



# Hume Coal & Berrima Rail Project

## Stakeholder Briefing to the Independent Planning Commission – Second Referral

29 June 2021

# Agenda

1. Opening comments on the Project
2. Hume Coal's response to the Commission's initial report (May 2019)
3. Hume Coal's response to DPIE's Assessment Report (June 2021)
4. Groundwater
  - Make good arrangements
5. Mining method
6. Closing comments and discussion

# The Project

- **Low impact underground coal mine** and associated rail infrastructure
- 23 year mine life, 3.5Mtpa.
- **High quality coal**, approx. 55% coking coal.
- No goaf i.e. no fracture systems like Long Wall and Bord & Pillar – **negligible subsidence**.
  - No houses will be impacted by underground mining.
- Reject emplacement underground, therefore **no permanent surface reject emplacement** and associated disturbance.
- Proposed **surface infrastructure area** is in an area largely **cleared by agricultural use** – therefore **no significant impact** on any **threatened species or communities**.
- Peak **construction** workforce of **414 FTEs**, and **300 FTE during operations**.
- **Net benefit to NSW of \$194M (\$200M royalties)**. Enable supply of coal to meet demand
  - noting the refusal of Dendrobiums' recent extension application.
  - Recently approved Tahmoor South Project life of 10 years.
- **Scope 1 GHG emissions** to be **fully offset**, thereby consistent with NSW Climate Change Policy Framework.

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# Commission's initial report - response

- Hume Coal commissioned **extensive work to address all the IPC recommendations** directed to the applicant, including independent peer reviews of:
  - mining method (recommendations R1-R3);
  - groundwater modelling (R4-R6) ; and
  - economic impacts and benefits, inc. the forecast market for coking coal (R20-R23).
- **Additional technical assessments** to respond to IPC recommendations included:
  - Surface water (R7 & R8) and surface level reject emplacement (R9)
  - Noise (R10 & R11)
  - Air quality (R12) and Greenhouse Gas (R13 & R14)
  - Visual impact (R15)
  - Historic heritage (R16-R18) and Biodiversity (cultural gardens) (R19)
  - Social impacts (R24 & R25)

# Commission's initial report - response

## Mining method (recommendations R1-R3)

Commission – recommendations in relation to safety, resource recovery and risk assessment.

Response – New independent expert engaged (Russell Howarth, 45 yrs experience).

### Relevant conclusions of independent review:

#### Safety

*'the proposed mining technique was found to be technically feasible' and that 'it cannot be inferred that the proposed mining system is unsafe on the basis that it has not been used before in NSW'*

#### Resource recovery

*'the mine layout maximizes recovery of the resource and results in a long-term stable pillar system that keeps mining induced surface subsidence impacts to an imperceptible level, minimizes hydrogeological impacts on subsurface strata above the Wongawilli Seam, and provides an ability to store mining wastes and excess water underground' (Russell Howarth & Associates, 2020).*

Discussed further at agenda item 5.

Independent review reports are contained in Appendix A of Hume Coal's Response Report to the Commission's initial report.

# Commission's initial report - response

## Groundwater modelling (R5)

Commission – recommendations in relation to engaging independent expert to resolve differences on groundwater modelling between Applicant and Dept.

Response – New independent expert engaged (Dr Lloyd Townley).

### **Relevant conclusions of independent review:**

*Townley (2020) concluded that **modelling** undertaken for the Hume Coal Project is **fit for purpose**, for predicting groundwater inflows to the proposed mine and drawdown of the water table within and near the Project area. The model is a Class 2 model, and has some elements of a Class 3 model.*

This conclusion is consistent with the previous expert reviews by **HydroAlgorithmics Pty Ltd (2016)**, **Kalf and Associates Pty Ltd (2016)** and **HydroGeoLogic (2017, 2018)** (appointed by DPIE)

Discussed further in response to DPIE's Assessment Report later in presentation (agenda item 4).

Updated water assessment, including independent review contained within Appendix B of Hume Coal's Response Report to the Commission's initial report.

# Commission's initial report - response

## Make good (R6)

Commission – recommended close attention to practical adequacy of make good provisions, including dispute resolution, economics and technical.

### Response

- a **credible and achievable pathway exists** to make good each bore potentially impacted by the project. Make good is **technically feasible**.

Discussed further in presentation (agenda item 4).

Updated water assessment, including independent review contained within Appendix B of Hume Coal's Response Report to the Commission's initial report.

# Commission's initial report - response

## Surface water (R7 & R8)

Commission - confirm whether the provisional Water Treatment Plant does form part of the Project and confirm how long under normal mining operations it would take for the reject emplacement stockpile and Primary Water Dam to reach capacity

### Response:

- Project has been **amended to remove the WTP.**
- **The shortest duration for the PWD to reach capacity is estimated to be 9.6 years, if reinjection were to cease in the first mining year**

Discussed further in response to DPIE's Assessment Report (agenda item 3)

Updated water assessment contained within Appendix B of Hume Coal's Response Report to the Commission's initial report.

# Commission's initial report - response

## Greenhouse Gas (R13 & R14)

Commission – more rigorous assessment of GHG emissions, and outline how emissions will be mitigated/offset.

### Response -

- Updated GHG assessment using in-situ gas values from exploration holes. Confirmed low gas content of the seam.
- **Very low** compared to other recent projects in the Southern Coalfields.

Mine	Status	Mine Life	Scope 1 (t CO <sub>2</sub> eq)
Hume Coal	Under assessment	23 years	178,245
Tahmoor South	Approved 23/4/21 by IPC	10 years	19,310,250
Dendrobium	Refused (not on GHGE grounds)	To 2048	17,000,000- 22,000,000

# Commission's initial report - response

## Greenhouse Gas (R13 & R14) - Mitigation

Emission reduction measures and offset potential – Project GHG emissions		
Emission type	Life of project emissions (t CO <sub>2</sub> -e)	Mitigation or offset measure(s)
Scope 1 - ventilation gas	11,611	<b>100% offset</b> via tree planting commensurate to fugitive gas emission rate
Scope 1 – diesel/petrol use	166,634	Alternative energy sources where practicable. Fuel consumption reductions.
Scope 2 – purchased electricity	1,552,006	Sourcing of electricity from renewable generation sources. Installation of solar power for onsite administration building requirements. Planned for as close to 100% use as possible.
Scope 3 – end use of product coal	104,745,843	All product coal to be sold to Paris Agreement signatories only.

# Commission's initial report - response

## Visual impact (R15)

Commission - Further visual impact assessment should be completed for assessment

### Response -

- Revised visual impact assessment completed to industry standards included within the UK document *Guidelines for Landscape and Visual Impact Assessment (GLVIA) Third Edition* (Landscape Institute 2013)
- 4 landholders will potentially have a view of the SIA (without screening). Screening committed to, which will further reduce potential for views.

Discussed further later in response to DPIE's Assessment Report (agenda item 3)

Updated VIA contained within Appendix E of Hume Coal's Response Report to the Commission's initial report.



# Commission's initial report - response

## Historic heritage (R16-R18) and Biodiversity (R19)

Commission - potential impact of water table drawdown on heritage items, address the recommendations of the Heritage Council of NSW, prepare revised Statement of Heritage Impact Assessment and visual impact assessment, and undertake further technical assessment on the impacts on private gardens, exotic trees and native vegetation from a declining water table.

### Response:

All heritage gardens occur where the Wianamatta Group shale outcrops, including Mereworth House and Garden. Due to the low hydraulic conductivity of the Wianamatta Group shale, predicted impacts to groundwater resources will not result in impacts to heritage items within or in the vicinity of the Project area.

- 9.8 ha of **non-native vegetation** under the 50<sup>th</sup> percentile results. This only represents 0.08% of the cultural landscape study area and 0.06% of the common boundary of the cultural landscapes
- 10.3 ha of **non-native vegetation** under the 67<sup>th</sup> percentile results. This only represents 0.09% of the cultural landscape study area and 0.07% of the common boundary of the cultural landscapes
- 11.8 ha of **non-native vegetation** under the 90<sup>th</sup> percentile results. This only represents 0.11% of the cultural landscape study area and 0.08% of the common boundary of the cultural landscapes.

Updated Statement of Heritage Impact (SoHI), including archaeological assessment and an assessment of the groundwater dependence of cultural gardens is contained within Appendix F and Appendix G of Hume Coal's Response Report to the Commission's initial report.

# Commission's initial report - response

## Social impact assessment (R24 & R25)

Commission - update Social Impact Assessment in accordance with the Department's 'Social Impact Assessment Guidelines – September 2017' and ensure consistency with the assumptions of the revised Economic Impact Assessment.

### Response:

An updated SIA was prepared in accordance with the Department's Social Impact Assessment Guidelines – September 2017 and took into consideration the revised Economic Impact Assessment to ensure consistency between assumptions used in both updated assessments and incorporated both the Hume Coal Project and the Berrima Rail Project.

Discussed further in response to DPIE's Assessment Report (agenda item 3)

Updated SIA contained within Appendix J of Hume Coal's Response Report to the Commission's initial report.

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## Response to DPIE Assessment Report conclusions (item 325)

*“The Department does not consider that these economic benefits outweigh the project’s actual and potential environmental and social impacts.”*

- The reasons DPIE has put forward to support the above statement are summarised under item 325 of the Assessment Report.
- Hume Coal’s responses to these reasons are presented in the following slides.
- With respect to the economic benefits – the project will result in a **net benefit to NSW of \$194M**. The project is committed to **best practice environmental management** and mitigation measures. Some of these come at a significant cost, which Hume Coal is committed to, eg:
  - No goaf rather than longwall to avoid all subsidence
  - Covered coal wagons to avoid dust emissions from trains
  - Underground reject emplacement to reduce surface visual, air quality and noise impacts.
- However, this is to achieve a project that on balance achieves effective resource recovery with acceptable residual impacts, which still delivers significant economic benefits to the local community.

# DPIE Assessment Report conclusions - Groundwater

DPIE considers that: *(Item 325, bullets 1 and 2)*

- *Unacceptable groundwater drawdown impacts on a large number of groundwater users', as is the practicability of the proposed make good strategy...*
- *Impacts are likely to lead to significant dispute and disruption in the local community, and consequently, the project is not compatible with the rural land uses in the vicinity of the development.*
- Response:
  - a **credible and technically feasible pathway exists** to make good each bore potentially impacted by the project.
  - The **predicted number of bores to be impacted is comparable or less than other approved mines.**

Discussed in detail in agenda item 4.

# DPIE Assessment Report conclusions – Surface water

DPIE considers that: *(Item 325, bullet 3)*

*There remains unacceptable uncertainty about the potential surface water impacts on Sydney's drinking water catchment, given the mine design risks and the lack of a contingency strategy in the event that surface water discharge is required.*

- Zero discharge mine.
- There is not unacceptable uncertainty relating to mine design risks – discussed later in agenda item 5.
- Notwithstanding, the Goldsim water balance model was used to estimate the length of time it would take for the PWD to reach capacity (720 ML), if the option of reinjection of surplus water to underground voids is prevented or unavailable at any time during the mine life. Applied 107 climate scenarios.
- The **longest duration** for the PWD to reach capacity is estimated to be **16.5 years**, if reinjection were to cease in the first mining year.
- The **shortest duration** for the PWD to reach capacity is estimated to be **9.6 years**, if reinjection were to cease in the first mining year.
- Therefore there is **substantial capacity** in the PWD to safely store water in the event that reinjection is unavailable for a period of time. Appropriate **contingency** available.

# DPIE Assessment Report conclusions – Mine Design

DPIE considers that: *(Item 325, bullet 4)*

*There remains considerable uncertainty about the **mine design**, particularly in relation to the stability of the web pillars, with resultant unacceptable risks to workplace health and safety, and potentially to the environment.*

- Experts are in **reasonable agreement on the majority of the issues.**
- Small residual points of disagreement related to the modelling and issues of local instability.

Discussed in further detail in agenda item 5.

# DPIE Assessment Report conclusions – Amenity

DPIE considers that: *(Item 325, bullet 5 – bullet 7)*

- *The project would have significant amenity impacts on a number of rural-residential land users in the Medway Road area, including noise and visual impacts.*
- *The residual risks cannot be adequately managed through approval conditions, given the potential impacts and uncertainties.*
- Visual impacts to 4 landholders on Medway Road (based on DSM)
- Acoustic impacts to 11 landholders along Medway Road:
  - 9 dwellings predicted to experience ‘marginal’ residual noise and entitled to voluntary mitigation under the VLAMP.
  - 2 dwellings predicted to experience ‘significant’ residual noise levels and are therefore entitled to voluntary mitigation and acquisition
  - 1 property purchased already. Landowners engaged re: noise abatements.
  - DPIE accepted amendments for temporary rejects stockpile.
  - Mine site is adjacent to the Hume Motorway – 25,000 movements/day both ways.
- Approval conditions are a proven method for addressing residual risk in many jurisdictions.

# DPIE Assessment Report conclusions – Social Impact

DPIE's considers that: *(Item 325, bullet 8 – bullet 10)*

- *There remains strong and long-standing opposition to the project from the local and broader community and Council.*
- *The site is not suitable for a greenfield coal mine given the rural-residential and small-scale agricultural land use of the area, along with the growing tourism and heritage landscape focus, and the predicted impacts on these land uses;*
- *on balance, the site is not suitable for the mine, and the project is not in the public interest.*

The updated SIA considered the findings from the community engagement activities, submissions, academic research and technical studies to assess the consequences of the Hume Coal Project against the revised baseline study.

All the identified social impacts (positive and negative) that were supported by evidence and the perceived impacts were able to be effectively mitigated and managed using established strategies and adoption of transparent community and stakeholder engagement strategies as outlined in the Social Impact Management Plan (see section 9 of Appendix J of the Hume Coal IPC Response Report).

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# Groundwater – Minimal impacts

The key message is that **groundwater impacts are less than other mines.**

- the predicted **peak annual inflow** to Hume Coal mine is equivalent to the average inflow from a group of 29 mines
- the predicted **maximum extent of the 2 m drawdown** contour at Hume (2 km) is less than half the average 2 m drawdown extent (4.7 km) from a group of 10 mines
- the predicted time for **groundwater recovery** back to 2 m at the Hume Coal Project is less than a fourth of the average from a group of 15 mines.

# Groundwater – Make Good

## Make Good Strategy

- DPIE recognise that Make Good is **technically feasible**.
- a **credible and achievable pathway exists** to make good each bore potentially impacted by the project.
- A detailed make good strategy, outlining the approach to **every identified bore** has been developed.
- The **predicted number of bores to be impacted is comparable or less than other approved mines**. [50%ile - 84 bores in total, cumulative effect of other mines such as Tahmoor and Bulli Seam Operations is much greater at over 200 bores].
- Hume Coal is committed to achieving a mutually agreeable make good solution tailored to each bore.
- Baseline groundwater monitoring for Make Good has commenced at approximately 20 boreholes (15% of landowners), as agreed to by the landowner.
- By applying the concept of make good for landholder bores, the drawdown effects will be mitigated, and a landholder's access to water for farming and other purposes **will not be compromised**.

# Groundwater – Make Good

## Make Good Strategy

- Approx. 30 bores will require payment for electricity costs
- Approx. 30 bores will requiring lowering of pumps in boreholes to ensure that the water maintains similar head
- Remaining 30 bores or so likely to require redrilling to facilitate similar flows and quality

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## Mining method

- DPIE experts are both in **reasonably close agreement with Hume Coal on the vast majority of the issues.**
- They acknowledge that method is **extremely flexible** and detailed plan dimensions can be **readily modified** to maintain compliance with project objectives.
- They acknowledge that the overall proposed method is safe:
  - Method is amenable to utilizing changes in panel and pillar dimensions as engineering controls to ***“safely deliver target hydrogeological and surface subsidence objectives”*** (Galvin, 2020).
  - ***“majority of issues are being addressed .... to achieve a layout that is robust and safe”*** (Canbulat, 2020).
- The method is a variation on other partial/secondary extraction methods already in use and will be treated by the NSW Resource Regulator as a secondary extraction system.

# Mining method

- Small residual points of disagreement relate to the modelling and issues of local instability:
  - **Modelling** – may result in minor changes to pillar dimensions BUT do not question the overall regional stability of the mine layout.
  - **Local instability** – this issue is not dissimilar to any other form of secondary pillar extraction and will be adequately dealt with through normal risk-based operational management plans, procedures and approvals.
  - A further, major positive risk control factor is the remote-control nature of the proposed operation, which offers significant safety advantages.
- It is normal practice for any new mine to **continue to review and refine the mine design and plan details, as the project proceeds beyond initial approval** to detailed design and planning stages. The Hume mine design will be subject to similar future refinements and will then take account of the detailed issues raised by both Galvin and Canbulat.

# Mining method

- There is **no considerable uncertainty as claimed by DPIE**.
- Any mining activity involves a level of inherent or residual risk. The role of the mine management is to ensure such risk is managed to an acceptable and safe level.
- The NSW Resources Regulator, through the Chief Inspector of Coal Mines, made the following statements in relation to the Hume proposal (Garvin Burns, 17/05/2019):
  - *“it cannot be inferred that the method is unsafe on the basis it has not been previously applied in NSW”;*
  - *“There is no information in the Hume Coal submission which suggests to the Resources Regulator that Hume Coal may not possess the necessary expertise and capacity to identify and implement the required controls to manage these risks”;*
  - *“Inherent risk cannot be the sole determinant as to whether a mining operation will be safe or unsafe. Such a determination must be based on the adequacy of risk controls identified in Principal Hazard Management Plans...”.*
- Hume Coal will submit the detailed mine plans to the Resources Regulator under the existing provisions of legislation, as a “high risk activity”, prior to extraction.

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# STATE SIGNIFICANT DEVELOPMENT

- Mining method is a great advantage it minimises fractures and goaf formation and as a result reduces water permeating into the mine. It protects the surface from subsidence and the aquifer from severe leakage.
- Mining method leaves 66% of coal remaining in situ to support the overburden.
- All water take is covered by existing licences the mine has already purchased from the market place.
- The mine has a low carbon footprint, Scope 1 and Scope 2 will be significantly offset. Scope 3 only sold to Paris Agreement signatories.
- Existing rail infrastructure goes to existing port with export capacity.
- Hume Coal has undergone extensive mitigation by design iterations to minimise environmental and social impacts.