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Dear David

INDEPENDENT EXPERT PANEL REVIEW OF PROPOSED REVISIONS TO DEVELOPMENT CONSENT CONDITIONS

Centennial Coal Company Limited (CCCL), the owner of the Airly Mine, is proposing a modification to the wording of Airly Mine Extension Project (SSD 5581) Development Consent Conditions (Schedule 3 Condition 1). The intent of these changes is to clarify the consent conditions that apply to the various mining zones around the significant cliff lines at the site. DPE commissioned Professor Ismet Canbulat (University of New South Wales) and Dr Ken Mills (SCT Operations Pty Ltd) as the Independent Expert Panel (IEP) to assist CCCL with clarification of the intent of recommendations in IRP (2016) so that the proposed changes to the wording of the conditions reflects this intent. This report presents the proposed changes, discussion of each of the conditions in relation to the intent of the IRP (2016) recommendations and endorsement of the proposed conditions.

The changes proposed by CCCL to Section 1 of Schedule 3 are as follows:

The Applicant must not carry out any second workings:

- a. *in the Panel and Pillar Zone that are within an angle of draw 26.5 degrees of the tops of cliffs identified in the Cliff Line Zone of First Workings before it has completed mining in at least four adjacent extraction panels in the Panel and Pillar Zone beneath Mount Airly;*
- b. *within 30 metres on the downslope side of cliffs identified in the Cliff Line Zone measured horizontally from the base of these cliffs;*
- c. *on the downslope side of the Cliff Line Zone except where these second workings:*
 - i. *are long term stable when all adjacent extraction has been undertaken*
 - ii. *and do not cause impacts or environmental consequences greater than specified in Table 1 of Schedule 3;*
- d. *within an angle of draw 26.5 degrees plus 50 metres from the edge of the New Hartley Shale Mine workings.*

The IEP recognises its role is not as an arbiter or decision maker but rather as a provider of expert guidance to CCCL and DPE on the technical issues.

1. Condition a.

The proposed change in wording presented in Condition a. relates to second workings on the plateau or upslope side of cliff formations. This change seeks to clarify that mining of the narrow panels in the Panel and Pillar Zone under the plateau area behind cliffs identified in the Cliff Line Zone of First Workings must not come within a distance defined by 26.5° angle of draw (i.e. half depth) of the top of the cliffs until at least four adjacent panels have been mined.

The intent of this condition is to ensure that relevant subsidence data and confidence in the subsidence monitoring systems are gained from a supercritical width panel geometry prior to there being any potential for the proposed mining to influence cliff stability. This requirement is consistent with the recommendations presented in IRP (2016).

The IEP endorses this change.

The IEP sees no need to link secondary mining in the form of pillar-splitting- and-quartering or other non-subsiding systems on the downslope of the cliffs to any mining that may or may not be undertaken on the upslope side of the cliffs. These are separate issues that can in the IEP's view be decoupled.

2. Conditions b. and c.

Condition b. is aimed to clarify that second workings in the form of pillar splitting-and-quartering may be conducted up to within 30m of the base of cliffs identified in the Cliff Line Zone of First Workings provided these workings are long term stable and cause only negligible subsidence.

Condition c. is aimed to clarify the nature of second workings that are permissible on the downslope side of the Cliff Line Zone of First Workings.

IRP (2016) concluded that the proposed pillar splitting-and-quartering geometry assessed in that study was likely to be long term stable and cause negligible subsidence at overburden depths between 30m and 110m.

In areas where the overburden depth is less than 110m at 30m from the base of the cliffs, pillar-splitting-and-quartering is acceptable up to within 30m of the base of the cliffs because this mining geometry is expected to be long term stable and have no potential to destabilise cliff formations. Such mining is considered to have no potential to cause impacts or environmental consequences greater than specified in Table 1 of Schedule 3.

In areas where the overburden is greater than 110m at 30m from the base of the cliffs, pillar-splitting-and-quartering as proposed by CCCL elsewhere is not considered necessarily long term stable and is therefore not consistent with

the intent to limit impacts and environmental consequences to less than those specified in Table 1 of Schedule 3. First workings options in areas where overburden depth is greater than 110m are expected to be acceptable provided the pillars formed are long term stable. The IEP understands CCCL do not currently propose any second workings downslope of the cliffs other than pillar-splitting-and-quartering. Other mining systems that may be developed in the future would need to ensure low levels of surface subsidence. These would need to be considered on their merits during the Extraction Plan process.

The controls on pillar-splitting-and-quartering relating to overburden depth were not specifically included in the Development Consent Conditions but are understood by the IEP to be consistent with CCCL's intended mining practices.

Condition c. is not intended to preclude other substantially non-subsiding mining systems being used at some point in the future providing they are long term stable and do not cause impacts or environmental consequences greater than specified in Table 1 of Schedule 3.

The IEP endorses the proposed changes in Conditions b. and c.

3. Condition d.

Conditions d. relates to avoiding second workings within 26.5° angle of draw plus 50m from the existing workings of the New Hartley Shale Mine. While this condition as stated is consistent with the existing consent condition, the wording is clarified so that the 26.5° angle of draw plus 50m barrier to New Hartley Shale Mine is measured from the edge of the existing New Hartley Shale Mine workings rather than the edge of the New Hartley Shale Mine Potential Interaction Zone in case these are interpreted as being different.


The intent of this condition is to ensure that any rock falls that occur over or near the New Hartley Shale Mine, including those that may occur naturally or because of previous shale mining, are able to be clearly distinguished as unrelated to and not caused by currently proposed mining at Airly Mine.

This requirement is consistent with the recommendations presented in IRP (2016).

The IEP endorses this change.

If you have any queries or require further clarification of any of these issues, please don't hesitate to get back to either of us.

Yours sincerely



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Disclaimer

Ismet Canbulat is employed as Professor and Kenneth Finlay Chair of Rock Mechanics at The University of New South Wales (UNSW) Sydney. In accordance with policy regulations of UNSW regarding external private consulting, it is recorded that this report has been prepared by the author in his private capacity as an independent consultant, and not as an employee of UNSW. The report does not necessarily reflect the views of UNSW, and has not relied upon any resources of UNSW.

References

IRP 2016 "Accuracy and Reliability of Mine Subsidence Impacts on Sensitive Features Across the Airly Mine Extension Project Application Area"
Report of the Independent Review Panel for Airly Mine dated 1 July 2016.