

## **APPENDIX A: CENTENNIAL'S RESPONSE TO THE COMMISSION'S REVIEW REPORT**

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# Centennial Coal

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Mr David Kitto  
Department of Planning and Environment  
PO BOX 39  
SYDNEY NSW 2000

Dear Mr Kitto

## **Re: Airly Mine Extension Project – Response to PAC Review Report**

On 13 November 2015, the NSW Planning and Assessment Commission (PAC) released its review report on the Airly Mine Extension Project. The PAC was satisfied that the Airly Mine Extension Project can be approved subject to conditions with nine recommendations made to be taken into consideration. Centennial's response to the nine recommendations made by the PAC in their review report is provided below.

***Recommendation 1 – The Applicant is to provide a proposed timeline of coal extraction, including a plan showing the expected progression of mining over the 25 year mine life.***

**Centennial Response –** The Airly Mine is a panel and pillar extraction operation. Typically decisions regarding the extraction undertaken by these types of operations are determined based on the geotechnical conditions found ahead of mining and the results of monitoring. Monitoring for long term pillar stability prior to extraction includes monitoring the following attributes:

- Roadway width, roadway height, pillar size
- Roof/floor displacements
- Pillar stress testing

In the event that this monitoring demonstrates variation from the design parameters, corrective actions will be taken. These corrective actions include consideration of changes to roadway widths, roadway height, pillar size, pillar retention, roof support and cessation of mining. These changes would be difficult to make in an appropriately defined adaptive management framework were a mine plan included in the conditions of approval (even as an appendix).

The design criteria proposed for the Airly Mine Extension Project for each mining zone have been defined and assessed within the Environmental Impact Statement, supporting appendices and responses made by Centennial Airly to submissions received during exhibition and assessment.

Centennial has undertaken similar mining methods at mining operations around Lake Macquarie that apply design criteria (as proposed by the Airly Mine Extension Project) rather than a detailed mine plan. Mine design and implementation is a key element of subsidence impact avoidance and management.

The mechanisms whereby this adaptive management framework is adopted are included in the Trigger Action Response Plan (**TARP**) within the existing approved Extraction Plan for the mine.

A plan showing the mining schedule has been provided as **Attachment 1** showing the mining of the resource in approximately 5 year blocks. Results of monitoring the mining activity will provide adaptive management input into future mining ensuring impacts remain within predicted levels.

**Recommendation 2** – *The proposed condition of consent that establishes the Panel of suitably qualified experts should specify that the Panel will be constituted by suitably qualified, experienced and independent experts (i.e. an Independent Expert Panel) whose appointment has been approved by the Department of Industry, Resources and Energy (DRE).*

**Centennial Response** – Following review of Centennial's submission (dated 22 October 2015) on the original DRE advice to the PAC (the **first advice** dated 8 October 2015), DRE forwarded further correspondence to the PAC on the primary elements of the first advice (the **second advice**). This second advice was provided to the PAC on 2 November 2015 and to Centennial on 17 November 2015 (after the PAC Review Report was published). The primary elements of that first advice were:

- (1) The inadequate mine design (Airly design of factor of safety <2 and angle of draw <26.5°, where industry standards suggest otherwise), leading to unacceptable cliff line instability
- (2) The establishment of an Independent Review Panel to provide advice on the appropriateness of a cliff protection zone, where this zone should be applied, design principles for long term pillar stability within this zone and other matters raised by the Principal Subsidence Engineer. This Panel should review the mine design criteria *prior* to approval of the Project.

Centennial's submission was based on the extensive consultation process undertaken during the development of the current approved Extraction Plan for the mine. This Extraction Plan required consideration of mine roof and floor conditions, pillar width to height ratios, final pillar dimensions and long term stability of pillars and the incorporation of measures to conserve and protect sensitive surface features, including cliff formations.

The Extraction Plan was developed in consultation with DRE and was peer reviewed by MSEC. A detailed TARP supporting the mine design was developed and includes independent peer review if performance criteria are exceeded and the adoption of an adaptive management process that includes consideration of:

- ☐ Increasing size of protection zones
- ☐ Moving around sensitive surface features
- ☐ Leaving additional pillars unmined
- ☐ Changing pillar dimensions/void widths
- ☐ Reducing size and extent of roadways
- ☐ Review and upgrade operational control systems

These measures were accepted by the DPE, following consultation with DRE, when approving the Extraction Plan in August 2015.

In addition, the application of a blanket 26.5 degree angle of draw will result in significant sterilisation of recoverable resources as follows:

- Sterilisation of approximately 5.4 million tonnes of panel and pillar coal
- Total loss of reserves of around 32% (taking into consideration lost development and extraction)

The combination of these two factors would render the operation unviable.

The second advice adopted the position taken in Centennial's submission. In particular, the DRE has recognized the factor of safety applied in the mine design as adequate to afford long term pillar stability, within the constraints of the already agreed measures within the current Extraction Plan. Centennial's proposed approach to adaptive management allows for modifications to be made to the mine design in the event performance measures are not met.

Correspondence from both department's concurred with Centennial's submission to the PAC Review Report on the DRE advice concluding that any independent expert panel should provide input into the Extraction Plan process and review (and provide advice) on the mine plan as part of the preliminary stages of each Extraction Plan. This advice is not required prior to determination.

Importantly, the lessons learned through the development of the existing Extraction Plan will provide a solid basis for the development and implementation of future extraction plans, such that environmental values, including cliff lines, can be conserved.

Centennial supports this position put forward by the DRE and supported by the DPE. However, Centennial considers that the input of independent experts should only be required if a breach of the performance measures identified in the conditions of consent is realised as per the approved TARP, and as agreed with the DRE and DPE during the development of the approved Extraction Plan.

Following approval of the Springvale Mine Extension Project in September 2015, and the consultation process with DPE during the assessment of that Project, Centennial's position on these panels has been:

- Independent panels should only review information provided to them by the Applicant when formulating their advice
- Independent review should only occur in the event performance criteria are exceeded
- Independent review panels should have strict timeframes for review
- Independent review panels should consider the social, environmental and economic impacts and benefits when providing advice
- Independent review panels should not be charged with any responsibility to modify approved activities

**Recommendation 3** - *the Independent Expert Panel should be established prior to determination, and undertake the following:*

- *review all submitted material on subsidence, including additional information supplied by the Applicant and its consultant, and comments from DRE and its Principal Subsidence Engineer;*
- *provide advice and recommendations about the following: - the accuracy and reliability of predicted subsidence impacts on sensitive surface features, particularly in relation to cliff lines in the vicinity of the areas to be mined beneath the former New Hartley Shale Mine; - the adequacy of the management regime in the proposed conditions of consent, including the performance criteria, management plans and monitoring requirements, in terms of providing appropriate protection to sensitive surface features.*

**Centennial Response** – As noted in response to Recommendation 2, the adaptive mine design approach proposed by Centennial Airly as part of the Airly Mine Extension Project is the same approach previously adopted and approved by the PAC through approval of Mod 3 to the current Airly Mine development consent.

The existing approved Extraction Plan includes a detailed TARP developed in consultation with the DRE. The mine design within the Extraction Plan and Extension Project Response to Submissions has been peer reviewed by one of the DRE recommended "Independent Review Panel" members. This peer review found that the mine design was conservative.

At the time the Extraction Plan was developed, Centennial undertook an extensive and detailed consultation process with both the DPE and DRE, to provide a litmus test for future Extraction Plans.

The mine design has a strong focus on adaptive management, as identified above and in the DRE correspondence dated 2 November 2015. The design has been derived from a recognition to provide

stable workings so as to, as far as practicable, minimise impacts to the environment and provide a safe working environment for Airly Mine employees.

This approach was subsequently detailed in the Mod 3 Extraction Plan and associated Trigger Action Response Plan (TARP) that was developed in consultation with DRE and approved by the Department of Planning and Environment on 23 June 2015. There is no change proposed to the adaptive mine design approach that is currently being implemented at Airly Mine for the area encompassed by the Airly Mine Extension Project.

On that basis, Centennial considers that the additional input of independent experts should only be required if a breach of the performance measures identified in the conditions of consent is realised as per the approved TARP, and as agreed with the DRE and DPE during the development of the approved Extraction Plan.

***Recommendation 4 – The proposed condition for the Extraction Plan expressly requires consultation with the Independent Expert Panel in preparing, revising and enforcing the Extraction Plans and associated management plans (including the Water Management Plan, Biodiversity Management Plan and Land Management Plan), particularly in relation to relevant mine design principles, the development of detailed Trigger Action Response Plans and performance indicators.***

**Centennial Response –** Centennial considers the role of the Panel should be to:

- undertake a review of existing available information provided to the Panel by Centennial Airly
- provide advice during the development of the Extraction Plan
- provide advice during the development of associated management plans

This advice should be limited to an analysis of the adequacy of monitoring and management measures proposed in the development of these plans. The advice should be provided to the Proponent and the DPE.

The mine design principles have been established throughout the development and assessment of the Airly Mine Extension Project EIS and supporting documents. As identified by the DRE, DPE and peer review experts, the mine design is conservative and the existing TARP allows for adequate consideration of measures that could be taken to adaptively manage the mining operations.

The need for revision or enforcement of Extraction Plans and any other conditions of approval should remain the responsibility of the consent authority (i.e. the Minister or by way of delegation, the Department of Planning) and not the Independent Expert Panel.

***Recommendation 5 – That all information relevant to the Independent Expert Panel's advice and recommendations is made publicly available on the Applicant's website.***

**Centennial Response –** Centennial supports the recommendation.

***Recommendation 6 – That, prior to determination, the Department seeks written confirmation from EPA that any residual issues relating to water discharges into Airly Creek and any downstream water quality impacts in the Gardens of Stone National Park can be adequately resolved, particularly in relation to the achievement of 99% species protection.***

**Centennial Response** – A meeting and site visit with representatives from the EPA (including ecotoxicology experts from the Office of Environment and Heritage) and Centennial was held at Airly Mine on 28 October 2015. Following this meeting, the EPA forwarded correspondence to the Planning Assessment Commission.

A letter was sent to the EPA by Centennial on 24 November 2015 detailing the agreed outcomes of this meeting.

In summary, the following matters were raised and addressed:

- (a) Water discharges to Airly Creek
- (b) Ecotoxicology monitoring.
- (c) Flow in Airly Creek, and in particular catchment modelling
- (d) The establishment of appropriate and relevant water quality concentration limits
- (e) The appropriate rainfall depth for the location
- (f) Volumetric discharge limits and arrangements of discharges

This letter is attached.

Following this consultation with the EPA and further review of the existing surface water impact assessment, Centennial considers that adequate measures are in place to ensure a level of protection to Airly Creek. The reasons for this include:

- (a) The mine is currently a dry mine, all water collected on site is used for process water. Discharges are not predicted unless there is a combination of the predicted ground water removal from the mine and high rainfall events.
- (b) The mine is located approximately 5 kilometres upstream from the National Park, where Airly Creek traverses grazing and other agricultural land uses before entering the Gardens of Stone National Park
- (c) Airly Creek is naturally brackish, with elevated background electrical conductivity, as a function of the underlying geology of the Shoalhaven Group (a geological unit corresponding to the depositional nature of the prehistoric marine setting)
- (d) Adequate dilution of discharges from the mine (during high rainfall events) are predicted to occur within a mixing zone approximately one kilometre downstream
- (e) Ecotoxicology assessment was undertaken at all dams with licenced discharge points on site, indicating varying levels of toxicity. These results represented considerable standing time with no discharge and no water is discharged from these dams except during high rainfall events.
- (f) Further eco-toxicity assessment and monitoring is proposed to be undertaken at licensed discharge point 1. As this dam would only discharge during high rainfall events where there is high levels of dilution, no toxicity would result from water discharged from the mine.
- (g) Water balance modelling of the Airly Creek catchment is undertaken (due to the low flow conditions in the Creek) indicating significant upstream influence of background water quality
- (h) Chemical analysis of all water samples collected upstream and downstream of the discharge points is undertaken as per the requirements of the Environmental Protection License, results indicating that background water quality is representative of the geology of the Shoalhaven Group

Further consultation between Centennial and the EPA regarding the establishment of appropriate water quality concentration limits is ongoing. The existing dataset developed for the Airly Mine includes the best available scientific evidence (as described in the Project EIS and supporting documents). These limits should be set at a level above which environmental harm may occur. Harm is measured through a multiple lines of evidence approach and includes consideration of ecotoxicology, macroinvertebrate and sediment analyses at a location downstream of the mine. These limits, and the nature, extent and location for monitoring, have been documented within the EIS.

**Recommendation 7** – *That the recommended condition of consent relating to the Water Management Plan should be strengthened to include specific consideration of the potential impacts to downstream water users of subsidence-related flow reductions in Gap Creek and Genowlan Creek, and the measures to implement the provision of compensatory water supply.*

**Centennial Response** – Centennial supports the recommendation that a compensatory water supply to any landowner of privately owned land whose water supply is adversely and directly impacted (other than an impact that is negligible) as a result of the Project.

The compensatory water supply measures must provide an alternative long-term supply of water that is equivalent to the loss attributed to the Project.

If Centennial is unable to provide an alternative long-term supply of water, then Centennial will provide alternative compensation to the landowner to the satisfaction of the Secretary.

**Recommendation 8** – *That the Department should include a condition of consent requiring that the Applicant provides an alternative, artificial water source to the Village Spring to ensure that bushwalkers and hikers have access to drinking water.*

**Centennial Response** – Centennial does not support this recommendation. The Draft Plan of Management for the Muggi Murum-Ban State Conservation Area (**Draft Plan**) states:

*The park provides opportunities for self-reliant recreation including four-wheel driving, nature study, camping, mountain biking, bushwalking and birdwatching.*

The Draft Plan further states under Management Response 3.7.1:

*Promote the park as a destination for sustainable, low impact recreation.*

And at Management Response 3.7.7:

*Rubbish bins will not be provided in the park. Visitors will be required to remove all of their rubbish when leaving.*

The State Conservation Area is administered by the NSW National Parks and Wildlife Service (NPWS). Centennial has consulted with the NPWS on the provision of an alternative, artificial water supply to the Village Spring. Following that consultation, Centennial has considered the recommendation and makes the following comments:

- The Village Spring is located within the vicinity of the Airly Village Ruins
- No camping will be permitted at the Airly Village Ruins
- The Airly Village Ruins, under the Draft Plan, will be accessible by foot
- The Airly Camping Area is located some two kilometres (four kilometre round trip) from the Airly Village Ruins
- There is currently no quality control on the Village Spring water quality, nor is there intended to be under the Draft Plan
- Any alternative water source would require significant infrastructure to install, which would not be in keeping with the management objectives of the Draft Plan
- In 2014, twenty (20) users accessed the Tramway Trail to the Airly Village Ruins, as per monitoring undertaken by the NPWS
- The installation and maintenance of an alternative, artificial water supply is not supported by Centennial or the NPWS

Centennial has supported the development of and approach taken in the Draft Plan of Management by proposing a mine design that avoids and minimises impacts and uses low impact monitoring

activities so as to minimise the footprint of the operation as far as practicable on the State Conservation Area. Installing a water supply at the Village Spring would be inconsistent with Centennial's approach to working within the State Conservation Area.

**Recommendation 9** – *That the proposed conditions of consent relating to visual mitigation measures are strengthened to ensure that vegetation screening or other mitigation measures commence before any construction occurs and are implemented in a timely manner.*

**Centennial Response** - Centennial Airly has committed to installing tree screening at the base of the reject emplacement area at the commencement of construction. Centennial can support a commitment to undertake visual screening planting 3 months prior to the commencement of construction of the reject emplacement area.

If you have any questions or require any further information in regards to this matter, please contact James Wearne (Group Approvals Manager) on 0407 207 530.

Yours sincerely



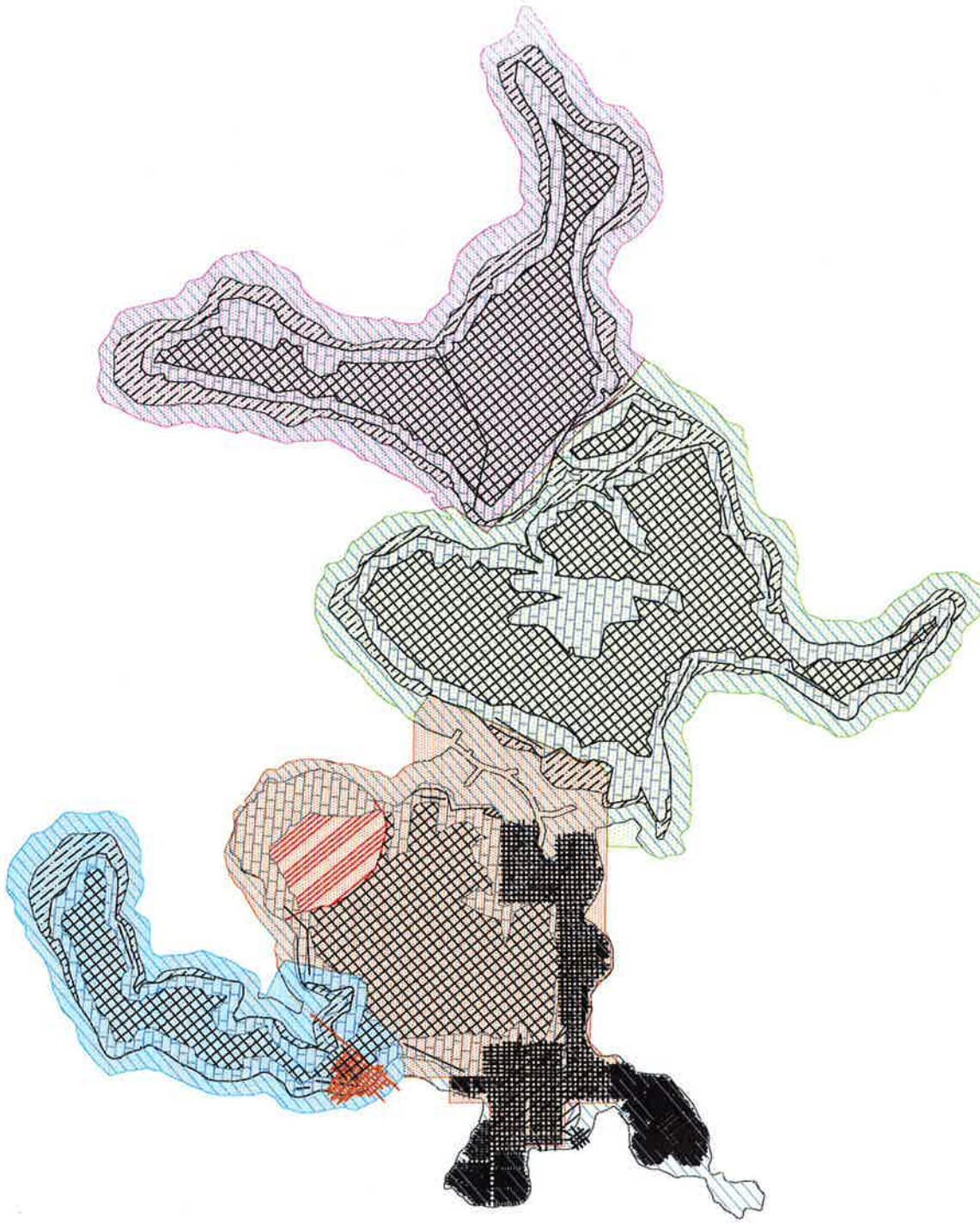
11/12/2015

Mary-Anne Crawford  
**General Manager Environment and Approvals**

**Attached**

- Plan AM00\_500 – Conceptual Airly Mine Schedule
- Letter to EPA following consultation meeting on 28 October 2015





LEGEND	PANEL AND PILLAR ZONE	DATE	14.01.2016
YEARS 1 to 4	CLIFF LINE ZONE OF FIRST WORKINGS	DRAWN	JS
YEARS 5 to 9	PARTIAL PILLAR EXTRACTION ZONE	SCALE	Not To Scale
YEARS 10 to 14	SHALLOW ZONE		
YEARS 15 to 20	NEW HARTLEY SHALE MINE INTERACTION ZONE		
	EXISTING WORKINGS		





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24 November 2015

Mr Allan Adams  
Regional Operations Officer – Central West  
NSW Environment Protection Authority  
PO Box 1388  
Bathurst NSW 2795

Dear Allan,

**Airly Mine – Notice of Variation to Licence No.12374**

On 28 October 2015, Centennial Airly held a meeting with the NSW Environment Protection Authority (EPA) at Airly Mine to discuss the draft notice of variation of Licence No. 12374. A site inspection of the surface facilities at the mine site was also undertaken. The outcomes following the meeting on the draft notice are outlined below, with the points outlined in the draft notice of variation listed in *italics*.

- *Amends P1 to insert new monitoring Points 9 and 10, and to update description of points 1, 7, 8.*

Centennial requested that the proposed new monitoring points listed under P1.3, EPA identification numbers 9 and 10 were removed from the licence and that ecotoxicity monitoring was undertaken at licenced discharge point no.1 (LDP001). Following an inspection of the catchment area of the mine site it appeared unlikely that a monitoring station would be required and the EPA agreed to review the requirement to install a flow monitoring station at Point 9. Centennial proposed that the flow in Airly Creek was estimated by undertaking water balance modelling of the catchment as opposed to the construction of a new flow monitoring station to demonstrate that the Airly Creek catchment was significantly greater than the catchment area of the mine site.

- *Amends L2.4 to remove points 7 and 8 and apply addition pollutant concentration limits to point 1.*

Centennial indicated it would consider the management of discharges of water from point 7 (LDP2) and point 8 (LDP3) such that the dams should only be permitted to discharge during rainfall events outlined in condition L2.5. In the Surface Water Impact Assessment (GHD, 2014c) for the Airly Mine Extension Project, the water quality observed in Airly Creek was described as being closely related to the natural geology of the catchment, having the same water type as found in the underlying Shoalhaven Group aquifer. Centennial requested that the concentration limits added to the licence under L2.4 were reviewed as the proposed



limits are unreasonable. The EPA agreed to review the pollutant concentration limits for turbidity and electrical conductivity at point 1.

- *Amends L2.5 to reflect that a rainfall depth of 56 millimetres for a 95<sup>th</sup> percentile 5 day rainfall event is appropriate for the location (Blue Mountains).*

Centennial noted that a rainfall depth of 44 millimetres for a 95<sup>th</sup> percentile 5 day rainfall event was appropriate for the location (Central Tablelands) and requested that it remained as it was listed on the current licence. The table below shows the results of analysis of the rainfall dataset for Ilford (Warragunyah) for the period January 1901 to December 2013. Using the Ilford rainfall dataset, the 95 percentile 5-day rainfall depth is 49.9 mm.

BOM Site	5-day Moving Sum (excluding zero rainfall days)
Ilford (Warragunyah)	49.9 mm

- *Amends L3.1 volumetric discharge limit to point 1.*

Centennial requested that the proposed new volume limit listed under L3.1 was removed from the licence. Discussion was based around the catchment of Airly Creek being significantly greater than the catchment area of the mine site and on this basis the EPA agreed to review the requirement. A fixed volumetric limit is currently applied to the licence which prescribes the volume of water that can be discharged via LDP001 irrespective of whether there is any water flowing in Airly Creek. Centennial proposed that to properly maintain water management structures at the mine site it would be unreasonable to place a condition on the Environment Protection Licence (EPL) such that water could only be discharged whilst there was water flowing in Airly Creek. Water that meets the water quality criteria prescribed in the EPL should be permitted to be discharged via LDP001 as required within a prescribed volumetric limit that does not rely on water flowing in Airly Creek.

- *Attaches O4.1 to restrict discharge from points 7 & 8 to periods of extreme wet weather*

Centennial requested that this new condition was removed from the draft licence as it was an onerous and unreasonable condition to be attached to the licence. Discussion was based on the existing condition that concentration limits do not apply when discharges occur that are solely a result of rainfall measured at the premises which exceeds a total of 44 millimetres of rainfall over any consecutive 5 day period. The EPA agreed to review the requirement of condition O4.1.

- *Attaches O4.2 to make clear arrangements for discharging from point 1 to achieve required dilution of mine water entering Airly Creek in line with discharge limit at L3.1.*

Centennial requested that this new condition was removed from the draft licence as it was an unreasonable condition to be attached to the licence. Due to the catchment of Airly Creek being significantly greater than the catchment area of the mine site the EPA agreed to review the inclusion of condition O4.2.

- *Amends M2.2 to require monitoring at new point 10 and to expand pollutants to be monitored at points 1 and 10.*

Centennial requested that EPA identification number 10 was removed from the licence as outlined above and the EPA agreed to review the inclusion of EPA identification number 10.

- *Attaches condition M4.1 requiring toxicity assessment of points 1 and 10 sampled water.*

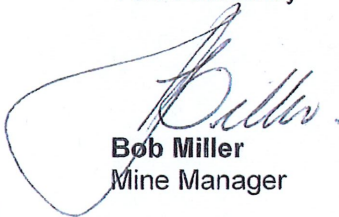
Centennial requested that the proposed new monitoring point, EPA identification number 10, was removed from the licence. Centennial proposed that ecotoxicity monitoring was undertaken at licenced discharge point no.1 (LDP001). Following discussion on the proposed toxicity assessment the EPA considered the following monitoring activity would be required to satisfy the assessment:

- ecotoxicity assessment to include water balance modelling of the catchment;
  - ecotoxicity monitoring to be undertaken at LDP001;
  - hand held flow monitoring to be undertaken at the existing Airly Creek monitoring location;
  - chemical analysis should be undertaken of water samples collected at the existing Airly Creek monitoring location;
  - chemical analysis should be undertaken of water samples collected at the existing Upstream Airly Creek monitoring location.
- *Amends M7.1 to include new Point 9 and to specify how Airly Creek streamflow is to be monitored.*

Centennial requested that the proposed new Point 9 under M7.1 was removed from the licence and the EPA agreed to review the requirement to install a flow monitoring station at Point 9.

Please refer any enquiries or comments to Sam Price, Environment and Community Officer on (02) 6359 2108 or at [sam.price@centennialcoal.com.au](mailto:sam.price@centennialcoal.com.au).

Yours sincerely



**Bob Miller**  
Mine Manager