

ASSESSMENT REPORT

Austar Coal Mine Modification (DA 29/95 MOD 4)

1. BACKGROUND

Austar Coal Mine Pty Ltd (Austar) owns and operates the Austar Coal Mine, which is located approximately 6 kilometres south of Cessnock in the lower Hunter Valley (see Figure 1).

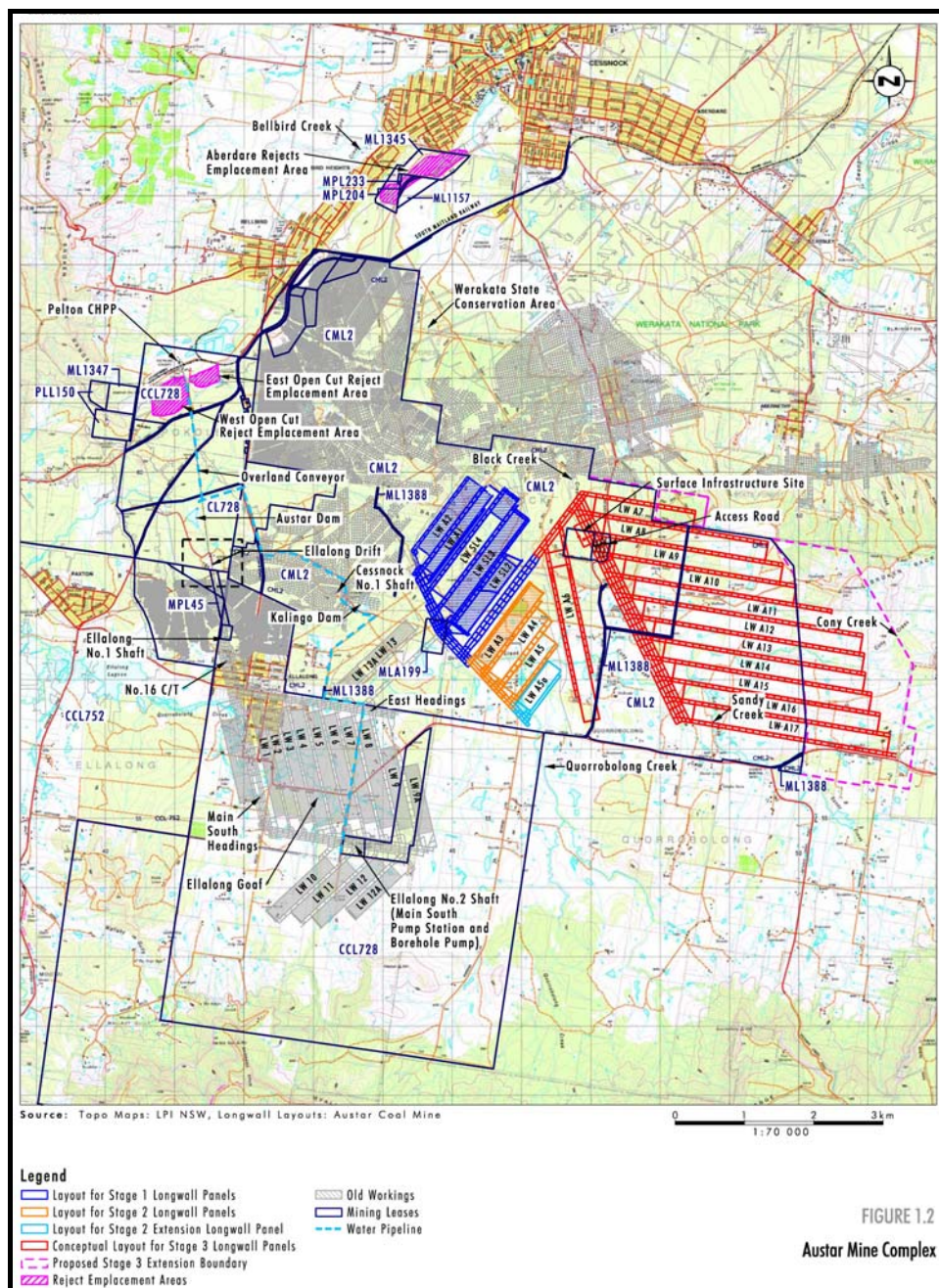


Figure 1: Austar Coal Mine

The Austar Coal Mine is an underground mining operation which amalgamates several older mines. Austar's mining operations are divided into three stages. Stage 1 involved mining in longwall panels A1 and A2, which was completed in November 2008. Stage 2 is currently underway, involving mining in longwall panels A3 to A5. Stages 1 and 2 are regulated under a development consent granted by the Minister for Planning in 1996 (DA 29/95). Stage 3, which involves mining longwall panels A6 to A17, is regulated under a project approval granted by the Minister for Planning in 2009 (MP 08_0111). A number of minor development consents issued by Cessnock City Council between 1974 and 2002 also apply to the mine.

DA 29/95 has been modified 3 times: in 2006 and 2008 to allow the introduction of Longwall Top Coal Caving (LTCC) technology in Stage 1 and Stage 2 longwall panels, and in 2009, to widen the Stage 2 longwall panels. The consent as modified allows Austar to:

- extract coal from longwalls A3 to A5 at a rate of up to 3 million tonnes per annum (Mtpa);
- undertake longwall mining operations using LTCC;
- process coal at Austar's nearby Pelton coal handling and preparation plant (CHPP);
- dispose of coal reject and tailings; and
- transport coal via rail to the Port of Newcastle for export.

2. PROPOSED MODIFICATION

On 18 May 2010, Austar lodged a modification application (DA 29/95 MOD 4) under section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Austar is currently developing its Stage 3 mining area. The Stage 3 surface infrastructure site commenced construction in December 2009 and is expected to take up to 3 years to complete. The infrastructure site includes a ventilation shaft which must be completed to allow the deployment of three underground roadway development units by 2011. This would allow longwall mining to commence in Stage 3 without any discontinuity to coal production from the mine. Austar is also considering the viability of revising its Stage 3 mine plan in light of more recent geological information.

Therefore, to maximise coal production whilst the ventilation shaft is constructed, and to allow sufficient time to investigate potential revisions to its Stage 3 mine plan, Austar proposes to modify its development consent to mine an additional longwall panel in the Stage 2 mining area, adjacent to longwall A5 (longwall A5a – see Figure 2). Austar also proposes to use LTCC in longwall A5a, to achieve a similar extraction height as in longwalls A3-A5.

The proposed modification does not involve increasing the maximum coal production rate or any changes to coal processing or coal reject management.

3. STATUTORY CONTEXT

3.1 Section 75W

This application is a proposal to modify the mine's original Part 4 consent (DA 73-11-98). Newstan has sought to modify this consent under section 75W of Part 3A of the EP&A Act.

Under clause 8J(8)(c) of the *Environmental Planning and Assessment Regulation 2000*, DA 73-11-98 can only be modified under section 75W of the Act, since it is a development consent relating to State significant development, granted by the Minister under Part 4 of the Act before 1 August 2005 and in force immediately before the commencement of Part 3A of the Act.

3.2 Consent Authority

While the modification is assessed under Part 3A, the modified development consent would remain a consent under Part 4 of the Act. Consequently, the Minister for Planning is the consent authority for the proposed modification. However, under the Minister's delegation of 25 January 2010, the Acting Director, Mining and Industry Projects, may determine the modification application.

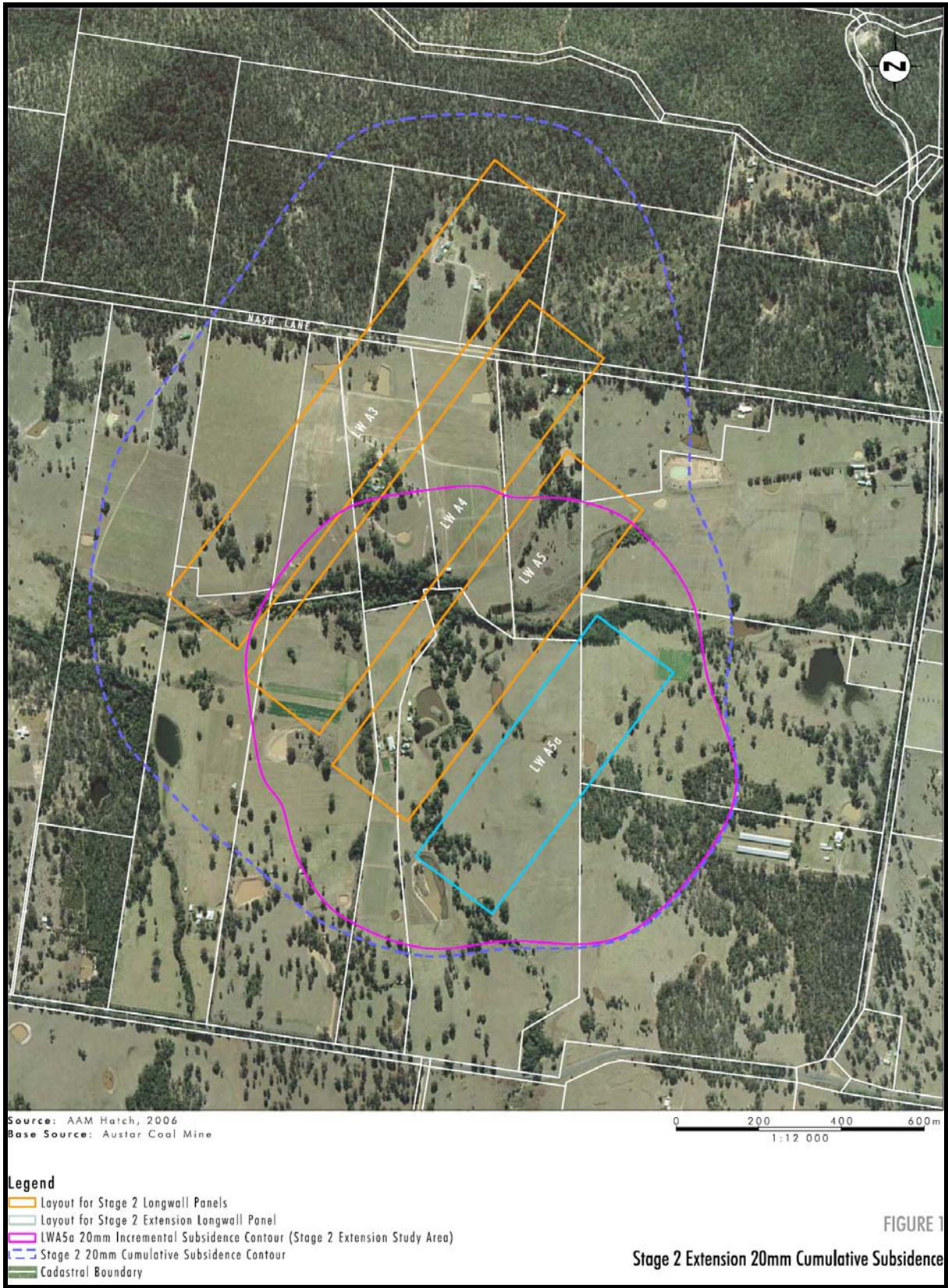


Figure 2: Location of proposed longwall A5a

4. CONSULTATION

4.1 Exhibition and Agency Consultation

The Department placed the EA on public exhibition from 2 to 20 August 2010 at the Department's Information Centre, at Cessnock City Council, the Nature Conservation Council and on the Department's website. The Department also notified relevant State government authorities and Cessnock City Council by letter and advertised the exhibition in the *Newcastle Herald* on 31 July 2010 and the *Cessnock Advertiser* on 4 August 2010.

4.2 Submissions

During the exhibition period the Department received eight submissions, comprising five from public authorities, one from a special interest group and two from the general public.

Public Authorities

Department of Environment, Climate Change and Water (DECCW) did not object to the proposed modification. However, it raised concerns relating to potential biodiversity and Aboriginal cultural heritage impacts. DECCW stated that Austar should monitor the condition of the *River-flat Eucalypt Forest* and *Lower Hunter Spotted Gum* Endangered Ecological Communities (EECs) for any potential impacts during the mining of longwall A5a. DECCW also requested that Austar prepares an Aboriginal Cultural Heritage Management Plan for the proposed modification area.

DECCW's **NSW Office of Water (NOW)** did not object to the proposed modification. NOW stated that Austar should protect access to groundwater for local users. NOW also stated that it has directed Austar to develop an integrated surface and groundwater monitoring program for inclusion in its site water management plan. The aim of this monitoring program would be to verify subsidence impacts against predictions, to account for lateral displacement of groundwater and to determine if any impacts are occurring in Quorrobolong Creek and Cony Creek. NOW highlighted that Austar's current groundwater monitoring bore network would need to be expanded, to quantify any alluvial groundwater loss.

Department of Industry and Investment (I&I NSW) supports the proposed modification and stated that Austar should update its Rehabilitation Environmental Management Plan and submit the revised plan to I&I NSW for approval. I&I NSW recommended the development of a rehabilitation management plan for Quorrobolong and Cony Creeks to mitigate any potential impacts.

Roads and Traffic Authority (RTA) did not object to the proposed modification, as no additional traffic impacts would be expected.

Hunter-Central Rivers Catchment Management Authority (CMA) did not object to the proposed modification, however it raised concerns regarding potential impacts to aquifers, river systems and riparian flora and fauna. The CMA recommended that Austar installs two additional surface and groundwater monitoring bores in the EECs to monitor any potential impacts.

Special Interest Groups and the General Public

The Construction, Forestry, Mining and Energy Union supported the proposed modification, based on its potential economic and social benefits.

Two landholders in the Stage 2 mining area raised concerns that mining the additional longwall panel would increase subsidence impacts at residences and farm buildings and would increase flood levels in the Quorrobolong Valley. The two landholders also raised concerns that the value of their properties would be affected as a result of the proposed modification.

5. ASSESSMENT OF ENVIRONMENTAL IMPACTS

5.1 Subsidence

Subsidence associated with mining the proposed additional longwall panel has the potential to affect natural and man-made features, including Quorrobolong and Cony Creeks, three farm dams and infrastructure such as overhead powerlines, underground telecommunications cables and survey control marks.

The EA included a specialist subsidence impact assessment (SIA). The SIA presented both the predicted and upper-bound subsidence levels. The SIA also included a cumulative assessment, which took into consideration the overall subsidence of longwalls A3-A5a and the potential subsidence profile of the proposed longwall A6, in the Stage 3 mining area (see Figure 3). The SIA found that the maximum subsidence levels that would be expected following extraction in longwall A5a would be similar to that predicted for longwalls A3 – A5 (see Table 1).

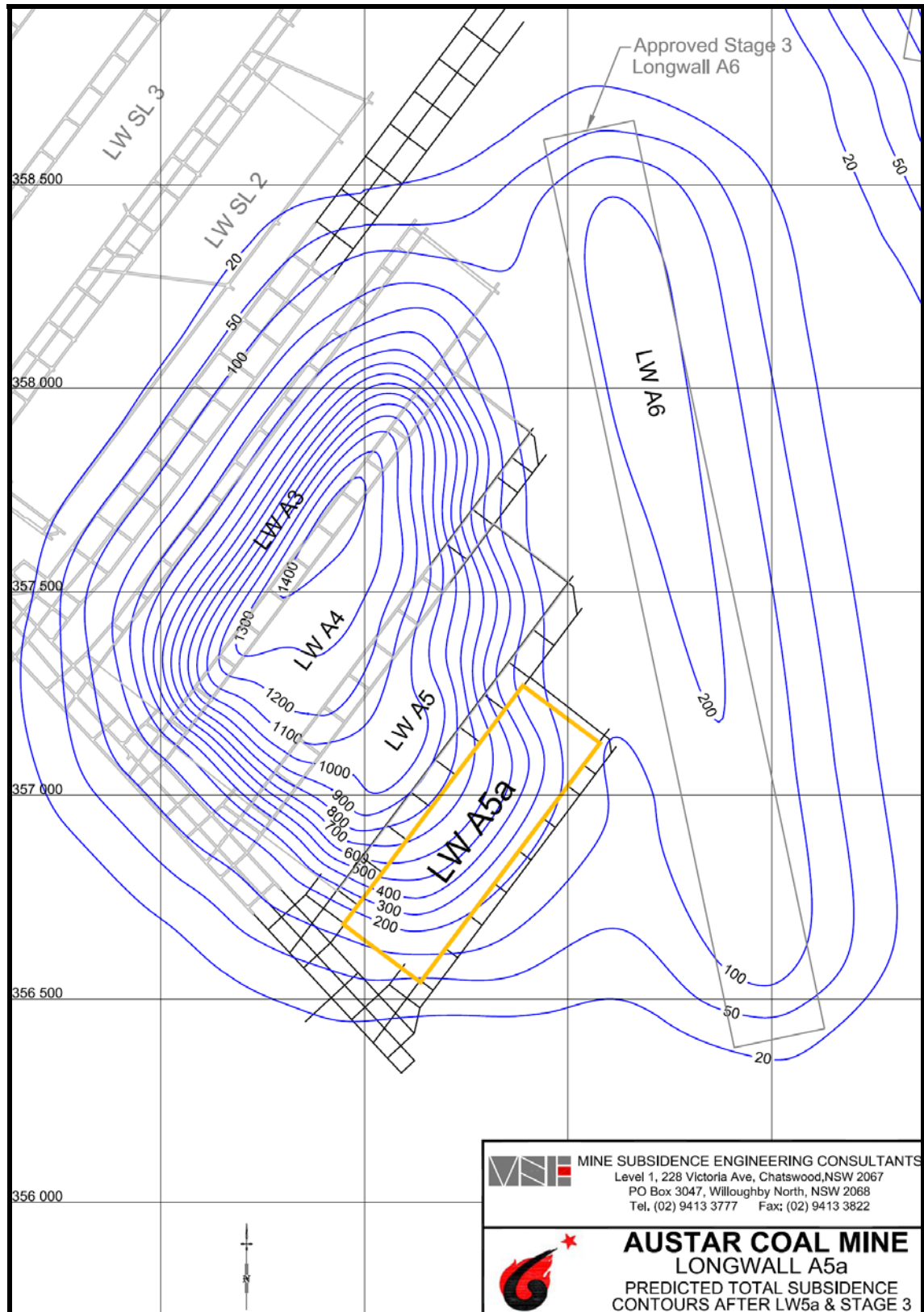


Figure 3: Cumulative subsidence profiles after mining longwalls A3 – A5a and longwall A6

Table 1: Cumulative subsidence resulting from the extraction from longwall panels A3-A5a

Longwall	Predicted subsidence (metres (m))	Upper-bound subsidence (m)	Predicted tilt (millimetres (mm)/m)	Upper-bound tilt (mm/m)
After A3-A5	1.4	2.95	5.7	11
After A5a	1.45	3.0	5.7	12

The upper-bound subsidence level is equivalent to 65% of the extracted coal seam thickness, which is typically the maximum subsidence level which is experienced in the Newcastle Coalfield. Austar uses the upper-bound subsidence level as a risk assessment tool, and the Department recognises that these levels represent an absolute worst-case subsidence scenario. Austar predicts that the maximum cumulative vertical subsidence after extraction of longwall A5a would more likely to be close to the predicted subsidence level. The Department notes that monitoring following completion of longwall A3 showed that the actual recorded subsidence was less than the predicted levels. The Department also notes that the depth of cover to longwall A5a is greater than the depth of cover to longwalls A3-A5.

In addition, the Department notes that the modelled subsidence predictions are based on recovering 6.5 m of coal throughout the length of each longwall panel in the Stage 2 mining area, and while approval to extract up to this maximum seam height from longwall A5a is sought, the actual extraction height would vary throughout the panel, dependent on geological features. The Department therefore considers that the overall level of surface subsidence following longwall A5a is unlikely to be significantly different to that previously assessed and approved for longwalls A3–A5, and that the maximum upper-bound subsidence predictions and associated impacts are unlikely to result. I&I NSW shares this view.

There are no buildings immediately overlying longwall A5a, although there are two houses and nine rural buildings in the longwall A3–A5 area which may be impacted by cumulative subsidence. However, the Department notes that even if the maximum predicted upperbound level of subsidence was to occur, predicted impacts to these buildings would be minor and all structures would remain safe, serviceable and repairable, in accordance with Mine Subsidence Board criteria. Also, impacts to farm dams are not expected to be significant, as predicted tilts would not significantly alter the grade of these dams. Austar's assessment concluded that the low level of predicted subsidence would not significantly impact the freeboard of the dams.

Impacts to other infrastructure, such as overhead powerlines and underground telecommunications cables, is also predicted to be minimal, and the Department considers that impacts would be able to be adequately managed under the mine's approved subsidence management strategies. There are no survey control marks above longwall A5a, however cumulative subsidence may impact the survey marks on Sandy Creek Road, south of the Stage 2 mining area. Should any impacts occur to survey marks, Austar would consult with the Land and Property Management Authority to reinstate the survey marks following ground stabilisation after completion of mining.

The owners of the property to the west of longwall A5a (Mr and Mrs Muxlow) raised concerns that cumulative subsidence from Stage 2 (including longwall A5a) and longwall A6 would cause structural damage to farm buildings and increase the risk of flooding at that property. The Department notes that the predicted vertical subsidence levels at the property following mining in longwall A6 would be relatively minor (ie between only 100 mm and 200 mm). The Department considers that the predicted levels of subsidence at the property would not lead to significant impacts at any building, and all structures would remain within safe, serviceable and repairable criteria. The Department also considers that any subsidence impacts at the property would be adequately managed under both the SMP for the Stage 2 mining area and any future SMP for the Stage 3 longwall panels. The Department has recommended that Austar revises its Subsidence Management Plan (SMP) for the Stage 2 mining area as a condition of consent.

The Department is aware that a development application has been lodged with Council for a tourist cabin development on the Morphet property, which directly overlies longwall A5a. The Department notes that Council has not yet determined the development application, and that the likely extent of impact to the proposed development would be unknown at this stage. The Department considers however that Austar's revised SMP would be adequate to manage subsidence impacts at this property.

Austar would continue to monitor subsidence levels in the Stage 2 mining area. The Department and I&I NSW consider that the current subsidence monitoring and management regime would be adequate to address any potential additional subsidence impacts for longwall A5a. The Department is satisfied that the potential subsidence levels during and following mining of longwall A5a would be likely to be similar to those already assessed and approved for longwalls A3-A5. The Department's view is that subsidence impacts and environmental consequences would therefore be very similar as well.

5.2 Surface Water

Impacts to Watercourses

Quorrobolong and Cony Creeks flow across the southwest and northwest corners, respectively, of the proposed layout of longwall A5a. Austar's subsidence modelling predicts that, following the extraction of longwall A5a, the maximum changes in grade at the creeks would be 0.5% for Quorrobolong Creek and 0.4% for Cony Creek. These changes in grade are similar to those assessed for longwalls A3-A5. The locations of the maximum changes in grade would however move further upstream as a result of mining longwall A5a. Whilst the creeks could experience elevated compressive strains as a result of valley closure movements, these strains would be within levels previously predicted for the creeks. The Department considers that any impacts to the creeks would be able to be managed under the existing impact management framework, and would be adequately managed under a revised SMP.

Austar also considered the likelihood of hydraulic fracturing and subsurface flows occurring at Quorrobolong and Cony Creeks. Alluvial material is confined to the alignment of the creeks, and the strata of the Branxton Formation underlie this material and extend below to the coal seam. The Branxton Formation is considered to be generally geomechanically strong, with few bedding plane partings. The depth of cover to longwall A5a is approximately 530 – 560 m, and the total height of the fractured zone is predicted to be between 235 – 275 m. The Department considers that the geology of the Branxton formation and the estimated height of the fractured zone prevents the potential for connective cracking from the creeks to the mine. It is also expected to limit potential for cracking of the beds of the watercourses and any significant subsurface flows.

Flood Impacts

Austar's flood assessment was based on maximum predicted subsidence levels, and the assessment included modelling predicted flood depths and velocities that could be expected following mining of longwall A5a. This modelling found that there would be an average increase of 100 mm to the predicted flood depths at the confluence of the two creeks. The assessment also predicted minimal increases in the extent and velocity of flood events. No additional flood impact at any residences would be expected following mining of longwall A5a. Austar's cumulative assessment of flood impacts following mining in Stages 2 and 3 found that no significant additional flood impact would be experienced at any property in the Stage 2 mining area.

Conclusion

The Department is satisfied that any additional surface water impacts and flooding impacts as a result of mining of longwall A5a would be very limited, and able to be adequately managed under a revision to the existing SMP.

5.3 Groundwater

The strata overlying the coal measures in the Newcastle Coalfield generally have very low permeabilities, and consequently there is limited leakage from any of the associated water-bearing zones or aquifers into underground mines within the coal seams. Austar's groundwater assessment indicated that there is a potential water-bearing zone in the Branxton Formation which occurs to a depth of 70 - 100 m below the ground surface. The assessment concluded that, as the fractured zone is predicted to reach up to 275 m above the coal seam, it would be unlikely to intercept the water bearing zone in the Branxton Formation.

Austar's has committed to revising its current Site Water Management Plan (SWMP) to include longwall A5a. Austar would continue to monitor groundwater levels in alluvial aquifers, fractured rock aquifers (including coal seam aquifers), abandoned coal mines, and in the shallow water-bearing zone. The Department has recommended a condition of consent which requires Austar to update its SWMP. The Department is however satisfied that groundwater impacts would not be significant during and following mining in longwall A5a.

5.4 Other Issues

The Department has assessed other potential impacts from the proposed modification, and these impacts are considered in Table 2 below:

Table 2: Other issues

Issue	Consideration
<i>Flora & Fauna</i>	The land within the longwall A5a mining area has been predominately cleared for grazing, however it contains small sections of <i>Riparian Swamp Oak - Rough-barked Apple Open Forest</i> and <i>Spotted Gum – Ironbark Forest</i> EECs. DECCW requested that Austar should monitor the condition of the EECs during mining of longwall A5a. The Department has recommended a condition of consent to include longwall A5a in its approved monitoring program. As the proposed modification would not involve any land clearing, the Department is satisfied that impacts to biodiversity within the A5a mining area would be minor. Austar's current biodiversity management plan would be revised to include longwall A5a. The Department has recommended a condition of consent which requires this plan to be updated and considers this would adequately manage any potential flora and fauna impacts.
<i>Heritage</i>	No significant Aboriginal or European heritage sites have been recorded within the longwall A5a mining area. Austar has committed to including the Stage 2 mining area in its Aboriginal Cultural Heritage Management Plan for the Austar Coal Mine. The Department proposes that this commitment be reflected as a condition of consent.
<i>Socio-economic</i>	The proposed modification would ensure that longwall mining could continue at the mine during construction of the surface infrastructure for the Stage 3 mining area. Should a discontinuity instead occur in coal production, a significant proportion of the mine's 275 employees may be required to be temporarily stood down. The proposed modification would prevent this, and the social impact that this would cause. The additional coal recovered would also provide income to the State through taxes and royalties.

6. RECOMMENDED CONDITIONS

A Notice of Modification has been prepared (see Tag A). The Department has recommended revised conditions of consent to manage and/or mitigate additional minor impacts from longwall A5a. The Department has also taken the opportunity to make minor administrative changes, to contemporise the consent. Austar has considered and accepted the revised conditions.

7. CONCLUSION

Austar is seeking to modify the development consent DA 29/95 for the Austar Coal Mine, to include an additional longwall panel to the Stage 2 mining area, and to extract this coal using LTCC technology. The Department is confident that any additional impacts arising from mining the additional longwall panel would not be significant, and would be able to be managed within the mine's existing framework of management plans (including its SMP). The Austar coal mine provides significant direct and indirect socio-economic benefits to the Cessnock region. The Department is satisfied that the proposed modification is generally in the public interest, and should be approved, subject to conditions.

8. RECOMMENDATION

It is RECOMMENDED that the Acting Director, Mining and Industry Projects, as delegate of the Minister for Planning:

- consider the findings and recommendations of this report;
- approve the modification application, subject to conditions, under section 75W of the *Environmental Planning and Assessment Act 1979*; and
- sign the attached Notice of Modification (Tagged A).

SIGNED 6/12/10

Colin Phillips

A/Manager, Mining Projects

NSW Government
Department of Planning

SIGNED 6/12/10

Howard Reed

A/Director, Mining and Industry Projects