au

MOOLARBEN COAL PROJECT

Response to Submissions

APPENDIX A7

Request for Response to Submissions

NSW GOVERNMENT
Department of Planning

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Wells Environmental Services
PO Box 205
EAST MAITLAND NSW 2323

Dear Mr Wells

Moolarben Coal Project
Response to Issues Raised in Submissions
(Project Application No. 05_0117)

As you are aware, the Department exhibited the Environmental Assessment (EA) for the Moolarben Coal Project from Monday 18 September until Monday 23 October 2006. Copies of the submissions received by the Department during the exhibition period have been forwarded to Wells Environmental Services on a progressive basis under separate cover.

On behalf of the Director-General and in accordance with section 75H(6)(a) of the *Environmental Planning and Assessment Act 1979*, you are hereby required to prepare a response to the issues raised in the submissions. Your response should be provided to the Department by Friday 24 November 2006, however if you require additional time please contact me prior to this date.

If you have any enquiries on this matter please contact Michael Moore on (02) 9228 6306.

Yours sincerely

Mike Young
Manager
Mining and Extractive Industries

2.11.06