Mining and Energy Division

Review of Environmental Assessment

Austar Coal Project

Mod 2 08-0111

Submission

Construction Forestry Mining and Energy Union (Mining and Energy Division)

Northern District Branch

September 2011

On 4 March 2011 Austar Coal Mine Pty Ltd applied to the Minister, Department of Planning & Infrastructure seeking approval for the modification of the longwall layout, including removal of longwall A6, and extraction of coal in longwalls A7 to A19, which are a reorientation of longwalls A7 to A17 as approved. This Project is sought under section 75W of the EP&A Act, 1979.

The Director General made the Environmental Assessment publicly available on the 9 September, 2011 at the DoP & I Information Centre Sydney, Cessnock City Council, and Nature Conservation Council, Newtown.

The Union is pleased to take the opportunity to comment on the Austar Mine Modification 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 Austar minesite is located approximately 10 kilometres south of Cessnock and is wholly within the State's Northern District Coalfields.

The Union is familiar with the Austar minesite 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 Austar Mine Modification Project as proposed.

Project Overview

To enable more efficient and safer extraction of coal from the Stage 3 area, Austar seeks approval to modify Project Aproval 08-0111 to allow the longwalls to be reorientated. This modification will include removal of longwall A6, and extraction of coal in longwalls A7 to A19, which are reorientation of long walls A7 to A17. The location of the main headings is proposed to be moved to the west and the width of chain pillars is also proposed to be increased to reduce roadway failure risk and in turn subsidence impact risks. The proposed Stage 3 Modification will remain entirely within CML2 and existing lease extension application area MLA 322 and MLA 333 and involve a change to the Stage 3 mine plan only, with no proposed changes to underground mining method, total approved rate or quantity of extraction, or associated surface infrastructure. Throughout the Environmental Assessment the area within the 20mm subsidence contour for the Stage 3 long wall panels as approved is referred to as the 'Stage 3' area. The area within the 20mm subsidence contour for the proposed Stage 3 Modification long wall panels will be referred to as the 'proposed Stage 3 Modification Area'.

The area of surface impact will be generally within the envelope of that previously approved for the majority of the underground mining area. Surface impacts are proposed to be decreased in the west of the approved Stage 3 area via the removal of Longwall A6, decreased in the south-east and north-west by reorientation of longwall panels and increased for a section of land between the approved Longwall A6 and the western extent of approved longwalls A7 to A17.

Ongoing exploration works and resultant refinement of the Stage 3 mine plan will be required over the life of the Stage 3 Project. Exploration works will be undertaken so as to avoid significant surface impacts, in accordance with the provisions of the relevant environmental management plans.

Consultation

Stakeholder consultation was undertaken as part of the Part 3A Project Application process with stakeholders including community representatives, non-Government organisations, and statutory agencies.

The community consultation program being undertaken by Austar has included letters, community meetings and presentations to key stakeholders including individual landholders within the Stage 3 Modification Project Area and the Austar Coal Mine CCC. Ongoing consultation will be linked to the existing Property Subsidence Management Planning process and the CCC.

Key issues of community interest raised in the consultation process included:

- Area of subsidence impact;
- Impact on housing, other structures and agricultural areas within the proposed State 3 Modification Area;
- Impact on creek lines, flooding and drainage; and
- Cultural heritage impacts.

Subsidence

Projected Impacts on Houses

There are 26 houses located within the subsidence impact assessment area. Twenty two of these houses are single-storey houses with lengths less then 30 metres, and six are single storey houses in lengths greater than 30 metres. No other significant residential features were identified within the subsidence assessment area.

The maximum predicted subsidence parameters for the Stage 3 Modification project are similar to or slightly less than the maximum predicted subsidence parameters for the Approved Stage 3 project.

The maximum predicted tilt for houses resulting from the extraction of the proposed longwalls is 5.5mm/m which represents a change in grade of 1 in 180. Tilts of less than 7mm/m generally do not result in significant impacts of houses.

Eighty-seven per cent of houses are assessed to experience nil or negligible impacts. Seven per cent of houses located directly above or immediately adjacent to the proposed longwalls are assessed to experience a very minor or minor impact. Only 4% of houses are assessed to experience moderate to extensive impact. All houses have a probability of less than 0.5% of experiencing an impact that would be considered severe.

All houses within the proposed Stage 3 Modification Impact Area are expected to remain safe, serviceable and repairable throughout the mining period, provided that they are in sound structural condition prior to mining.

Projected Impacts on Roads

Sandy Creek Road, Quorrobolong Road, Coney Creek Lane and Big Hill Road are each located across the subsidence impact assessment area.

The maximum predicted subsidence parameters for the Stage 3 Modification are similar to or less than the maximum predicted subsidence parameters for the approved Stage 3 project.

The maximum predicted tilt at the roads, at any time during or after extraction of the proposed longwalls is 5 mm/m which represents a change in grade of 1 in 200. The maximum predicted tilt is less than 1% and is unlikely to result in any significant impacts on the road's serviceability or the drainage of water at the roads.

Quorrobolong Road has a bitumen seal within the assessment area and Coney Creek Lane and big Hill Roads are unsealed roads. It would be expected that any surface cracking that may occur at these roads as a result of the extraction of the proposed longwalls would be of a minor nature due to relatively small magnitudes of predicted strains and due to the relatively high depths of cover. Experience to date along the unsealed Nash Lane has been that no remediation due to mining impacts has been required.

Projected Impacts on Local Drainage Culverts

Historical drainage culverts located across the mining area are expected to experience the full range of predicted subsidence movements.

The predicted maximum subsidence parameters for the Stage 3 Modification project are similar to or slightly less than the predictions for the Approved Stage 3 project.

The maximum predicted tilt at the drainage culverts at any time during or after the extraction of the proposed longwalls is 6.5mm/m or a change in grade of 1 in 150 and

is unlikely to result in any significant impacts on the serviceability of the drainage culverts. It is expected that drainage culverts will experience curvatures less than the maximum predicted and consequently experience minimal impacts due to variations in the predicted curvatures and the orientation of the culverts relative to the subsidence trough.

Projected Natural Feature Impacts

The maximum predicted subsidence along Cony Creek ranges from 20mm above LWA11 to 1750mm above LWA19 while maximum predicted subsidence along Sandy Creek ranges from <20mm above LWA12 to 1600 mm above LWA19.

The maximum predicted mine subsidence parameters for Cony Creek under the proposed Stage 3 Modification project are slightly less than for Cony Creek under the Approved Stage 3 project. The maximum predicted mine subsidence for Sandy Creek under the proposed Stage 3 Modification project is slight more than for Sandy Creek under the Approved Stage 3 project.

The Branxton Formation forms the upper section of the constrained zone. This formation is massive, relatively homogeneous and contains relatively thick beds. If surface cracking occurs as a result of the extraction of the proposed longwalls, any cracks are likely to be filled with alluvial materials during subsequent flow events.

Austar has communicated with surrounding stakeholders regarding the subsidence impact assessment, potential subsidence impacts, monitoring and management considerations and will include this communication through the development of Extraction Plans and Built Features Management Plans prior to longwall mining taking place.

Significant subsidence impacts on the land surface from the proposed Stage 3 Modification underground mining are not predicted. However, in the event that subsidence impacts are greater than the predicted impacts, a variety of contingency measures and rehabilitation techniques will be available to repair and/or further avoid the impacts of subsidence.

Vibration

Austar is currently undertaking vibration monitoring in the Stage 2 area in accordance with Austar Coal Mine Vibration Monitoring Plan – Longwall Panels A3, A4 & A5. Vibration monitoring has previously occurred over LW A3 at vibration monitoring location V4 and is currently occurring over LW A5 at vibration monitoring locations V5 and V6.

The majority of vibration events during mining LW A3 and LW A4 have been in the range of less than 8.6 mm/s PPV and have occurred up to ten times per month. The highest magnitude even in the period from August 2009 to May 2011 was recorded on 29 January 2010 with a PPV of 15.9 mm/s recorded by vibration monitor V4 directly over LW A3 within the Stage 2 mining area. Vibration monitor V5 located approximately 250 metres to the south-east of vibration monitor V4 recorded a PPV of 9.8 mm/s for the same event. This event was not large enough to result in any significant structural impact to residences in the Stage 2 mining area. All other events recorded within the Stage 2 mining area have remained below structural damage criteria.

As detailed in the Mine Subsidence Engineering Consultants (2011)(MSEC 2011), the vibration experienced within the Stage 2 mining area is within the range of likely vibration levels that are expected as a result of mining in the Stage 3 Modification Area.

Based on the data provided in the MSEC (2011), and taking into account the findings of vibration monitoring in the Stage 2 area described, it is considered that mining in the proposed Stage 3 Area is unlikely to result in vibration impacts in excess of those already approved under Project Approval 08-0111.

The levels of vibration would generally be expected to be low and would not be of sufficient amplitude to result in any significant structural impact. Any structural impact which occurs due to vibration, resulting from underground mining in the Stage 3 Modification Area, is expected to be of a minor nature, and easily repaired using normal maintenance techniques.

Vibration from underground mining within the Stage 3 Modification Area will be monitored via an extension of the existing Austar Stage 2 Vibration Monitoring Program.

Surface Water and Drainage

The Stage 3 Modification Area is predominantly located within the Cony Creek and Sandy Creek catchments, which form part of the Congewai Creek and Wollombi Brook drainage systems.

To assess the potential impacts of the proposed Stage 3 Modification on flooding and drainage, a detailed flooding and drainage assessment was undertaken. This assessment builds on the previous flooding and drainage assessments undertaken for the Stage 2 and Stage 3 areas.

The flood modelling analysis indicates that the Stage 3 Modification is unlikely to have significant impact on the flow regime of the Cony Creek and Quorrobolong Creek systems, with only minor changes predicted in runoff regimes and peak discharges.

Based on the subsidence predictions, the predicted subsidence associated with the mining operation of the Stage 3 Modification will result in maximum changes in grade of 0.3 per cent, 0.8 per cent and 0.3 per cent respectively within Quorrobolong Creek, Cony Creek and Sandy Creek, compared to the existing channel conditions. This predicted maximum change in grade is similar to the change in grade predicted to occur as a consequence of the approved Stage 3 mine plan.

As the predicted changes in in-channel grade are small and are considered to lie within the natural variations in grade of the creek lines of the Quorrobolong Valley, it is considered that the Stage 3 Modification will not significantly alter the flow capacity or stream velocities within the existing channels. It is also considered that there is minimal potential for channel realignment to occur as a result of the Stage 3 Modification.

The potential to increase erosion on the landform is also expected to be minimal due to the relatively small predicted changes in landform grades combined with the high level of groundcover and limited amount of exposed soils that exist in the area.

Impacts on Surface Water Users

Modelling indicates that the proposed Stage 3 Modification mining is unlikely to have a significant impact on runoff or flow regimes within the Sandy Creek and Cony Creek systems and as a result flows within the creeks should remain relatively unchanged.

The potential for mining to result in stream capture within these creek systems is also considered negligible predominantly due to the depth of cover and the strength and thickness of the underlying Branxton Formation. The predicted upper limit of the vertically connected cracking above the goaf is 285 metres or less with the dept of cover between the Greta Coal Seam and the bed of Cony Creek and Sandy Creek being in excess of 500 metres. Vertical fracturing within the constrained zone is generally discontinuous and is unlikely therefore to result in increased hydraulic connectivity. As a result the potential for flows within the Cony Creek or Sandy Creek system to drain to the goaf resulting from the proposed Stage 3 Modification mining is negligible.

This is supported by the fact that Quorrobolong Creek was previously undermined by LW 1 to LW 6 and LW SL1 at the Southland Colliery. In these locations the depth of cover varies between 310 and 370 metres. Following mining there was no reported loss of water from the creek and no reported surface cracking in the creek bed. Similarly, monitoring undertaken in the Stage 2 area to date indicates no loss of water from Quorrobolong Creek and no surface cracking in the creek bed.

Groundwater

A detailed Ground Water Impact Assessment for Stages 2 and 3 of Austar Coal Mine was undertaken by consultants Connell Wager.

No additional depressurisation of the regional groundwater table associated with the coal seam is expected as a result of the proposed Stage 3 Modification mine plan

compared to that of the Stage 3 mine plan as approved under Project Approval 08-0111.

With regard to the shallow alluvial aquifer, subsidence modelling undertaken by MSEC (2011) indicates that hydraulically interconnected fracture networks above the longwall goaf is likely to extend to a height of approximately 245 to 285 metres. The depth of cover above the coal seam ranges from approximately 455 to 760 metres over the proposed Stage 3 Modification long walls. As a result there is negligible potential for hydraulically interconnected cracking to extend from the shallow alluvial aquifer associated with Cony Creek and Quorrobolong Creek to the goaf. On this basis there is negligible potential for groundwater loss from the shallow aquifer as a result of cracking of the strata over the goaf. There is no change to predicted impacts on the shallow aquifer as a result of the proposed Stage 3 Modification mine plan compared to that of the currently approved Stage 3 mine plan.

Subsidence modelling indicates that valley closure and surface tension cracking may occur as a result of subsidence. This could cause minor cracking and fractures in the upper 15 metres of the underlying stratum. This cracking is unlikely to result in drainage or loss of groundwater but may increase the capacity of the upper section of the underlying stratum to store groundwater through increased void space. This increase in void space will be negligible and is unlikely to result in a significant decrease in groundwater levels. Any reduction in groundwater levels will be offset by minor flows in the creek system which will readily fill any cracks that may result from tension cracking. As a result it is considered that subsidence has negligible potential to adversely impact on groundwater levels in the area. Available groundwater quality information indicates that groundwater in the shallow alluvial aquifer is low yielding and of poor quality and as a consequence is not suitable for agricultural or domestic purposes. In addition minor temporary changes in groundwater levels that may result from subsidence are unlikely to significantly reduce groundwater availability to the riparian ecosystems that align Sandy, Cony and Quorrobolong Creeks and draw water from the associated alluvial aquifer.

Mine Water Balance

The principal source of groundwater inflow into the proposed Stage 3 Modification area will be from the adjacent up dip abandoned workings via faults, dykes, maingates

and tailgates. Inflows from adjacent working are estimated to make up approximately 90-92% of the maximum predicted groundwater inflows. Maximum inflows to the Proposed Stage 3 Modification goaf from the overlying Branxton Formation are estimated to be 0.18 ML/day to 0.26 ML/day or about 8 to 10% of the total maximum predicted inflow.

The changes to the longwall layout proposed as part of the Stage 3 Modification will result in a total underground storage void that is consistent with that previously approved under Project Approval 08-0111. According to Connell Wagner longwall mining within the Stage 3 area will create an additional storage capacity to store approximately 25 000ML which will have sufficient capacity to store approximately 23 to 39 years of the total predicted maximum groundwater inflows to Stage 3.

The proposed Stage 3 Modification void is down dip from the surrounding abandoned mines and will be approximately 450 to 740 metres below the surface. Consequently any groundwater that flows directly into the proposed Stage 3 Modification mining area will be contained in the void and not discharge at surface level.

The proposed monitoring and management regime recommended for the Stage 3 project is considered suitable for the proposed Stage 3 Modification.

Aboriginal and Historic Heritage

Aboriginal and historic heritage assessment of the surface of the proposed Stage 3 Modification Area was undertaken as part of the Environmental Assessment of the proposed modification. The assessments build on previous assessments undertaken for the Stage 3 Project and other Austar Coal Mine infrastructure. The assessments include desktop review of impacts and management strategies for sites previously identified during field survey, and further survey and assessment within previously unsurveyed properties where landholders have access. The properties surveyed included 20 private properties, representing a significant increase in survey area from the surveys undertaken in w008. These surveys identified additional artefact scatters, isolated finds and potential archaeological deposits along drainage lines within the proposed Stage 3 Modification Area. Subsidence predictions indicate that maximum predicted mine subsidence movements for the proposed Stage 3 Modification mine

plan are predicted to be similar to, but slightly less than those predicted based on the approved Stage 3 mine plan for the majority of site types identified.

In the surveys undertaken in 2008, one axe grinding groove site was identified that could potentially be impacted by Stage 3 mining. The proposed Stage 3 Modification will result in a substantial reduction in total subsidence impact at the grinding groove site identified in the 2008 survey, although some potential fracturing of bedrock still remains. Austar and Aboriginal stakeholders agreed upon an offset strategy for potential impacts from the Stage 3 mining on the grinding groove. While the predicted subsidence impacts on the grinding groove as a result of the proposed Stage 3 Modification have decreased considerably compared with the Stage 3 mine plan as approved. Austar remains committed to the agreed offset for potential grinding groove impacts.

In the 2008 assessment (Umwelt 2008) access was not available to all private property in the Stage 3 area. However, historical research was undertaken as part of the 2008 assessment which indicates there is a low likelihood of any further potential heritage items to be present within the Stage 3 Modification Area. In the unlikely event any further potential items are identified they are unlikely to have any significant or research potential and any potential impact to the potential items would be negligible.

Ecology

Flora Impact Assessment

Subsidence impacts are not expected to have a significant impact on the ecology or ecological communities of the proposed Stage 3 Modification. In addition, due to the depth of cover and relative predicted uniformity of subsidence over the Stage 3 Modification Project area, it is predicted that surface mitigation works along creeks and drainage channels will not be required and hence disturbance of these areas is not likely to be necessary.

Mining of the Stage 3 Modification Project area is not expected to significantly impact on runoff regimes, bank stability, channel alignment, in-channel and out of channel ponding or groundwater availability. Drainage line analysis of the predicted

subsided landform indicates that all creek systems will remain free draining without mitigation works.

Impact on Threatened Species

Heath wrinklewort (Tutidosis heterogama) and small flower grevillea (Grevillea parviflora susp. Parvilflora) were found within the Stage 3 Modification Area.

Subsidence predictions indicate that there will be no impacts associated with longwall mining that could result in the significant alteration of surface landforms, vegetation or habitats. The impacts are expected to be very minor and focused in riparian environments. All five threatened flora species with potential to occur in the Stage 3 Modification Area occupy drier environments on slopes and ridges and would not occur in the riparian environments of the Stage 3 Modification Area. As such, there is no reasonable potential for any of these potentially occurring threatened flora species to be impacted by the proposed Stage 3 Modification. It is noted that subsidence predictions as a result of the proposed Stage 3 Modification mine plan are similar to or slightly less than those proposed as a result of the Stage 3 mine plan which is currently approved.

Impact on Endangered Ecological Communities

The potential for the proposed underground mining to have an impact on River-flat Eucalypt Forest EEC and the Lower Hunter Spotted Gum- Ironbark Forest was assessed. The assessment concluded that the proposed Stage 3 Modification will not have a significant impact on the river-flat Eucalypt Forest or Lower Hunter Spotted Gum-Ironbark Forest EEC's such that it would place the local occurrence of the EECs at risk of extinction.

No EPBC Act listed EECs were found within the proposed Stage 3 Modification mining area, and therefore an assessment of significance under that Act is not required for any EEC.

Impact on Threatened Species

Twelve threatened fauna species were recorded within the Stage 3 Modification Area, while 18 were found to have potential to occur.

Subsidence predictions and flooding and drainage assessments indicate that there will be no impacts associated with long wall mining that could result in the significant alteration of surface landforms, vegetation or habitats. The impacts are expected to be very minor and focussed in riparian environments only. The majority of threatened fauna species recorded or with potential to occur in the Stage 3 Modification Area occupy and/or utilise drier environments on slopes and ridges and would not occur in the riparian environments of the Stage 3 Modification Area. As such, there is no reasonable potential for these threatened species to be impacted by the proposed Stage 3 Modification.

The outcome of the seven part test concluded that the proposed Stage 3 Modification will not have a significant impact on any recorded or potentially occurring threatened fauna species.

Impact on Endangered Populations

There are no endangered flora or fauna populations present within the Stage 3 Modification Area, therefore there will no be impacts on endangered populations as a result of the proposed Stage 3 Modification.

Justification

According to the proponent the proposed Stage 3 Modification is an optimisation of the conceptual Stage 3 mine plan approved under Project Approval 08-0111.

The proposed modification to mine plan will result in:

- Reduction in overall strata failure and business interruption risk due to alignment of longwall orientation with the principal stress direction;
- Reduction in roadway failure risks and subsidence impact risks due to an increase in chain pillar width from 45 metres to 55 metres;
- Access to high quality, thick seam coal to the west of approved longwalls A7 to A17 that would otherwise have been sterilised by the approve mine plan thus maximising resource recovery; and
- Reduction in risk to longwall production between geologically structured zones in approved longwall A6 by moving the main headings to this location.

The proposed mine plan modification is therefore anticipated to reduce risk and provide for more consistent production with less interruption, whilst having no significant increase in overall environmental impact levels over and above what was previously assessed and approved.

In Summation

An evaluation of the proposed Austar Coal Mining Stage 3 Modification Project proposal has been undertaken by comparing environmental risks against the currently approved project, in conjunction with the Proponents commitment for controls, safeguards or mitigation measures.

Based on comparative analysis of the key elements detailed in the Austar Coal Mine Statement of Environmental Effects, it is considered the Project to build on the attributes of existing approved mining operations.

The Union supports the Austar Coal Mine Modification Stage 3 Project.

Grahame Kelly
DISTRICT SECRETARY