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22 May 2024

NSW Department of Planning, Housing and Infrastructure
Attention: Joe Fittell

Email: Via the Major Projects Portal

Dear Mr Fittell

**Second Submission - HVO North and South Open Cut Coal Continuation Projects (SSD-11826681 and SSD-11826621) - EPA Comments to Response to Submissions**

Thank you for the request for the NSW Environment Protection Authority (EPA) to review the proposed Hunter Valley Operations Continuation Project North and South Open Cut Coal Continuation Projects (the **Project**) (SSD-11826681 and SSD-11826621) and the Response to Submissions (RTS) received via the Major Projects Portal on 14 November 2023.

The EPA had previously responded to the Project's Environmental Impact Statement which included comments that additional information was required for the EPA to complete its assessment of air and noise impacts associated with the Project. This submission provides additional comments in **Attachment A** on climate change impacts and the greenhouse gas assessment.

These comments are provided to assist Department of Planning, Housing and Infrastructure (DPHI) and the NSW Independent Planning Commission in their assessment and determination of the Project.

The EPA has reviewed the RTS and supporting attachments in relation to Greenhouse Gas (GHG) emissions, and the Proponent's response to the DPHI Request for Information (RFI) dated 11 March 2024 to address issues raised in the:

- EPA's submission on the exhibited EIS dated 6 March 2023; and
- NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) Net Zero Emissions Modelling team's submission on the Greenhouse Gas Assessment dated the 27 February 2023.

In 2023, the NSW Parliament passed the *Climate Change (Net Zero Future) Act 2023* which sets legislated emission reduction targets of 50% of 2005 levels by 2030, 70% by 2035 and Net Zero by 2050. The latest projections show that additional action needs to be taken across NSW to meet these legislated emission reduction targets. It will be necessary for all sectors to ratchet down their emissions to meet the interim targets for 2030, 2035 and Net Zero by 2050.

This proposal is the largest coal mining proposal ever put forward in NSW. In its current form, the modelling indicates this proposal is likely to make up approximately 14% of future new coal production in NSW between 2024 and 2050 and has significant unabated GHG emissions.

Consistent with the principles in the *Draft NSW EPA Guide for Large Emitters,* the EPA expects proponents to avoid and minimise scope one and two emissions, and only use offsets as a last resort for residual emissions that cannot be avoided or minimised. The EPA prefers proponents

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to reduce their reliance on carbon offsets generated outside of NSW as, under current frameworks, offsets generated outside of NSW cannot be counted in the NSW emissions inventory.

The Project relies on offsets, with no detail on where the offsets will be generated. If approved, in its current form, modelling indicates the Project will generate a significant amount of GHG emissions, accounting for 35% of all NSW coal sector GHG emissions in the absence of any onsite abatement or offsetting within NSW in 2045. This represents over 3.5% of NSW total emissions in 2045. However, if the offsets are obtained from within NSW, modelling indicates the Project would account for approximately 5.2% of all NSW coal sector GHG emissions and 0.5% of NSW total emissions in 2045.

Without changes to avoid or mitigate some of the forecast GHG emissions, this proposal may contribute to other parts of the NSW economy having to reduce emissions faster for NSW to remain on track to meet the legislated Net Zero Emissions target in 2050.

The EPA is willing to work with the Proponent to consider modifications to the proposal that will reduce GHG emissions from this Project.

In the absence of changes to the Project to reduce GHG emissions, the EPA recommends that regular reports be provided on technologies available to reduce emissions. These reports should be supported by an independent peer review process undertaken to test the veracity of the assessment and any associated recommendations.

Additionally, mining beyond 2040 should be restricted due to the significant fugitive emissions that will be generated from the deep coal reserves. If mining is to be permitted beyond 2040 and before any of the deeper coal reserves are mined, the EPA recommends that the consent be conditioned to require the proponent to demonstrate that there is a mitigation measure(s) available at the time, that can be implemented to abate the fugitive emissions from the deep coal reserves.

A condition should also be included that requires the proponent to undertake a study based on a robust methodology which demonstrates how they will abate these fugitive emissions, and that describes the mechanism that will be implemented to achieve this outcome before mining can continue. The study should incorporate best practice techniques available at that time, such as pre-drainage of gas, and beneficial reuse or treatment of that gas, and be supported by independent expert advice.

Should you require any further information about this matter, please contact Darren Wallett, Manager Environment Protection Planning, at environmentprotection.planning@epa.nsw.gov.au.

Yours sincerely,

**Nancy Chang**
**Executive Director, Strategy and Policy**
**NSW Environment Protection Authority**

# ATTACHMENT A – Additional Information Required

## GREENHOUSE GAS EMISSIONS

The Environment Protection Authority (EPA) has an important role in protecting the environment from climate change impacts and in delivering actions that will support New South Wales (NSW) to achieve its target of net zero emissions by 2050.

A key action in the EPA's *Climate Change Policy and Climate Change Action Plan 2023–26* is for the EPA to provide climate change advice to inform decision making in relation to project approvals for activities that will be regulated by the EPA (if approved).

The NSW and Australian Parliaments have passed legislation that provides a pathway towards Net Zero. It is important that any new project is contributing to NSW meeting its interim emissions-reduction targets under the *Climate Change (Net Zero Future) Act 2023* (Climate Change Act) to help deliver net zero emissions by 2050.

The Project in its current form, and without additional mitigation measures is estimated to release 29.3 million tonnes carbon dioxide equivalent ($MtCO_2$-e) into the atmosphere, with 14.3 $MtCO_2$-e assumed to be offset, leaving 15 $MtCO_2$-e being unabated between 2024 and 2050.

The proposed HVO North and South Open Cut Coal Continuation Project (the Project) is the most significant proposal for coal extraction in NSW's history. If approved, the mining activity would remain operational until 2050 and extract an additional 716 million tonnes (Mt) of coal over the life of both mines, constituting approximately 14% of future new coal production in NSW between 2024 and 2050.

The EPA requested the NSW Department of Climate Change, Energy, the Environment and Water's (DCCEEW) Net Zero Emissions Modelling (NZEM) team undertake a review of the revised Greenhouse Gas (GHG) assessment prepared for the Response to Submissions (RTS) Report. This also included the Proponent's response to the Department of Planning, Housing, and Infrastructure's (DPHI) Request for Information (RFI) dated 11 March 2024. The purpose of this review was to assess whether the matters raised in NZEM's submission on the exhibited EIS and its supporting GHG assessment dated 27 February 2023 were adequately addressed.

The outcomes of this review are outlined below.

### 1. Supporting NSW's Legislated Emission Reduction Targets

**a) It is recommended that further commitments be sought on how the Project will help contribute to NSW in meeting its associated GHG emissions reduction targets for 2030, 2035 and 2050 to support the *Climate Change (Net Zero Future) Act 2023*.**

The RTS states that over the entire Project lifetime (2024-2050), the Project is estimated to release 29.3 million tonnes carbon dioxide equivalent ($MtCO_2$-e) of scope 1 GHG emissions to the atmosphere.

To satisfy the Commonwealth Government's Safeguard mechanism, the Proponent has proposed to offset these Project emissions by 11.7 $MtCO_2$-e through either purchase and surrender of Australian Carbon Credit Units (ACCUs) or Safeguard Mechanism Credit units (SMCs) or by implementing abatement technologies (based on "whatever is cheapest").

The Proponent further advises in its response to the RFI that an additional 2.6 $MtCO_2$-e of emissions reduction will be sought through the voluntary surrender of additional ACCUs to help support the Climate Change Act targets. This brings the total Project emissions proposed to be offset to 14.3 $MtCO_2$-e.

Therefore, after the application of the Commonwealth Governments Safeguard Mechanism and the Proponents' additional commitment to help support the Climate Change Act targets, the Project will have 15 Mt $CO_2$-e of unabated GHG emissions over the life of the project.

From the information submitted, the Project's GHG emissions are expected to peak from 2042 to 2045, with annual scope 1 GHG emissions estimated to range from 1.2 to 1.7 $MtCO_2$-e. Of the 1.7 $MtCO_2$-e of emissions by year 2045:

- 76% will be from fugitive methane and carbon dioxide from the accessed coal seams,
- 23% of emissions will be from diesel combustion from mining vehicles.

The Proponent has not provided details of where the offsets will be generated. Any offsets not generated in NSW cannot currently count towards the NSW emissions inventory. If approved, modelling indicates it will account for approximately 35% of all NSW coal sector GHG emissions in 2045 in the absence of any onsite abatement or offsetting in NSW. This represents over 3.5% of NSW total emissions in 2045. These estimates are based on the NSW Government's 2024 GHG projections for NSW. If the Project is approved without any changes to emissions or abatement, the large increase in emissions from this Project in the mid-2040s, would mean that this project may contribute to requiring other parts of the NSW economy to compensate by making deeper emissions cuts for the state to remain on track with the NSW Government's target of net zero emissions by 2050.

While there are strategies and programs progressing to help support NSW to meet the net zero target, including the *EPAs Climate Change Action Plan 2023-26*, there are limited policies and programs in place at present to support faster decarbonisation of other sectors to provide a buffer for the level of increased emissions expected from the HVO expansion. At this stage, the NSW Government does not have a policy framework in place to support shifting the burden of decarbonisation from one sector to another.

Therefore, the EPA recommends that the Proponent should be required to provide a commitment to additional on-site mitigation strategies that will help make a meaningful contribution to NSW achieving its GHG emissions reduction targets under the Climate Change Act.

In particular, the EPA considers strategies such as the delivery of pre-drainage of gas and a more rapid fleet replacement will have a positive benefit in further reducing GHG emissions beyond what is currently proposed, as the current proposal relies heavily on offsets. The proponent has noted that these technologies are not available at the scale needed now. If this is the case and the project is approved, the EPA would expect regular assessments and reports of the technologies available to reduce greenhouse gas emissions based on the information available at the time. Access to the deep coal reserves post 2040 should be dependent on the availability of these technologies.

## 2. Emission reduction pathway and adequacy of proposed GHG mitigation measures

**a) A preferred emissions reduction pathway for the mitigation of GHG emissions down to the Safeguard Mechanism baseline and all residual emissions; and**
**b) Future commitment to adopting on-site GHG emissions reduction technologies for fugitive methane and carbon dioxide liberated during the extraction of coal and the emissions associated with diesel combustion.**

Impact of the Safeguard Mechanism on the Project and offsetting

The Proponent considered the reduced GHG baseline required under the reformed Safeguard Mechanism that will lead to a reduction in the net GHG emissions to 2050. To satisfy its obligations under the Safeguard Mechanism, the proponent has indicated that that it will need to reduce the total Project emissions by 11.7 $MtCO_2$-e through either purchase and surrender of ACCUs or SMCs or by implementing abatement technologies (based on "whatever is cheapest").

If offsets are cheaper, the bulk of the 11.7 $MtCO_2$-e of offsets will need to be purchased to satisfy the Commonwealth Government's Safeguard Mechanism obligations between 2037 and 2050, when the emissions are mostly fugitive emissions from the extraction of coal from deeper, more methane-rich coal seams.

The proponent further advises in its response to the RFI that an additional 2.6 $MtCO_2$ -e of emissions reduction will be sought through the voluntary surrender of additional ACCUs to help support the Climate Change Act targets.

This will leave 15 $MtCO_2$-e of residual unabated emissions to be released to the atmosphere between 2024 and 2050. Emissions during this period are associated with the extraction of coal and combustion from diesel vehicles engines used in mining activities.

According to the RTS and RFI, the preferred emissions reduction pathway appears unclear as the proponent has stated that further investigations will be needed to identify the cheapest mitigation option, where the proponent considers offsetting to be the only viable option.

However, the EPA is aware that these investigations may take many years over the life of the project and could lead to uncertain outcomes. In this regard such investigations would need to include a range of offsetting and abatement options that include robust, credible plans for dealing with these emissions that should be conditioned as part of the assessment process.

The application of a of a mitigation hierarchy should also be applied where emissions are firstly avoided then reduced as much as possible, before proposing to offset emissions to achieve specified emission reduction goals. This then should be followed by all reasonable and feasible on-site mitigations options. Offsetting should be used as a last resort. Offsets must be based on clear, enforceable, and accountable methods.

If offsetting is used, clarification should be sought on whether such an approach will provide a meaningful contribution to NSW's emission reduction targets under the Climate Change Act. In addition, whether the offsetting scheme is robust enough to cater for such large quantities of emissions and number of offsets, potential issues with double counting, and the location of the offsets (i.e. whether they are in NSW or other Australian jurisdictions). Under current policy frameworks, offsets purchased outside of NSW cannot currently be counted in the NSW emissions inventory.

The EPA requests that carbon offsets from NSW-based offset projects (i.e. NSW-sourced ACCUs or SMCs where the proponent is entitled to use them) be used where practicable. This enables direct emission reductions and co-benefits to accrue in NSW. Consistent with the principles in the *NSW EPA Guide for Large Emitters,* the EPA does not recommend the use of international carbon offsets as their benefits do not accrue in Australia. Use of Australian credits also ensures their integrity.

Mitigation Options

The annual mix of fugitive emissions from the extraction of coal from the deep coal seams and emissions associated with diesel combustion is roughly an equal mix up to 2040. However, there is a rapid increase in fugitive emissions from the coal seams from 2040 to 2045 due to coal extraction from deeper, gassier and more methane-rich reserves.

The EPA is concerned that the RTS does not include commitments to adopt on-site GHG emissions reduction technologies other than the proponent indicating that it would undertake further investigations after the approval is granted.

- Combustion Emissions

The proponent states in its response to the RFI that Scope 1 emissions are currently hard-to-abate due to the limited availability of technically and commercially feasible measures for emissions reduction. However, the proponent further states that there are considerable fleet replacement purchases scheduled throughout the life of the Project. Each one of these purchases is an opportunity to upgrade to the latest technology to reduce emissions.

In relation to emissions from diesel combustion, the RTS included an analysis of alternatives to diesel powered equipment. This included battery electric, biofuels, hydrogen, hybrids, and various fuel cells. It concluded that apart from biofuels the alternatives were either too immature for adoption or impractical for a multi-seam open cut mine. It also highlighted that the supply and cost of biofuels would limit its widespread use and that biofuels are not compatible with Tier 4 Final engines (i.e. new generation of diesel engines that reduce nitrogen oxide and particulate emissions by over 90%).

The RTS did not include an investigation into the use of renewable diesel, which is a different fuel to biodiesel and can be more readily used in current diesel engines without injector clogging issues. Further information provided by the proponent in its RFI dated 11 March 2024 highlighted the greenhouse gas benefits in its use. It also noted that the sustainable fuel industry is expected to grow significantly over the next 20 years, however at this time there are barriers in their use including cost and limited availability.

In this regard the EPA supports the Proponent's commitment for a review on the practical and feasible adoption of alternative power technologies and the use of sustainable fuels every three years. This would provide key steps during the life of the Project to continually assess the feasibility of sustainable fuels (such as renewable diesel and green hydrogen) as the sustainable fuel industry matures. This work will also help inform equipment and fleet replacement to help transition to diesel-powered alternatives.

However, it is important that such a program is structured so it provides a rigorous and robust review process that includes commitments by the proponent on the delivery on the outcomes of this work. To strengthen such a program the EPA recommends that it should be supported by an independent peer review process undertaken by a suitably qualified person/company. This process would then be able to test the veracity of the assessment and any associated recommendations. The EPA would like to continue work with DPHI on conditions of consent that could help support such a program should approval be granted.

- Coal Seam Fugitive Emissions

The Proponent engaged consultants CoalBed Energy to provide a feasibility assessment report in relation to pre-gas drainage. This report highlighted challenges associated with gas pre-drainage including the coal being relatively under-saturated with gas and having a low permeability (meaning the coal contains relatively little gas and may require stimulation by measures such as hydraulic fracturing).

The report also highlighted that the coal reservoirs with the highest methane gas contents (of the order of 5-7 cubic metre per tonne, $m^3/t$) are relatively deep and will not be encountered until 2043/44 which coincides with the highest fugitive emissions for the Project.

Although the proponent makes no mention on exploring pre-drainage as a mitigation option in its response to the RFI, the Proponent concluded in its RTS that it may be challenging to produce meaningful methane gas volumes at HVO North and South through pre-drainage. However, the Proponent recommended that:

- a study be undertaken as part of a post approval process to examine areas of higher potential for gas drainage and to investigate the feasibility of a pre-drainage program; and
- the scope of a gas pre-drainage trial be developed and provided to the Planning Secretary within two years of development consent being granted.

As fugitive methane and carbon dioxide emissions are a significant component of the 29.3 Mt $CO_2$-e, the EPA considers that such a detailed study should not be left to a post approval process that will have unknown outcomes.

In the absence of this study, the EPA recommends that mining beyond 2040 be conditional, due to the significant fugitive emissions that will be generated from the deep coal reserves.

If mining is to be permitted beyond 2040, the EPA recommends that the consent be conditioned to require the proponent to be able to demonstrate that there are mitigation measures available at the time that can be implemented to abate the fugitive emissions from the deep coal reserves. The conditions should include the requirement for a study based on a robust methodology which demonstrates how they will abate fugitive emissions and a mechanism that requires the implementation of an agreed abatement approach before mining can continue. The study must include best practice techniques available at that time, such as pre-drainage of gas, and beneficial reuse or treatment of that gas, and be supported by an independent peer review process undertaken by a suitably qualified person/company.

This study would provide an opportunity to gather additional data on coal saturation and permeability properties for the gas reservoir model, including a more extensive dataset from further drilling. This information would help to assess the feasibility of installing pre-drainage technologies and other options, including limiting access to coal reservoirs with the highest (methane) gas contents until such time that technology is established and implemented to help mitigate any fugitive GHG emissions to an appropriate level.

Following further analysis, a preferred pathway should be documented for either case, that outlines:

(a) analysis that shows that pre-drainage can be successfully deployed to reduce emissions from extraction of coal seams; or
(b) analysis that shows that pre-drainage is not a viable option for the Project and alternative mitigation solutions are required.

The EPA considers that this pre-drainage of gas may be an important mechanism to ensure the Project does not significantly impact on the NSW targets legislated under the Climate Change Act or require compensation from other sectors of the economy.