20th February 2023

Dear Mudgee Wine Association Members,

RE: Bowdens Silver Project – unresolved technical issues regarding Acid Mine Drainage risk

Thank you for the opportunity to speak with you on Monday (13.02.23).

As requested in the meeting, please find below a summary of key concerns regarding design flaws and unresolved technical issues of the Bowdens Silver Project, specifically in relation to acid mine drainage, impacts to ground and surface water as well as air quality as it relates to dust.

Background

Bowdens propose an open cut mine operation of which over 50% of the waste rock and the processed tailings are classified as being potentially acid forming (PAF). The Waste Rock Emplacement (WRE) and the Tailings Storage Facility (TSF) are two significant management risks as they will remain on site forever. The WRE is expected to take up an area of 77ha and the TSF a further 112ha respectively. This project proposes to manage these risks by encapsulating acid forming contents in impermeable material:

- Underneath the Waste Rock Emplacement using an HDPE (Hi density polyethylene) liner and underneath the Tailings Storage Facility using clay and a BGM (bituminous geomembrane liner)
- Above the PAF material using Store and Release covers including a GCL (Geosynthetic Clay Liner) for both the WRE and TSF

DPE Expert Review

As part of its approval process, in 2022 the NSW Department of Planning & Environment (DPE) engaged expert environmental consultancy, Earth Systems, to review Acid Mine Drainage and Surface Water impacts of the Bowdens project.

Earth Systems concluded that Bowdens' proposed approach was technically unresolved and inappropriate for the management of acid mine drainage from potentially acid forming material in the waste rock emplacement (WRE) and tailings storage facility (TSF). Earth Systems stated:

- *"It remains our advice that the design of these facilities will need to be updated, noting that GCL liners have a limited design life, store-and-release covers are not suitable for AMD control, and the longevity of AMD generation from PAF waste rock is unknown but may continue for hundreds of years."*¹
- *"The waste rock dump design is unproven and appears substantially problematic, with initial indications that the site could be establishing the need for water treatment in perpetuity."*²

¹ Earth Systems, Technical Memorandum - Acid and Metalliferous Drainage, 16th December 2022, page 1, paragraph 4 ² Earth Systems, Update On Independent Review – Acid And Metalliferous Drainage, 23rd November 2022, page 6, table 5

• "Store-and-release covers are used widely, but almost never in recent years for the purposes of AMD control. The proposed store-and-release cover systems are not considered an appropriate strategy for PAF waste rock or PAF tailings management."³

LAG Expert Review

As we discussed, the Earth Systems findings confirm concerns raised by independent mining expert, Michael White, when he reviewed the Bowdens EIS in 2020 for the Lue Action Group:

- "This author has not found any mine sites where the use of this design and technology at this scale has been successfully employed in either the short term or the long term".⁴
- "This proposed Project is using predictive modelling and small area field trials to claim its containment designs will manage and prevent AMD impacts on the surrounding environment during the project lifespan and for generations to come. There is no certainty that it will be effective."⁵

Ground Water Risks:

We also discussed other concerns raised by experts regarding the potential risks associated with the final pit lake and the unknown impacts of the geological faults beneath the mine site.

- "The open cut pit would be left as a final void with appropriate design to ensure it remains a terminal groundwater sink" ... "If unmitigated, there would be a more than 50% chance that the water level could increase above the level required for the pit to become a throughflow system".⁶
- *"Figures show considerable layer deviations at the mine site, but there was no commentary provided to justify this representation ... the role of the mapped fault structures is not discussed."*⁷
- The assertion that the perturbations would be 'of little consequence to predictions' is not objectively justified and is questionable'⁸.
- It is concluded that the model layering has been poorly executed."9

Surface Water & Dust Suppression Risks:

Both independent surface water experts Earth Systems (DPE) and Shireen Baguley (LAG) recently identified that Bowden's surface water balance model is severely flawed and raised doubt around water availability. The 2020 EIS included an external water supply pipeline from Ulan Coalfields, however when this was unable to be secured, the project was amended in 2022, claiming all water requirements could be sourced from the site. As a result, there are serious concerns around impacts to water users downstream and Bowdens' ability to manage dust suppression with such water

³ Earth Systems, Update On Independent Review – Acid And Metalliferous Drainage, 23rd November 2022, page 6, table 5 ⁴ White, A High Level Mining Review of the Bowdens Lead, Zinc, Silver Project, July 2020, page 6, paragraph 2

 ⁵ White, A High Level Mining Review of the Bowdens Lead, Zinc, Silver Project, July 2020, page 6, paragraph 2
⁶ White, A High Level Mining Review of the Bowdens Lead, Zinc, Silver Project, July 2020, page 6, paragraph 6
⁶ DPE, Bowdens Silver Assessment Report, December 2022, page 35, paragraph 174

⁷ Middlemis, Bowdens Silver Project Groundwater Assessment Review, 19th December 2022, page 13, paragraph 2

⁸ Middlemis, Bowdens Silver Project Groundwater Assessment Review, 19th December 2022, page 14, paragraph 1

⁹ Middlemis, Bowdens Silver Project Groundwater Assessment Review, 19th December 2022, page 15, paragraph 2

constraints. Bowden's acknowledge that "during dry weather periods, when evaporation is high, more water for dust suppression would be required."¹⁰ However:

- Bowdens have decreased the average water requirements for dust suppression from 204ML/year (WRM 2020) to 131ML/year (WRM 2022) with little explanation as to why.¹¹
- DPE's water expert Earth Systems noted that Bowdens explanation for this was not supported by data, nor were uncertainties in dust suppression requirements considered in the sensitivity analysis of the water balance model.¹²
- "The primary means by which the project would be dispersing any heavy metals would be metal particles attached to dust, generated from the site"¹³

Whilst there are numerous other aspects to this project that warrant the attention of Wine producers in the region, I hope that this has been a useful brief summary of some of the concerns related to acid mine drainage, impacts to ground and surface water as well as air quality related to dust .

In conclusion we are concerned that in recommending the Bowdens Project for approval, the NSW DPE has ignored the advice of its own independent experts, who conclude that Bowdens proposed technical risk management strategies are technically unresolved and inappropriate.

These technical issues are not supposed to be resolved in Conditions of Consent. The DPE has failed in its duty to provide adequate protection to the MWRC and its communities from the serious environmental, economic, and social risks posed by the project.

As such, we encourage stakeholders to object to the project through the NSW Independent Planning Commission's portal to ensure this project does not proceed with risk management strategies that are unproven and technically unsound.

Many thanks,

Jack White (on behalf of Lue Action Group)

¹⁰ Baguley, S. Proposed Bowdens Mine Surface Water Report, February 2023

¹¹ Baguley, S. Proposed Bowdens Mine Surface Water Report, February 2023

¹² Baguley, S. Proposed Bowdens Mine Surface Water Report, February 2023

¹³ Stephen O'Donoghue, DPE & IPC Meeting transcript 30th January, 2023 p 15