

06 March 2025

To Whom It May Concern

RE: Carbon Abatement at Narrabri Coal Operations in financial year 2023 – 24 (FY2024)

The responsible emitter, Narrabri Coal Operations Pty Ltd (NCO), operates the Narrabri Underground Mine facility in the northwest of New South Wales (NSW). NCO's fugitive emissions make up a significant majority of the total carbon emissions for the site. The mine's fugitive emissions are predominantly Carbon Dioxide (CO₂) with a minor portion of methane. As an underground coal mine, NCO faces the challenge of hard-to-abate CO₂ emissions, a common issue across the industry, and one that was communicated to the Government in the context of the industry consultation undertaken in relation to Safeguard Mechanism reforms. The limited readiness of technological options and the lack of cost-effective carbon abatement solutions present ongoing challenges in achieving a higher level of carbon abatement at NCO in FY2024.

In FY2024, the facility recorded elevated levels of CO₂ and relatively low concentrations of methane. These low methane levels rendered the pre-drainage gas (gas drained prior to mining) unsuitable for flaring or energy production. The methane concentrations in the main ventilation system were significantly lower than the minimum required to support the implementation of Ventilation Air Methane (VAM) technologies. As a result, NCO was unable to advance major carbon abatement efforts targeting methane.

Abating CO₂ is a complex challenge with no simple solution. The limited demand for CO₂ in NSW makes it difficult to develop a viable market for its reuse. Industries that tend to require high-purity CO₂ face significant barriers due to the high costs and energy demands of gas separation technologies. Furthermore, the remote location of Narrabri Mine adds complexity in respect of transportation.

Carbon Abatement Initiatives Undertaken in FY2024

Enclosed Flare for Pre-drainage Gas

While methane levels during FY2024 remain too low to support flaring, there is a potential that NCO's pre-drainage gas will reach a composition and consistency to allow for flaring in the future. As a result, the mine completed a review of providers for the procurement of an enclosed flare during FY2024. After conducting a comprehensive study and completing a 30% engineering design, the selected provider demonstrated its capability to deliver a custom flare tailored to the current pre-drainage equipment at NCO. When the appropriate gas levels are achieved, the flare will be installed onsite, enabling NCO to flare pre-drainage gas with methane content greater than 30% and oxygen levels below 6%, in compliance with regulatory requirements.

Sealing of the Northern Area (100 Series Panels)

NCO has consistently worked to enhance the sealing of the Northern 100 Panel mining area. NCO has focused on strengthening the integrity of goaf seals by addressing weak spots and using PUR injection to prevent leaks. In FY2024, NCO partnered with industry specialists to evaluate and reduce fugitive emissions from the old 100 Panel goafs. A notable achievement during FY2024 was the successful trial of a nitrogen chamber sealing system in the LW107 goaf, which showed significant potential for reducing emissions. Ongoing monitoring ensures that any issues are promptly detected and addressed, supporting sustained emission reductions.

Reducing Diesel Consumption

In line with the long-term sustainability goals, NCO continued exploring options for transitioning to cleaner energy sources by connecting more equipment to the main electrical grid, thus reducing the need for diesel. In FY2024, one diesel generator was decommissioned and replaced by grid power, further reducing emissions and reliance on diesel-powered equipment.

Carbon Neutral Electricity

In FY2024, NCO achieved carbon neutrality for 100% of its Scope 2 emissions in NSW by purchasing Climate Active certified carbon-neutral electricity. This effort supports the broader goal of transitioning to cleaner energy sources, where this can be justified commercially having regard to cost pressures throughout the business, minimising greenhouse gas emissions, and contributing to both regulatory compliance and national climate targets.

Additionally, the Narrabri Air Quality Management Plan for Stage 2 and 3 operations reflects an ongoing commitment to sustainability. It includes a focus on sourcing renewable or carbon-neutral energy where feasible, ensuring NCO continues to explore opportunities for further reducing the carbon footprint.

Narrabri Coal Solar Farm

Another important future initiative being explored is the proposed Whitehaven Solar Farm Project, which aims to generate 26 MW of electricity to supply the mine directly. If constructed, this project will help reduce NCO's reliance on grid power and lower emissions from electricity consumption. In FY2024, Whitehaven Coal lodged the scoping report, including a Battery Energy Storage System (BESS), and received the Scoping Environmental Assessment Requirements (SEARs). The inclusion of BESS will enhance energy storage capabilities, further supporting the efforts to transition to sustainable energy sources.

Concept Studies Explored FY2024

Gas Separation Plant

NCO explored the option of building a Gas Separation Plant to separate pre-drainage gas into methane and CO₂ streams. Methane concentrations above 30% are required to make this technology viable, making it possible to flare more methane or convert it into energy using bio-generators. The CO₂ product could potentially be utilised by interested stakeholders. Evaluations indicate power generation from pre-drainage gas is not technically viable at this stage. This is primarily due to low and fluctuating methane concentrations that fail to provide the consistent output necessary for cost-effective power generation. While this option has not yet proven feasible, NCO will continue to monitor developments in this space.

Carbon Dioxide Utilisation

Given the facility's high CO₂ production, NCO has been investigating ways to utilise CO₂ from the pre-drainage gas. During FY2024, NCO conducted various concept studies for CO₂ utilisation, including concept studies for algae farming through the creation of a miscanthus farm at the mine site. While these studies have not been pursued due to economic constraints, NCO will continue to monitor technological developments in this area.

NCO will continue to review long-term solutions by exploring innovative technologies and strategies for emissions reduction, despite the significant challenges posed by the readiness and economic viability of existing technologies. NCO's efforts in FY2024 demonstrate an ongoing commitment to reducing its carbon footprint ensuring compliance with regulatory requirements.

Whitehaven recognises the need to partner with industry to develop solutions to reduce or remove carbon emissions from energy and heavy industry. Over the past five years Whitehaven has invested \$5.6 million to Low Emissions Technology Australia (LETA) towards technology which can safely mitigate fugitive emissions from coal mines and will continue this important work as part of its decarbonisation roadmap.

Yours sincerely



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