



**Mining and Energy** Division

# Review of Environmental Assessment

Ashton Coal

Modification 10

Gas Drainage Plant

DA 309-11-2001-i

## Submission

Construction Forestry Mining and Energy

Union (Mining and Energy Division)

Northern District Branch

August 2012

On 23 July 2012, Ashton Coal Operations Pty Ltd (ACOL) applied to the Minister, Department of Planning seeking approval to integrate gas management across the underground. This Project is sought under Section 75W of the EP&A Act, 1979.

The Director General made the Environmental Assessment publicly available on the 15 August 2012 at the DoP Information Centre Sydney, Singleton Council and Nature Conservation Council.

The Union is pleased to take the opportunity to comment on the Ashton Coal Project and related activities Environmental Assessment.

The Mining and Energy Division is a Division of the CFMEU under the Federal Workplace Relations Act 1996, with over 120,000 members, one of the largest in Australia. The Division covers several industries including the coal industry, coal ports, metalliferous mining industries, electrical power generation, oil and gas and the Nation's small coking industry.

The Northern District Branch of the CFMEU Mining and Energy Division, being the branch that on behalf of the organisation which is making the submission is the principal Union representing coal miners in the Northern District coalfields of New South Wales. The Ashton facility is located near the village of Camberwell and is wholly within the State's Northern District coalfields.

The Union is familiar with the Ashton facility site and has engaged the services of an Environmental Consultant with extensive experience in local government and environmental assessments on coal mining related projects.

After reviewing all the material and taking advice, the Union supports the gas drainage facility Project as proposed.

## **Project Overview**

ACOL is proposing to modify the development consent for the Ashton Coal Project (DA 309-11-2002-i) to maintain safe working conditions in the underground mine and integrate gas management across the underground: This modification includes the construction and operation of:

- A central gas drainage plant and gas flaring facility compound, measuring approximately 25 x 75m, located on the ground surface in the north eastern corner of the underground mine area.
- Up to about 80 gas bores distributed across the underground mine area, (where the construction of the bores will be staged over the remaining 10-12 year life of the underground mine).
- A pipeline network to convey gas from the gas bores to the central gas drainage plant and gas flares.
- Minor associated works where required for access and electrical power.

The proposed modification will not alter the overall area of the ACP or the mining method. Further, there will be no increase in rate of coal extraction, production or frequency of rail loading and off-site rail transport to that already approved by DA 309-11-2001-i.

It is noted that in the Environmental Assessment for Mod 7 that a more substantial gas drainage arrangement would be required to effectively manage gas levels in the deeper seams of the multi-seam underground mine. This modification describes the more substantive gas drainage arrangement. This will ensure safe and efficient mining operations for the remaining 10 to 12 years of mine life in the three deeper coal seams (i.e. Upper Liddell, Upper Lower Liddell and Lower Barrett seams).

All aspects of the proposed modification relate to development on land within the disturbance limits of the existing approved ACP. Therefore there is no addition or change to the land development schedule described in the original consent in Schedule 1 to DA 309-11-2001-i.

With the exception of a portion of land owned by Macquarie Generation and located in the north-west of the proposed development area, ACOL owns the land on which the proposed infrastructure will be developed. ACOL has an existing agreement with Macquarie Generation for the development of the proposed infrastructure.

## Consultation

ACOL has discussed the proposed project with neighbouring land owners, neighbouring mining operations, the local community, Aboriginal stakeholder groups and various Government Authorities, including Singleton Council.

ACOL participates in regular meetings with Macquarie Generation to discuss the interaction of activities on the portion of land owned by Macquarie Generation which overlies the underground mine. These meetings also currently include representatives from Ravensworth Operations Project and RUM due to the additional interaction with Lemington Road realignment activities and neighbouring mine activities on or adjacent to this portion of land.

Consultation with Macquarie Generation on the proposed modification has included these regulation interaction meetings, project specific meetings, site inspections, written correspondence and verbal communication.

ACOL has taken these concerns into consideration in its design of the project and proposes to implement the following measures where appropriate:

- Limiting the total number of gas bores on Macquarie Generation owned land to a maximum of 15 (including those approved by MOD 7).
- Relocating some of the gas bores to ensure an adequate setback is maintained to Macquarie Generation infrastructure and potential work areas, and the realigned Lemington Road.
- Implementing visual screening for gas bores in close proximity to, and visually exposed to, the realigned Lemington Road where appropriate.
- Implementing additional tree screens at strategic locations to diminish the potential visibility of gas bores on Macquarie Generation owned land to public road users.

Property 130 is immediately adjacent to and south of ACOL owned land, under which the underground mine has been developed. The property is a working dairy farm which is encompassed in part by ACOL's mining lease ML 1533. The southern extent of LW1 in the approved mine plan extend under part of this privately-owned property.

Access to the dairy and farm residence from the New England Highway is provided by a right of way across ACOL owned land and the underground mine. ACOL has an agreement with the landowner to maintain access to this property at all times, whether via the Right of way or via an alternative access route.

Consultation with the landowner and farm manager is carried out as part of the ongoing mining operation. More recently this has included meetings to discuss the requirement for and design of the proposed gas drainage infrastructure. In response to this consultation ACOL has proposed to implement the following measures:

- Gas bores or gas drainage infrastructure will not be located on any part of the privately-owned land holding.
- Gas bores required to be located in proximity to the property boundary will be set back from the boundary by a minimum of 50m, wherever possible and taking into account mine safety requirements.
- Gas bore compounds will be setback from the centre of the ROW by a minimum of 12m.
- Monitoring of noise levels at the property during construction of gas bores in proximity to the property boundary and use of temporary acoustic screening where required.
- Monitoring of methane and odour levels at the property boundary wherever free venting from gas bores occurs within 100m of the property boundary.
- Ensure heavy vehicle access through the “Dairy Lane” occurs outside school bus pick-up/drop off and milk tanker access times, where possible.

ACOL regularly consults with its registered Aboriginal stakeholder groups on activities being carried out or proposed to be carried out at the ACP, where those activities interact with Aboriginal heritage.

The proposed gas drainage works, potential interactions with Aboriginal heritage and the management thereof, has been tabled at numerous meetings. Of the 33 stakeholder groups and two individuals, ten have provided verbal feedback on the Aboriginal heritage impact assessment report. Each of these indicated the proposed management measures and recommendations were satisfactory.

## **Modification Description**

The proposed development extends over a large area, encompassing the approved underground mine.

Indicative proposed disturbance areas have been selected taking into consideration mine layout constraints, operational needs and the existing environment, including known items of Aboriginal heritage, flora and fauna values, visual amenity and proximity to neighbouring private land holdings and residences. The majority of the required total disturbance area will

occur on land previously cleared for grazing, which has now been undermined. The need for further tree clearing will be avoided wherever possible.

The central gas drainage plant and flaring units will be located in the general vicinity of the recently approved 5.5m upcast ventilation shaft (MOD 9). This site is situated toward the north eastern corner of the underground mine area, on the south western slope of a ridgeline. The location of the site with respect to the topographic feature will provide visual and acoustic screening to Camberwell village residents and New England Highway road users.

The central gas drainage plant will comprise the following components:

- UP to 4 x 1500 L/s electrically driven liquid ring vacuum pumps.
- Gas-water separator.
- Flow control recirculation.
- Control panel room, gas analyser and electrical transformer.
- Cooling water tank.

The central gas drainage plant will be constructed within a pad, approximately 25 x 75m. The pad will be cut into the slop at its northern end.

The pad will be capped with road base material to form a free draining surface and a perimeter fence will be installed for security.

A small water source (tank or dam) constructed within the compound will provide clean water to the plant for operation and cooling of the pumps. An open shelter will be constructed over the pumps and control room to provide adequate protection from the elements whilst not inhibiting ventilation of the area for safety.

The gas drainage plant has been designed for a maximum flow capacity of 4500 L/s, comprising three modular 1500 L/s liquid ring pumps. The pumps will be established in stages, with up to 3000 L/s flow capacity, or two modular 1500 L/s liquid ring pumps, being initially required and installed. A third pump is planned to be included in the initial build of the plant for back up purposes during maintenance or in the event of a temporary breakdown.

The lead time for the pumps is about 14 months with the majority of components pre-assembled off site.

A crew of about 10 construction workers will be required to complete the onsite works, with up to an expected eight vehicle trips per day. Construction will generally be confined to daytime hours. Where evening construction activities are required, these will be confined to non-impulsive noise generating activities.

Following commissioning, the gas drainage plant will operate 24 hours a day, seven days a week to maintain controlled drainage of gas from active gas bores, generally in line with the progression of long wall extraction.

Equipment for the monitoring and safety of the plant will be installed and integrated with an automated shutdown system that will be triggered through the detection of pre-determined thresholds in the system.

Sufficient lighting will be installed at the site to provide safe working conditions. These will be shielded or directed away from New England Highway traffic and from privately-owned areas.

The gas drained from the underground workings will be primarily managed by flaring.

A flaring facility will be constructed a safe distance from the gas drainage plant. The design of the gas flaring facility and associated network has been reviewed by Pacific MGM for safety and potential public risk. ACOI proposes using enclosed vertical flaring units, with sufficient flares to be installed to manage up to 4500 L/s of gas. The number of flaring units installed will be commensurate with the initial capacity of the gas drainage plant.

Gas will be drawn into the base of the stack and pass through a series of burners where it will be combusted and converted to CO<sub>2</sub> and water vapour. A small LPG cylinder will be used to provide a source of fuel for the pilot light.

Combustion of the gas will be enclosed within the stack, limiting external visual exposure of the flaring gas. Monitoring and safety equipment will be fitted to each flare, including gas sensor, flame detector and temperature sensor.

In addition to the flares, a small stack will be installed adjacent to the flares to allow the free venting of gas when required. The vent stack will be used where the supply of gas exceeds the capacity of the flaring units, or during the maintenance and repair of the flares.

It is anticipated that up to about 80 goaf gas drainage bores may be required to effectively manage gas build up within the mine and to ensure provision of safe working conditions. This projected number of gas bores constitutes an estimated upper limit and it is likely that a smaller number of gas bores will ultimately be developed.

Installation of the gas bores will be staged progressively as each longwall block and coal seam is mined. Each gas bore will be drilled slightly in advance of mining into strata coincident with the goaf zone above the seam being mined. Holes will be cased using a combination of steel casing and sealed to prevent gas escaping up the outside of the casing. Each gas bore will be spaced at 300 to 400 m intervals along each longwall panel.

Up to four individual gas bores may be constructed at each location, targeting the goaf zone of each successive seam. Construction will occur during daytime hours only.

Each gas bore will become operational once the longwall has passed underneath it and goaf forms. At this point the bore will be connected to the pipeline network. This process will be repeated as the longwall advances passing beneath each successive bore.

Each bore will remain active until such time when the methane content falls below a pre-determined threshold. The bore will then be sealed until such time that drainage of the gas associated with mining lower seams is required. It is anticipated that each bore will remain active for about three months.

As underground mining continues to subsequent seams it is expected that the buoyancy effect of methane will allow the gas to rise into previous goaf zones. This will enable the bores to be reactivated and may avoid the need to drill new bores to a lower depth.

Individual gas drainage bores will be connected to the central gas drainage plant via a reticulated pipeline network. The layout of this network has been designed to account for existing environmental features and constraints, predicted mine subsidence impacts, infrastructure, access tracks, dams, buildings and existing land use activities wherever possible.

The pipeline will range in normal diameter from 300mm to 70mm and be generally constructed of reinforced high density polyethylene.

A primary trunk pipeline will extend from the central gas drainage plant along the length of LW1, stopping short of the boundary with Property 130. This will form the main branch of the network.

An initial disturbance area of about 5m wide will be required, enabling vehicle and equipment access, trench digging and soil stockpiling. Disturbed areas will be re-grassed to minimise the potential for erosion.

A pipeline network will be required to cross Bowmans Creek to connect gas bores on the western side of the creek. It is initially envisaged that this will be achieved by routing a small section of the pipeline into and along one of the main Pike Gully Seam gate roads. If this proves unfeasible from a gas reticulation perspective or compromises the safety of the underground mine then alternate creek crossing arrangements will be investigated and implemented.

The east west sections of the pipeline network that cross the longwall panels will be subjected to subsidence as each seam is mined. There is sufficient flexibility built into the pipeline design to minimise subsidence impacts on the pipeline network.

A mobile gas drainage plant is already utilised by ACOL to provide vacuum assisted free venting of gas from the Pikes Gully Seam. This will continue as an interim measure until the central gas drainage plant has been completed and at times where use of the central plant is limited, or in more sensitive areas that preclude the construction of the pipeline.

## **Noise**

Consultants Spectrum Acoustics assessed the potential noise impacts of the development on privately-owned residences in the surrounding area.

The results predict a moderate (3dB) exceedance of the existing ACOL criteria at one private residence (property 130) during borehole and pipeline construction in the vicinity of the property boundary. The dominant source of noise during construction is the drilling rig. The drill sound power level of 108 dB(A) was determined as the average of noise levels at four locations at the front, rear, left side and right side of the drill. Orientating the drill with the quietest side facing the impacted property residence, would adequately reduce the relative sound power level to 102 dB(A). Notwithstanding, the following measures will be implemented to reduce noise impacts:

- Use of a temporary noise barrier (2.4m to 3m high).
- Noise monitoring to ensure compliance with existing ACOL noise impact criteria.

ACOL will implement these measures to ensure its noise levels at the private residence are maintained below its consented noise limits.

## **Air Quality**

Consultants PAE Holmes assessed the potential air quality impacts of the development, including consideration of dust, combustion gases, odour and GHG emissions associated with the construction and operation of the development.

Methane is less dense than air, directly vented gas will generally rise and disperse quickly within the air column. Methane is also a non-odorous and non-toxic gas.

PAE Holmes assessed the likely ground level odour concentrations of the development from venting of excess goaf gas at up to 4500 L/s at the central gas plant. The results indicate that the ground level odour will be less than the most stringent odour goal of 2 OU at all surrounding private residences.

Flaring of the gas and operation of diesel compressors and generators will lead to emission of NO<sub>x</sub> and other gases. PAE Holmes also modelled the concentrations of these gases to assess the potential impacts on private residences. The results indicate that the maximum predicted 1-hour NO<sub>2</sub> ground levels at the closest private residence will be well below the guideline criterion of 246 µg/m<sup>3</sup> (for NO<sub>2</sub>).

A small increase in GHG emissions will also occur from the increased consumption of diesel from the use of additional equipment during construction and operation. However, this increase will cause no significant impacts in the context of the overall GHG emissions from the underground mine.

## **Aboriginal Heritage**

Insite Heritage assessed the potential impacts to Aboriginal heritage proposed to be caused by the development.

For the purposes of this assessment, the underground mine area was broken up into 21 landform units. Although visibility was generally low across the majority of the survey area a further 30 previously unrecorded site locations were recorded. These sites are in the process of being registered on AHIMS, and will be managed consistently with previously recorded sites.

Insite Heritage has recommended additional measures for the management of the Aboriginal objects in each landform unit as well as the following general measures which will be implemented by ACOL where appropriate:

- Highly visible perimeter barricades should be placed around the known objects that are located in proximity of proposed works to avoid unintentional impacts during construction and operation.
- All areas of impact should be inspected and assessed in accordance with the methodology prescribed in the relevant AHIP.
- Following the marking of the final pipeline route, the entire length should be inspected and Aboriginal objects recorded and collected.
- In accordance with the AHIP methodology the requirement to identify areas of potential subsurface objects should be identified prior to excavation works.
- Pipeline routes should avoid passing through or over known sites and should be laid within previously disturbed areas wherever possible.
- Gas bores should be located as far from known sites as the operational plan allows.
- Site access should be via existing tracks, wherever possible.

Aboriginal stakeholders have indicated their support for the implementation of these measures.

## **Riparian and Terrestrial Ecology**

PEA Consulting assessed the potential ecological impacts of the development.

Conditions of the Ashton Voluntary Conservation Agreement (VCA) enable the development of mine related infrastructure where it is required for the safety of the mine and where the infrastructure cannot be located in an area outside the VCA area. ACOL has determined that for safety reasons a gas bore is required within close proximity to the start line of each panel. Notwithstanding, the property owner of the land overlying the start location of LW1 and bordering the VCA area has indicated a strong preference for mine infrastructure not to be located on his land. Hence, for safety reasons a gas bore will be required to be developed in the VCA area to manage gas within the initial part of LW1. The next LW1 gas bore is proposed to be located outside the VCA area proximal to its northern boundary. The distance between these two LW1 gas bore locations is approximately double the distance proposed between gas bores to provide adequate gas drainage and management within the underground mine. Hence, while not specifically proposed, the proponent may need to locate an additional gas bore along the LW1 panel within the northern part of the VCA area.

The proposed design and location of gas drainage infrastructure within the VCA area will be restricted to areas with prior disturbance or degradation as far as practically possible. ACOL may consider using the mobile gas drainage plant at these two required bore locations rather than developing the connecting pipeline in this area, to limit the amount of disturbance.

PEA Consulting conservatively considered a total disturbance foot print of about 12.7 ha will be required to facilitate the construction of the proposed infrastructure, including existing disturbed areas. Notwithstanding under this conservative assessment of ecological impacts it is estimated that only about 0.7ha of native vegetation will potentially be disturbed as a result of the development.

The impacts to vegetation communities will be generally limited to the removal of grasses and small shrubs. Mature trees will be avoided as far as practically possible.

## **Traffic and Transport**

Consultants SKM assessed the potential traffic related impacts of the development.

Access to the site from the New England Highway will be via “Dairy Lane” and the future realigned Lemington Road for works west of Bowmans Creek. During construction, light and heavy vehicles will be required to access the site each day.

It is estimated that up to about 25 vehicles a day will access the site via “Dairy Lane” when construction and operation of various phases of the development overlap, decreasing to about 6 vehicles a day following completion of the gas plant construction.

SKM recommended the following actions to be implemented to ensure the potential traffic related impacts are minimised:

- The ‘Dairy Lane’ property access intersection will be used as a ‘right in’ intersection for south bound vehicles accessing the site when other approved ACP development is occurring with approved traffic controls. In the event these traffic controls do not exist, the ‘Dairy Lane’ intersection will be operated as a ‘left in left out’ only.
- Temporary ‘Trucks Turning’ caution signs should be installed in both direction on the New England Highway approximately 200 to 300m in advance of the “Dairy Lane” and Brunkers Lane realigned Lemington Road intersections during construction works.
- Grass cutting in the vicinity of the intersection to enhance sight distance.

## **Visual Amenity**

Consultants AECOM assessed the visual impacts of construction activities and surface infrastructure on public road users and surrounding private residences.

Initial construction works will generally be short lived, although additional campaign based construction activities will occur intermittently for the remaining mine life. The visual impact of the constructed infrastructure will be low, with only minor infrastructure being visible to public road users for only a short period of time as they pass by the site. Views to the central gas drainage plant will not be significant due to separation distances and general topographic screening.

On this basis the visual impacts of the development are considered to be low to moderate significance.

## **Surface Water**

The general locations of gas bore pads were selected to be a sufficient distance from any natural or diverted watercourse so as to avoid all direct impacts on surface waters from the development. However, some gas bores and sections of pipeline are proposed within close proximity to sections of Bowmans Creek were made redundant by the creek diversions. Where gas bores and pipelines are proposed in these areas, existing ACOL management controls will be put in place to ensure impacts to the diverted Bowmans Creek are avoided.

Each gas bore head will be fitted with a non-return valve and locked to eliminate any potential for the entry of surface water to the mine during flood events.

## **Ground Water**

The gas bores will be constructed into strata within the goaf zone specifically for the purpose of gas drainage and will not be capable of drawing groundwater.

All gas bores will require sealing between the tertiary casing and the surrounding rock through which the bore is developed. This will be achieved by use of a suitable sealing mixture such as cement grout, cement/bentonite grout, bentonite pellet chips or concrete.

This bore construction methodology will ensure intersected alluvial groundwater is protected from possible cross contamination; prevent uncontrolled groundwater inflows into the underground mine; and will ensure the efficient capture and conveyance of the gas under negative pressure provided by the central gas plant.

## **Justification**

ACOL is statutorily required to manage gas levels in the underground mine for the safety of its employees. Further it is required to implement measure so as to minimise the release of GHG emissions from the mine as far as reasonably and feasibly practical. It is also required to examine opportunities to flare or reuse methane drained from the mine, including goaf gas drainage.

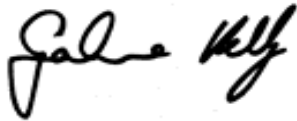
This modification application forms the basis of a long-term gas management strategy for the ACP underground mine and is consistent with the approved Ashton Coal Mine Greenhouse Gas Investigation Abatement Report.

## **In Summation**

The proposed modification will not alter the size of the approved ACP, the operating hours, the mining methods, the rate of approved coal extraction and production, or the method and frequency of off-site coal transport to that already approved by DA 309-11-2011i. The proposed modification will not radically alter or transform the approved project, and the ACP will be substantially the same development as originally approved by the Minister.

This development will ensure ongoing safe working conditions are maintained and will reduce the amount of GHG that would otherwise be emitted from the mine.

The Union considers that on balance, the Ashton Mine Gas Drainage Project is consistent with currently approved DA 309-11-2001-I and objectives of the EP&A Act. The Union therefore supports the proponent's application.

A handwritten signature in black ink, appearing to read "Grahame Kelly". The signature is written in a cursive style with a large initial 'G' and 'K'.

**Grahame Kelly**

**DISTRICT SECRETARY**