

SECTION 6
Statement of
Commitments

6.0 Statement of Commitments

The DGRs for the Project require that the EA includes a Statement of Commitments which details the measures proposed by UCML for environmental mitigation, management and monitoring of the Project.

If approval is granted under Part 3A of the EP&A Act for the proposed Project, UCML will commit to the following controls.

6.1 Compliance with the EA

6.1.1 To carry out the development for the Project generally in accordance with the Project Application and this EA report.

6.2 Life of Mine Operations, Production, Concept Mine Plan and Rail Haulage

Project Life

6.2.1 The project approval life will be for 21 years from Project Approval. Closure and rehabilitation activities will be undertaken in accordance with an approved Mining Operations Plan, or other relevant approval under the Mining Act or equivalent, at the time of closure.

Production Limits

6.2.2 The Project will produce up to 20 Mtpa of product coal.

Hours of Operation

6.2.3 Mining and associated activities for the Project may be undertaken 24 hours a day, seven days a week.

6.2.4 Construction will generally be undertaken between 7.00 am and 7.00 pm daily. Construction activities may occur outside these hours when UCML is satisfied that such activities are inaudible at nearest private residences.

Refinement of Mine Plan

6.2.5 Any refinements to the concept mine plan outlined in this EA report will be detailed and assessed as part of SMPs and MOPs or other relevant process.

6.2.6 The locations of ancillary surface infrastructure required to support underground mining will be documented and detailed within the operational approvals required for UCML to continue its mining and associated activities.

Rail Haulage

6.2.7 The peak number of trains from UCML will be limited to a maximum of 10 per day i.e. 20 train movements.

6.2.8 No product coal will be transported from site by road transport except in an emergency situation with prior approval of the Director General.

6.2.9 Annual average and maximum daily train movements and tonnages will be reported in the Annual Environmental Management Report (refer to commitment 6.17.1).

6.3 Subsidence

In relation to ongoing refinement of conceptual underground mine plans, and associated subsidence management, UCML will ensure that the project does not exceed the performance measures outlined in **Table 6.1**.

Table 6.1 – Subsidence Impact Performance Measures

Watercourses	
Goulburn and Talbragar Rivers	There will be no subsidence impacts on these rivers.
Ulan Creek, Mona Creek and Cockabutta Creek	No significant changes to the extent of surface water ponding and no diversion of flows from creek alignment.
Biodiversity	
Threatened species, populations, or ecological communities	Negligible impact on vegetation and associated fauna habitat No impact on clifflines and associated cave habitat located in Brokenback Conservation Area and Spring Gully Cliffline Management Area
Land	
Cliffs	Less than 20% of the total length of cliffs (and associated overhangs) within the mining area will experience mining-induced rock fall
Heritage	
Aboriginal heritage sites	Nil subsidence impacts on identified Aboriginal heritage sites within the Brokenback Conservation Area.
Talbragar Fish Fossil Reserve	Mining subsidence movements will be accommodated without significant disturbance to the fish fossil beds.
Built Features	
Built features	Safe, serviceable and repairable, unless the owner and the MSB agree otherwise in writing

6.3.1 Where a potential subsidence impact is predicted on private property, UCML will prepare a Private Property Subsidence Management Plan for each of the potentially affected private landholders. These plans will clearly outline impacts of mining on the property and the management and remediation measures to be implemented, by agreement with the landowner.

6.4 Groundwater

6.4.1 A groundwater monitoring program will be implemented for the Project as outlined in **Section 5.3**, or as otherwise agreed by the Director General in consultation with the DWE. The groundwater monitoring program will include:

- Continued measurement of groundwater levels, pressures and water quality within the existing regional network of monitoring bores and an expanded network as underground mining progresses to the north and west, specifically considering:
 - depressurisation monitoring of at least three multi level piezometer strings equipped with vibrating wire transducers (or equivalent) and distributed within the Permian-Triassic strata;
 - strata hydraulic conductivity measurement on rock core obtained at these above noted piezometer locations;
 - daily or more frequent monitoring of pore pressures and piezometric elevations by installed auto recorders in selected new piezometers.
- Mine water seepage monitoring, including:
 - measurement of all water pumped underground and all mine water pumped to surface on a daily basis. Measurement will be undertaken using calibrated flow meters or other suitable gauging apparatus;
 - routine monitoring of coal moisture content delivered from the working face, ventilation humidity and any build up of water storage in the goaf.
- Groundwater monitoring will include:
 - monthly monitoring of basic water quality parameters pH and EC in pumped mine water.
 - six monthly monitoring of pH and EC in the regional monitoring network.
 - annual measurement of total dissolved solids (TDS) and speciation of water samples in selected piezometers to support identification of mixing of groundwater types.
 - graphical plotting of basic water quality parameters and identification of trend lines and statistics including mean and standard deviation calculated quarterly. Comparison of trends with rainfall and any other identifiable processes that may influence such trends.

The monitoring network and monitoring programme will be reviewed on an annual basis to determine ongoing suitability and any proposed changes will be discussed in the Annual Environmental Management Report (AEMR).

Monitoring Review and Management Response

6.4.2 The results of groundwater monitoring and a comparison of measured and predicted impacts will be reported in the Annual Environmental Management Report (refer to commitment 6.17.1).

6.4.3 Impacts on the privately owned licensed bores identified in **Section 5.3** as being potentially affected, will be assessed by monitoring and in the event that any utilised

privately owned bore is significantly affected, an alternative water supply will be provided by UCML until such time as the bore is re-established or replaced.

- 6.4.4 The groundwater monitoring results will be analysed (graphically and statistically) as new results become available i.e. quarterly or six monthly. In addition, a monitoring review and verification process will be established in consultation with DoP and DWE to verify regional groundwater losses as necessary to refine groundwater mitigation strategies.
- 6.4.5 Identification of any changes or long term trends in groundwater outside the predicted impacts will result in an investigation to determine if the trend is a result of the Project operations and if so, identify management strategies to be implemented to address the identified issues as per UCML's Internal TARP process (T – trigger; A – Action; R – response; P – Plan).
- 6.4.6 Review of depressurisation of coal measures and comparison of responses with aquifer model predictions will be completed every two years. Expert review will be undertaken by a suitably qualified hydrogeologist, and reported to DWE and DoP.

6.5 Surface Water

- 6.5.1 Erosion and sediment control measures will be designed and implemented for construction of surface infrastructure to a standard consistent with *Managing Urban Stormwater Soils and Construction* (the Blue Book) *Volume 1 and Volume 2E Mines and Quarries* (Landcom, 2004) and Guidelines for Establishing Drainage Lines on Rehabilitated Minesites (Draft) (DIPNR, undated).
- 6.5.2 As described in **Section 5.4**, UCML will implement clean water divisions to minimise the volume of water to be handled within the mine water management system.
- 6.5.3 The staged remediation strategy for the Goulburn River Diversion will be implemented, generally as described in **Section 5.4**.
- 6.5.4 In addition to the detailed mine water seepage monitoring outlined in Commitment 6.4.1, water usage, rainfall, dam volumes and discharges (including transfers) will be monitored to assist in the management of the mine water management system. This monitoring will be conducted in a manner that enables the detailed water balance to be maintained and updated at least annually for ongoing operations. The water balance will be used on an ongoing basis for operational management and will also be reported in the AEMR.
- 6.5.5 Subsidence monitoring will include pre and post mining within drainage lines. This will include monitoring of the presence of surface cracking, surface ponding or out of channel flows and remediation measures as appropriate (refer to **Section 5.4**).

6.6 Ecology

- 6.6.1 UCML will prepare an updated and integrated Biodiversity, Rehabilitation, Offsets and Land Management Plan for the Project, within 12 months of project approval. This plan will cover:
- **Operational and management procedures** to be implemented to minimise and mitigate biodiversity impacts within proposed surface disturbance areas (Open

Cut and Surface Infrastructure and ancillary activities associated with underground mining and exploration) and to maximise biodiversity values for all UCML landholdings. This will include:

- details of progressive rehabilitation and revegetation of the post-mining landscape. Completion criteria will be determined in consultation with relevant agencies;
 - general management strategies for fencing/access control;
 - weed control;
 - feral animal control;
 - bushfire management; and
 - a detailed tree felling procedure to minimise impacts on hollow-dependent fauna species during the construction phase of the Project;
- **A Biodiversity Offset and Management Strategy** to further address the impact of the Project on the recognised significant ecological features within the project area, as outlined below:
 - establishment and protection of the Biodiversity Offset and Management Areas (being the Bobadeen Vegetation Offset Area and Brokenback and Spring Gully Escarpment Management Areas) within two years of receiving project approval
 - Targeted revegetation/regeneration of ecological communities, particularly the target TEC, within the Bobadeen Vegetation Offset Area, as described in **Section 5.5**;
 - Augmentation of fauna habitat to improve habitat quality within the Bobadeen Vegetation Offset Area;
 - Inclusion of *Acacia ausfeldii* within rehabilitation of post-mining open cut and within regeneration in the Bobadeen Vegetation Offset Area; and
 - Detailed ecological monitoring across the Biodiversity Offset and Management Areas.

An integrated ecological monitoring program will be developed and implemented to assess the efficacy of all impact mitigation strategies across the Biodiversity Offset and Management Areas, and the larger project area.

6.6.2 Underground mining will not be undertaken within the Brokenback Conservation Area, as shown on **Figure 1.2**.

6.6.3 UCML will utilise existing disturbed ground areas, where practicable, for the placement of infrastructure associated with underground mining, to avoid impact on significant ecological features such as the White Box Woodland TEC.

6.6.4 Surface infrastructure, e.g. pipelines, power lines and roads, will be co-located, where practicable, to minimise ground disturbance.

- 6.6.5 UCML will rehabilitate and revegetate the open cut to self-sustaining native vegetation communities, being Grey Box Woodland and Ironbark Open Forest Complex on Sandstone communities which are characteristic of the pre-mining composition.
- 6.6.6 Revegetation works will use local provenance species, where possible.
- 6.6.7 The results of the ecological monitoring and management measures will be reviewed annually and reported in the AEMR. Management measures will be adapted, as required, on the basis of monitoring outcomes.
- 6.6.8 UCML proposes to provide for long term conservation of the Bobadeen Vegetation Offset Area. The appropriate mechanism for achieving this long term conservation security will be determined in consultation with DoP and DECC. At this stage it is proposed to involve rezoning for environmental protection.

6.7 Aboriginal Archaeology

- 6.7.1 Prior to any impact on Aboriginal sites, UCML will submit to the Director General of the DoP, an Aboriginal Cultural Heritage Management Plan (ACHMP), to be developed for the Project in consultation with DECC and Aboriginal stakeholder groups. The ACHMP will:
- provide detail on the preferred management strategies for the individual sites;
 - outline the ongoing conservation action associated with the Aboriginal heritage evidence within the Brokenback and two grinding groove conservation areas;
 - provide details of a verification process in relation to the cultural and scientific significance of rockshelters within areas of proposed underground mining; and
 - details of post mine monitoring of subsidence impacts at archaeological sites with potential subsidence impacts.
- 6.7.2 The ACHMP will include all primary and ancillary elements outlined in Section 13 of the Aboriginal Heritage Assessment Report (South East Archaeology 2009).
- 6.7.3 Impacts to the Mona Creek 23-30 rock shelter sites (ID# 180-187) and the Cockabutta Creek 18-20 sites (ID# 160-162) will be avoided under this project.
- 6.7.4 Detailed recording of the stone arrangements (ID# 589, 603, 697 and 700) will be undertaken, prior to commencement of secondary extraction under these sites.
- 6.7.5 Archaeological survey of all potential impact areas that could not be accessed during the present investigation, will be completed prior to any impact occurring in these areas.

6.8 European and Natural Heritage

- 6.8.1 UCML will carry out archival recording of Old Ulan Village and Bobadeen Homestead to Heritage Branch, Department of Planning standards prior to longwall mining within 100 metres of the structure.

6.8.2 A Conservation Management Plan or Strategy will be prepared for the site of Old Ulan Village to ensure appropriate short and long term management strategies are determined. This will include a maintenance strategy for Old Ulan Village, to be developed prior to longwall mining within 100 metres of the structure.

6.8.3 The Talbragar Fish Fossil Reserve will be secured with appropriate fencing and suitable signage subject to landowner approval.

6.9 Air Quality

6.9.1 Measures to minimise dust emissions from the operation will be included in the project design such as enclosures on top of overland conveyors and spray systems for permanent coal stockpiles where practicable.

6.9.2 The Project will minimise the total disturbance footprint and the area of untreated hardstand to the minimum practicable;

6.9.3 UCML will continue to implement existing dust controls, including:

- watering of active mining areas, active spoil emplacement areas and haul roads that are subject to frequent vehicle movements;
- all drill rigs are equipped with dust control systems and are regularly maintained for effective use;
- automatic sprays fitted to dump hopper and crushing plant to minimise dust from coal processing activities;
- topsoil stripping is preferentially undertaken when there is sufficient moisture content in the soil;
- minimising the area of disturbance by restricting vegetation clearing ahead of mining operations, rehabilitating mine spoil dumps as soon as practicable after mining and using existing facilities and infrastructure where possible;
- restricting blasting activities during adverse weather conditions

6.9.4 UCML will continue to implement the current spontaneous combustion management system to address the coal's susceptibility to spontaneous combustion, which includes procedures for identifying potential sources of carbonaceous material with spontaneous combustible properties and methods for handling and disposing of these materials.

6.9.5 The existing air quality monitoring program will be maintained. Monitoring results will be compiled and reviewed at least monthly to determine the need for any operational or management change to minimise air quality impacts. Results also will be compiled and analysed annually and reported in the AEMR.

6.10 Noise and Vibration

- 6.10.1 Noise emissions from the Project, when measured within 30 metres of a private residence, will not exceed the predicted worst case noise levels as outlined in **Section 5.9** unless a specific agreement is reached with the landholder in regard to noise impacts at that residence.
- 6.10.2 UCML will implement all reasonable and feasible measure to minimise the noise impact from the Project at residences.
- 6.10.3 UCML will continue the implementation of the current noise reduction program unless agreement is reached with the one remaining private resident in Ulan Village and an alternate approach is approved by DECC and DoP.
- 6.10.4 Within 12 months of project approval, UCML will review its existing noise monitoring program to ensure the monitoring locations are relevant to the Project.
- 6.10.5 UCML will design and undertake blasts to ensure the relevant vibration and blast overpressure criteria are met at private residences, unless there is an agreement with these residents in relation to blast impacts above the relevant criteria.
- 6.10.6 Blasting will typically be undertaken between the hours of 9.00 am and 5.00 pm, Monday to Saturday. No blasts will be undertaken on Sundays or public holidays.
- 6.10.7 UCML will undertake no more than one blasting event per day. A blasting event occurs during a designated blast shutdown period where a number of blasts may occur with a short period of separation, typically less than 2 minutes (with the exception of misfires).
- 6.10.8 UCML will consult with residents surrounding the project area prior to the first blast on site and identify those residents that may wish to be notified of blasting times on an ongoing basis.

6.11 Traffic and Transport

- 6.11.1 Prior to the commencement of construction activities UCML will prepare a construction traffic management plan in consultation with Council and the CCC.
- 6.11.2 UCML will consult with Council to determine the relevant funding for upgrade to the Ulan Road / Cope Road intersection. The existing 'AUR' right turn treatment at the Ulan Road / Cope Road intersection will need to be upgraded to a 'CHR' treatment (i.e. right turn bay).

6.12 Visual

- 6.12.1 UCML will implement the following visual controls to screen or filter views of project infrastructure from residential and public road locations:
- maintaining vegetation screening along Ulan Road;
 - ensuring that all lighting associated with the Project complies with Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting;

- all buildings and infrastructure potentially visible to the public to be coloured in suitable natural tones, where practicable;
- directing light towards work areas and not towards private residences;
- progressive rehabilitation of disturbed areas; and
- revegetation will be progressively undertaken of the Goulburn River Diversion, as described in Section 5.4 of the EA.

6.13 Greenhouse Gas and Energy Assessment

- 6.13.1 UCML will continue to implement their existing greenhouse gas and energy management commitments, as described in **Section 5.12**.
- 6.13.2 UCML will investigate and implement where feasible GHG and energy management and mitigation initiatives during the design, operation and decommissioning of the Project.
- 6.13.3 UCML will continue to monitor and seek to improve its energy and greenhouse gas performance against performance targets.
- 6.13.4 UCML will report its greenhouse and energy performance via legislative reporting requirements.

6.14 Decommissioning and Mine Closure

- 6.14.1 Within 12 months of project approval, UCML will revise the current conceptual mine closure plan. A detailed closure planning process will be undertaken for the Project five years prior to cessation of mining.
- 6.14.2 Decommissioning of the mining operations and surface facilities associated with the Project will occur progressively throughout the life of the Project, in accordance with conditions of the relevant mining titles. This will include progressive decommissioning of mine entries, ventilation fans, ventilation shafts, borehole facilities and associated surface facilities. A decommissioning plan will be prepared for each stage as part of the MOP process and provided to DPI for approval prior to the commencement of decommissioning works.

6.15 Waste

- 6.15.1 The management of waste materials generated by the construction and operation of the Project will be managed through the design; procurement of construction materials and purchasing; identification and segregation of reusable and recyclable materials; processing materials for recycling; and considering environmental impacts for waste removal processes.

6.16 Community

Economic Development – Employment, Education and Training

6.16.1 UCML currently aims to maximise local employment and provide training and education opportunities through:

- Advertising employment, apprenticeships and traineeships in local media;
- Providing an employment pack that allows local residents to register their interest in employment opportunities at the UCML office;
- Sharing information about mining careers at UCML and corporate entity with local schools;
- Offering training opportunities through partnerships with local tertiary education providers;
- Participating in the corporate school scholarship program; and
- Continued implementation of Corporate and UCML Corporate Social Involvement (CSI) programs

6.16.2 In addition to current practices, UCML proposes to:

- Formalise a policy that gives local residents employment preference where they have the required skills and experience, and demonstrate a cultural fit with the organisation;
- Provide access to the corporate careers centre via the UCML website so that local residents can easily register their interest in employment online; and
- Develop partnerships with other local organisations, such as the Mudgee Regional Tourism Inc. Committee, to promote employment opportunities in non-mining related sectors to the families of UCML employees.

Economic Development –Business Opportunities

6.16.3 UCML will continue to implement XCN Procurement Policy giving preference to sourcing materials and services from local companies where all other commercial factors are equal.

Quality of Life – Community Investment

6.16.4 UCML will review its social involvement program three yearly in consultation with key stakeholders such as the Community Consultative Committee and Mid-Western Regional Council to ensure the program's focus areas remain relevant and address issues of greatest community need/challenge.

Quality of Life – Health Care

6.16.5 UCML will continue to reduce the impacts of its workforce on local health services by continuing current activities such as:

- Running an in-house annual influenza vaccination program;

- Providing in-house employee medical assessments every three years;
- Offering First Aid training to employees;
- Delivering a health promotion program for UCML employees;
- Encourage raising funds for health-related causes (e.g. hospital equipment, the Cancer Foundation etc) through staff volunteering and fund raising activities.

Quality of Life – Road Safety

- 6.16.6 UCML will continue to promote safe driver practices in its internal newsletter and apply a driver fatigue policy to all employees
- 6.16.7 UCML will investigate the possibility of providing a bus to transport workers during the mine's construction phase.

Cumulative Impacts

- 6.16.8 UCML will continue to work with representatives from neighbouring mines to discuss and address issues of common concern in relation to management of cumulative impacts.
- 6.16.9 Ulan Coal Mines will participate in any working parties / forums which Council or government may establish to address the impact of regional development on health care, land availability, education and childcare services.

6.17 Environmental Management, Monitoring, Auditing and Reporting

Annual Environmental Management Report

- 6.17.1 UCML will prepare an Annual Environmental Management Report for the Project.

Update of Environmental Management Plans

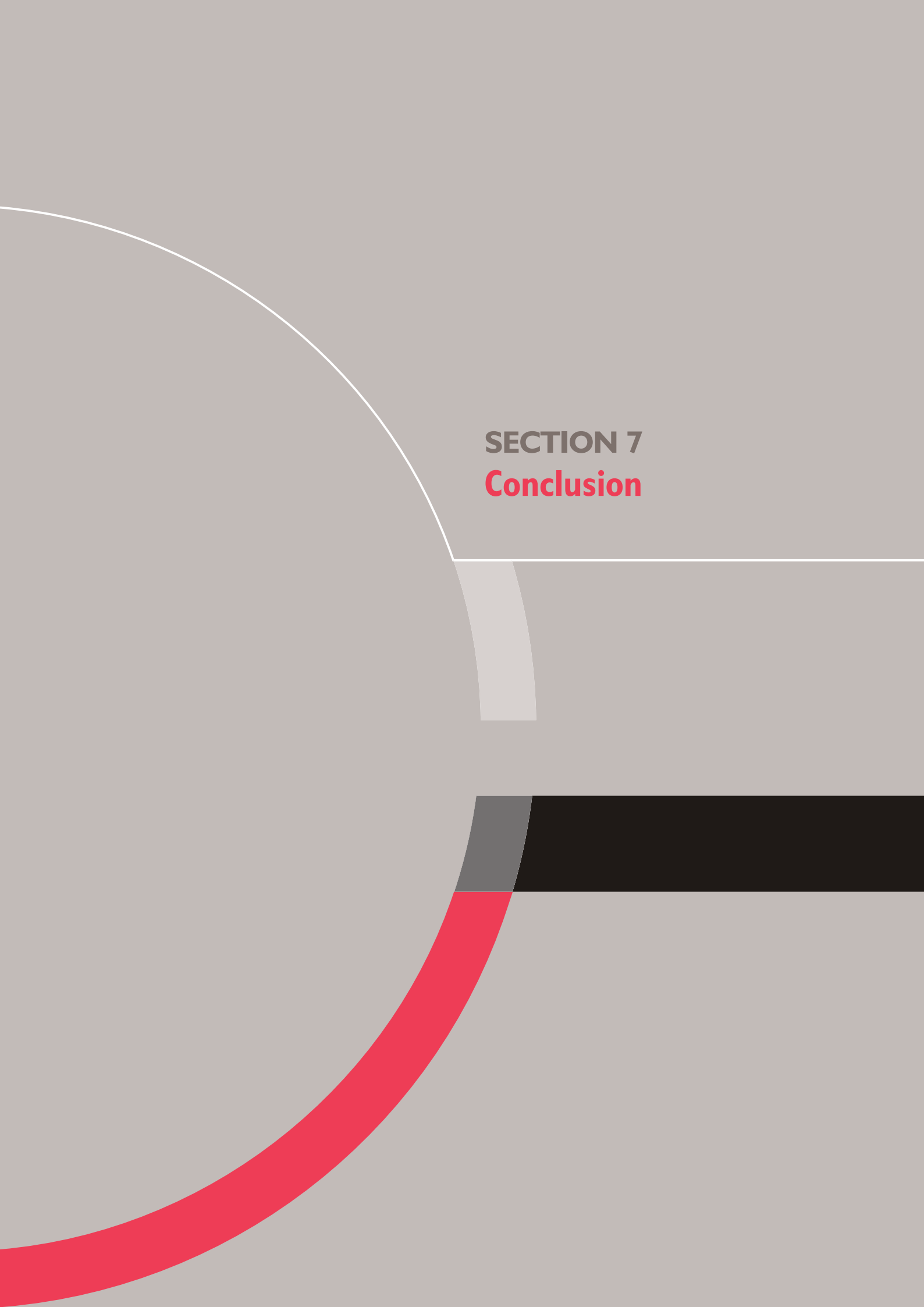
- 6.17.2 Within 12 months of approval, UCML will review, update and integrate relevant aspects of the environmental management of the Project in the UCML complex environmental management plans. This work will be undertaken in consultation with the relevant Government authorities, as agreed with the Director-General.

Surrender of Redundant Development Consents

- 6.17.3 Within 12 months of project approval or on completion of underground mining of the currently approved SMP area (longwall panels 23 to 26 and W1 to W3), whichever is the later, UCML will surrender all other development consents that relate to activities that are adequately covered in the new project approval.

Independent Environmental Audit

- 6.17.4 Three years after commencement of the Project mining operations, and every three years thereafter, UCML will commission and pay the full cost of an Independent Environmental Audit of the Project in consultation with the Director-General of DoP. A copy of the audit report will be provided to the Director-General of DoP and DPI, DECC, DWE and members of the Community Consultative Committee.



SECTION 7
Conclusion

7.0 Conclusion

7.1 Environmental Impacts

As detailed in **Section 5.0**, the environmental impacts of the project have been identified and the subject of a detailed environmental assessment based on:

- assessment of the site characteristics (existing environment);
- consultation with government agencies;
- consultation with local community and other stakeholders; and
- expert technical assessment.

The key issues were the subject of the comprehensive specialist assessments. The potential impacts of the project on the existing environment are detailed in **Section 5.0** and the appendices to this document.

Whilst there are many complex aspects which must be read in their entirety to fully understand these assessments, **Table 7.1** provides a broad overview of the key outcomes of the EA.

Table 7.1 – Overview of Environmental and Social Impacts

Environmental/Social Issue	Overview of Key Outcomes (After proposed Management and Mitigation)
Air Quality	<ul style="list-style-type: none"> • The project is not predicted to result in exceedances of air quality criteria at any nearby private residences. • On a cumulative basis, two residences are predicted to have exceedance of relevant DECC criteria, both of which are already affected by other approved operations.
Greenhouse	<ul style="list-style-type: none"> • Direct and indirect greenhouse gas emissions from the project will result in an insignificant contribution of greenhouse gases when compared to national and global emissions.
Noise	<ul style="list-style-type: none"> • Project Specific Noise Criteria are anticipated to be exceeded at seven private residences in the surrounding area as a result of the project. Two of these residences are already impacted by other approved operations. In addition, a temporary accommodation facility is expected to be impacted, however, this facility only has development consent to operate until mid 2010. • There has recently been a substantial change to land ownership in Ulan Village, with only one private residence remaining. The UCML Noise Reduction Program will continue to be implemented unless an alternative approach is approved by DECC and DoP. • UCML will undertake ongoing noise monitoring and reporting as part of the Project.
Blasting	<ul style="list-style-type: none"> • UCML has committed to blast design and controls to achieve relevant criteria at all surrounding private residences, unless specific agreement is in place with the residents.

Table 7.1 – Overview of Environmental and Social Impacts (cont)

Environmental/Social Issue	Overview of Key Outcomes (After proposed Management and Mitigation)
Ecology	<ul style="list-style-type: none"> • A relatively minor area of the project area (4%) will be subject to surface disturbance. • Subsidence impacts on vegetation will be negligible. • The project will not cause significant impacts to listed threatened species, populations or EECs. However, there are potential subsidence impacts on cave roosting bat habitat. • Impacts to flora and fauna will be minimised through progressive rehabilitation, mitigative measures and an extensive offset program that will ensure no loss of biodiversity values in the medium to long term.
Aboriginal Heritage	<ul style="list-style-type: none"> • establishment of the Brokenback Conservation Area, consisting of an area of approximately 58 hectares within the Ulan West underground mining area. The Conservation area will result in avoiding impact on 27 rock shelter sites, including six of the 11 high significance sites that would be susceptible to impacts. • establishment of two Grinding Groove Conservation Areas. • Further site recording, investigation and salvage in partnership with the local Aboriginal community.
Historic Heritage	<ul style="list-style-type: none"> • Archival recording of Bobadeen Homestead and Old Ulan Village for historical heritage purposes. These are all of low heritage significance. • Mining subsidence movements will be accommodated without significant disturbance to the Talbragar Fish Fossil Reserve.
Visual Amenity	<ul style="list-style-type: none"> • minor unobstructed short-term views of the UCML facilities will continue to be available to passing road commuters. • The proposed new infrastructure may add to the visual intensity of the mine but will not greatly change the visual amenity of the surrounding area.
Subsidence impacts on the Built Environment	<ul style="list-style-type: none"> • Three private residences are located in the subsidence affectation area. These will be maintained in a safe, serviceable and repairable condition, unless the owner and the MSB agree otherwise in writing. • Impacts on services (e.g. transmission lines) will be managed in consultation with the service provider.
Surface and Groundwater	<ul style="list-style-type: none"> • No significant changes to the extent of surface water ponding or the volume of surface water runoff within the subsidence affectation area. No diversion of flows from creek alignment. • The yield of up to five private licensed bores may be significantly affected as a result of groundwater drawdown from the project. UCML will re-establish water supply to these landholders by either a new bore or alternative water supply. • The project will continue to generate an excess of mine water, increasing during mining of Ulan West. This excess mine water can be managed by existing treatment and discharge arrangements supplemented by mine water sharing with other nearby mines and the establishment of discharge provisions to the Talbragar River.

Table 7.1 – Overview of Environmental and Social Impacts (cont)

Environmental/Social Issue	Overview of Key Outcomes (After proposed Management and Mitigation)
Traffic and transport	<ul style="list-style-type: none"> • The current ARTC strategy provides for upgrades to rail infrastructure to provide sufficient rail capacity to accommodate the predicted volume of rail traffic generated by the Project. • the Project will result in a substantial increase in local traffic volumes during the construction and operation phases of the Project but traffic conditions are expected to remain satisfactory with relatively good conditions being maintained on the road network and at principal intersections.
Socio Economic	<ul style="list-style-type: none"> • The Project will result in an influx of employees and their families to the local area and region as a result of increased employment. This will place further strains on the health sector. Assessment of accommodation and education capacity indicates sufficient capacity in these areas. <p>UCML will continue and refine substantial existing programs in relation to:</p> <ul style="list-style-type: none"> • maximising local employment and providing training and education opportunities; and • funding local organisations through its Corporate Social Involvement (CSI) program.
Waste	<ul style="list-style-type: none"> • any waste generated by the project will be managed through UCMLs existing waste management system.

The impacts of the project have been kept to a minimum through:

- obtaining a detailed understanding of the issues and impacts by scientific evaluation;
- proactive and appropriate strategies to avoid, minimise and mitigate or manage; and
- a thorough Statement of Commitments (refer to **Section 6.0**).

7.2 Suitability of the Site

The UCML project area has been subject to coal mining since the 1920s, and is now a major mining complex, with established facilities to support substantial underground, highwall and open cut mining activities. Current approvals allow mining operations within the project area until 2021. Continuation of mining within this area is far more suitable than seeking to mine up to 20 Mtpa from one or more greenfield sites.

The existing land uses of the study area and surrounding areas are described in **Section 5.1**. A detailed analysis of potential on-site and off-site impacts is provided in **Section 5.0** and an overview of environmental impacts in **Section 7.1**. This analysis demonstrates that the study area exhibits no major constraints to the project.

7.3 Benefits of the Project

The project will create a number of benefits for the local and wider communities through direct means such as employment and wages, and indirect processes such as spending and use of services. The key benefits of the Project are summarised below:

- economic recovery of approximately 287 Mt of ROM coal;
- streamlining of the approval framework for the total UCML operations, providing UCML, government and the community with future certainty over the nature of future operations and the integrated and updated environment and community management and monitoring program for the next 21 years of mining;
- provides the opportunity for UCML to review, renew and update long term commitments to quality environmental outcomes over the life of the project. These are described in further detail in **Section 5.0**, and include substantial aboriginal heritage conservation areas, biodiversity offset and management areas, and a commitment to staged stabilisation and revegetation of the Goulburn River Diversion. This diversion was approved as part of historical operations but requires significant remediation at substantial cost, to meet current stakeholder expectations.
- average annual economic contribution of \$147.7 million to the NSW economy during construction;
- average annual economic contribution of \$563.3 million to the NSW economy during mining operation;
- employment of approximately an additional 401 mining personnel from current employee numbers, with many more indirect jobs created through flow-on effects
- employment of approximately 270 construction personnel, with many more indirect jobs created through flow-on effects;
- payment of significant royalties to the State of NSW; and
- significant export earnings for Australia.

7.4 Ecologically Sustainable Development

One of the objectives of the EP&A Act is '*To encourage ecologically sustainable development*'. The definition of Ecologically Sustainable Development (ESD) adopted for the EP& Act is detailed in Section 6(2) of the *Protection of the Environment Administration Act 1991*. The four principles of ESD defined under this act are:

- the precautionary principle – if there are any threats of serious or irreversible environmental damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- inter-generational equity – the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations;
- conservation of biological diversity and ecological integrity – this is a fundamental consideration; and

- improved valuation, pricing and incentive mechanisms – environmental factors should be included in the valuation of assets and services.

Table 7.2 outlines the way these principles have been considered for the project.

Table 7.2 – Incorporation of the Principles of Ecologically Sustainable Development

ESD principle	Relationship to the Proposal
Precautionary principle	<ul style="list-style-type: none"> • a detailed analysis of available scientific information has been undertaken for the EA and consideration has been given to the extent of scientific certainty relating to any potential impacts; • potential threats of serious or irreversible environmental damage were identified by a risk assessment undertaken for the initial stages of the EA process. Any potential impacts are identified and assessed through the EA (refer to Section 5); • consultation was undertaken with government authorities and potentially affected landholders to further ensure that no uncertainty existed regarding potential environmental impacts; and • measures to mitigate potential impacts associated with the project have been developed and are discussed in Section 5.
Inter-generational equity	<ul style="list-style-type: none"> • potential social impacts associated with the project were considered as part of the EA (refer to Section 5); • a number of mitigation measures will be implemented to minimise any potential impacts to the local community (refer to Section 5); • the project will not sterilise any land from any potential future land uses; • conservation of significant Aboriginal heritage sites; • the project will provide direct employment for up to 979 people; and • areas of land disturbed by previous mining on site and the Project will be rehabilitated to provide woodland areas that can be utilised by future generations.
Conservation of biological diversity and ecological integrity	<ul style="list-style-type: none"> • potential impacts to flora and fauna species and vegetation communities of local, regional, state and national significance were identified and mitigation measures and an offset program developed to minimise any potential impacts (refer to Section 5.5); and • significant impacts to threatened or endangered flora and fauna species are not expected.
Improved valuation, pricing and incentive mechanisms	<ul style="list-style-type: none"> • the project is a continuation of existing operations and therefore maximises use of existing equipment and infrastructure. Continued operation at this site is of significant improved value in comparison to production from a greenfields site; • the project will use existing, upgraded coal processing and rail loading facilities, thereby improving efficiency of energy consumption and eliminating impacts that would be associated with duplicated facilities; and • mine planning has been undertaken so that the efficiency of the project has been maximised and any isolation or sterilisation of coal is minimised, this has been achieved through selective use of equipment and location of site infrastructure.



SECTION 8
References

8.0 References

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SECTION 9
**Abbreviations and
Glossary**

9.0 Abbreviations and Glossary

9.1 Abbreviations

AADT	Annual Average Daily Traffic Volume
AEMR	Annual Environmental Management Report
AGO	Australian Greenhouse Office
AHD	Australian Height Datum
AHMP	Aboriginal Heritage Management Plan
AMBS	Australian Museum Business Services
ANZECC	Australian and New Zealand Environment and Conservation Council
ARI	Average Recurrence Interval
ARTC	Australian Rail Track Corporation
CCC	Community Consultative Committee
CCO	Chemical Control Order
CEEC	Critically Endangered Ecological Community
CHPP	Coal Handling and Preparation Plant
dB	Decibel
dBA	A-weighted Decibel
DECC	Department of Environment and Climate Change
DEWHA	Australian Government Department of Environment, Water, Heritage and the Arts
DGRs	Director General's Requirements
DoCC	Australian Government Department of Climate Change
DoL	Department of Lands
DoP	Department of Planning
DPI	Department of Primary Industries
DSC	Dams Safety Committee
DWE	Department of Water and Energy
EA	Environmental Assessment

EC	Electrical Conductivity
ECRTN	Environmental Criteria for Road Traffic Noise
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EL	Exploration Licence
EMS	Environmental Management System
ENM	Environmental Noise Model
EPA	Environment Protection Authority of NSW (former, now DECC)
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EP&A Regulation	Environmental Planning and Assessment Regulation 2000 (NSW)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i>
EPL	Environment Protection Licence
GHG	Greenhouse gas
HVAS	High Volume Air Sampler
INP	NSW Industrial Noise Policy
LEP	Local Environmental Plan
LGA	Local Government Area
MCP	Moolarben Coal Project
MER	Mackie Environmental Research Pty Ltd
ML	Megalitres
MLA	Mining Lease Application
MOP	Mining Operations Plan
MSB	Mine Subsidence Board
Mt	million tonnes
Mtpa	million tonnes per annum
MWRC	Mid-Western Regional Council
OH&S Act	<i>Occupational Health and Safety Act 2000</i>

PAD	Potential Archaeological Deposit
PM₁₀	Particulate matter less than 10 micro metres in diameter
PoEO Act	<i>Protection of the Environment Operations Act 1997</i>
PRP	Pollution Reduction Program
RBL	Rating Background Level
ROM	Run-of-mine
ROMP	Rehabilitation and Offset Management Plan
RTA	Roads and Traffic Authority
SCA	State Conservation Area
SCT	SCT Operations Pty Ltd
SEA	South East Archaeology
SEPP	State Environmental Planning Policy
SIA	Socio-economic impact assessment
SMP	Subsidence Management Plan
TAUP	Transport and Urban Planning
TDS	Total Dissolved Solids
TEC	Threatened Ecological Community
TSC Act	<i>Threatened Species Conservation Act 1995 (NSW)</i>
TSP	Total suspended particulate matter, usually in the size range of zero to 50 micrometres
UCML	Ulan Coal Mines Limited
Umwelt	Umwelt (Australia) Pty Limited
WSP	Water Sharing Plan

9.2 Glossary

Alluvium:	Sediment deposited by a flowing stream, e.g., clay, silt, sand, etc.
Amenities:	Lunch room, showers, toilets.
Amenity:	An agreeable feature, facility or service which makes for a comfortable and pleasant life.

Aquifer:	A water-bearing rock formation.
Arboreal:	Adapted for living and moving around in trees.
Archaeological:	Pertaining to the study of culture and description of its remains.
Attenuation:	The reduction in magnitude of some variable in a transmission system, for example, the reduction of noise with distance as it travels through air.
Average Recurrence Interval (ARI):	The statistically calculated interval likely to be exceeded once in a given period of time. A term used in hydrology, also known as return period.
Background Noise:	Existing noise in the absence of the sound under investigation and all other extraneous sounds.
Catchment Area:	The area from which a river or stream receives its water.
Coal Reserves:	Those parts of the Coal Resources for which sufficient information is available to enable detailed or conceptual mine planning and for which such planning has been undertaken.
Coal Resources:	All of the potentially useable coal in a defined area, based on geological data at certain points and extrapolations from these points.
Coarse Reject:	Lumps of carbonaceous shale up to 200 mm in size separated in the coal preparation process.
Conservation:	The management of natural resources in a way that will preserve them for the benefit of both present and future generations.
dB (Decibel):	A unit for expressing the relative intensity of sounds on a logarithmic scale from zero (for average least perceptible sound) to about 130 (for the average pain level).
dBA:	A modified decibel scale which is weighted to take account of the frequency response of the normal human ear.
Dip:	The direction in which rock strata is inclined.
Drift:	A tunnel used to access coal resources.
Ecology:	The science dealing with the relationships between organisms and their environment.
Ecosystem:	Organisms of a community together with its non-living components through which energy and matter flow.
Effluent:	The liquid waste of sewage and industrial processes.
Electrical Conductivity:	The measure of electrical conduction through water or a soil-water suspension generally measured in millisiemens per centimetre or microsiemens per centimetre. An approximate measure of soil or water salinity.

Environmental Planning and Assessment Act 1979:	NSW Government Act to provide for the orderly development of land in NSW.
Environment Protection and Biodiversity Conservation Act 1999:	Commonwealth legislation that regulates development proposals that have an actual or potential impact on matters of national environmental significance.
Fault:	A fracture or fracture zone along which there has been displacement of the sides relative to one another. Displacement can be vertical and/or horizontal.
Fauna:	All vertebrate animal life of a given time and place.
Floodplain:	Large flat area of land adjacent to a stream which has been deposited during previous stream flow events and is inundated during times of high flow.
Flora:	All vascular plant life of a given time and place.
Geology:	Science relating to the earth, the rocks of which it is composed and the changes it undergoes.
Geomorphic:	Relating to the formation of the earth's surface features.
Geotechnical:	Relates to the form, arrangement and structure of geology.
Groundwater:	Sub-surface water which is within the saturated zone and can supply wells and springs. The upper surface of this saturated zone is called the water table.
Habitat:	The environment in which a plant or animal lives; often described in terms of geography and climate.
<i>In situ</i>:	In its original place.
Indigenous:	Native to, or originating in, a particular region or country.
L_{A1} Noise Level:	The noise level exceeded for one per cent of the time. It is used in assessment of sleep disturbance.
L_{A90} Noise Level:	The noise level, measured in dB(A), exceeded for 90 per cent of the time, which is approximately the average of the minimum noise levels. The L ₉₀ level is often referred to as the "background" noise level and is commonly used to determine noise criteria for assessment purposes.
L_{Aeq} Noise Level:	The equivalent continuous noise level, measured in dB(A), during a measurement period.
L_{AMax} Noise Level:	The maximum noise energy, measured in dB(A), during a measurement period.

Land Capability:	The ability of a parcel of land to be used in a sustainable manner (that is without permanent damage) for a given land use.
Landform:	Sections of the earth's surface which have a definable appearance (e.g. cliff, valley, mountain range, plain, etc).
Longwall Mining:	A form of underground mining. A panel of coal is removed by shearing machinery, which travels back and forth across the coal face. The area immediately in front of the coal face is supported by a series of hydraulic roof supports providing working space.
Mean:	The average value of a particular set of numbers.
Megalitre (ML):	One million litres.
Meteorology:	Science dealing with atmospheric phenomena and weather.
Mitigate:	To lessen in force, intensity or harshness. To moderate in severity.
Native:	Belonging to the natural flora or fauna in a region.
Outcrop:	Bedrock exposed at the ground surface.
Overburden Emplacement:	An area for placing overburden or waste rock, removed from above and between the coal seams.
Particulates:	Fine solid particles which remain individually dispersed in gases.
pH:	Scale used to express acidity and alkalinity. Values range from 0-14 with seven representing neutrality. Numbers from seven to zero represent increasing acidity whilst seven to fourteen represent increasing alkalinity.
Piezometer:	A small diameter bore lined with a slotted tube used for determining the standing water level of groundwaters.
Protection of the Environment Operations Act 1997:	NSW legislation administered by DECC that regulates discharges to land, air and water.
Rating Background Level (RBL):	A period (day, evening or night) background noise level determined in accordance with chapter 3 of the NSW Industrial Noise Policy (EPA, 2000).
Rehabilitation:	The process of restoring to a condition of usefulness. In regard to mining, relates to restoration of land from a degraded or mined condition to a stable and vegetated landform.
Revegetation:	The process of re-establishing vegetation cover.
Run-of-mine (ROM):	Bulk material extracted from a mine, before it is processed in any way.
Salinity:	A measure of the concentration of dissolved solids in water.

Seam:	An identifiable discrete coal unit.
Sedimentation:	Deposition or settling of materials by means of water, ice or wind action.
Sediment Dam:	A dam built to retard dirty runoff to allow sediment to settle out before allowing clean water discharge.
Site Specific:	Relating to conditions existing at a particular location.
Socio-economic:	Combination of social and economic factors.
Spontaneous Combustion:	Spontaneous ignition of some or all of a combustible material.
Subsidence:	The vertical movement of a point on the surface of the ground as it settles above a coal panel extracted by underground mining.
Subsidence affectation area:	The ground surface area affected by subsidence, defined by: <ul style="list-style-type: none">• the area bounded by the 26.5 degree angle of draw (i.e. the angle of the line connecting the edge of underground workings and the limit of subsidence at the surface); and• the predicted vertical limit of measurable subsidence, taken as the 20 mm subsidence contour.
Surface Infrastructure:	Any man made object, facility or structure on the surface of the land.
Tailings:	Fine residual waste material separated in the coal preparation process.
Thermal Coal:	Includes medium to high ash, low sulphur coals used for domestic power generation and medium to low ash energy coals which are exported.
Topography:	Description of all the physical features of an area of land and their relative positions, either in words or by way of a map.
Total Dissolved Solids (TDS):	A measure of salinity expressed in milligrams per litre (mg/L).
Total Suspended Particulates (TSP):	A measure of the total amount of un-dissolved matter in a volume of water or air usually expressed in milligrams per litre (mg/L) (for water) or micrograms per cubic metre ($\mu\text{g}/\text{m}^3$) for air.
Woodland:	Land covered by trees that do not form a closed canopy.