

## ON OPPOSITION TO THE PROPOSED DENDROBIAN EXPANSION

The rationale for State Significant Infrastructure Status is flawed

According to the NSW Government, the rationale for declaring the expansion of Dendrobium Mine in Sydney and Wollongong's water catchment as State Significant Infrastructure is that the expansion of Dendrobium Mine is essential for the operation of the Port Kembla steelworks. However, Bluescope Steel had already made provision for purchasing and transporting coal from other mines [4], and has also secured considerable Federal and NSW Government funds to investigate transition to low- or zero-carbon steel production. [5, 6]

Damage to Sydney and Wollongong's drinking water catchment

Sydney is the only city in the world that allows longwall mining in a publicly owned water catchment. The proposed mining is in the protected Special Areas of the water catchment upon which 5 million people rely for drinking water. There should be no mining in the Special Areas of Greater Sydney Water Catchment; this is the stated position of WaterNSW and the legislated purpose of Special Area protection.

Mining induced subsidence will damage the watercourses and swamps that feed our drinking water reservoirs. Despite the reduction in the overall size of the project, longwalls themselves proposed for Area 5 are still 305m wide.

South 32 predicts that 305 metre wide longwall panels may result in subsidence of 2m to 2.45m [7]. Previous mines of similar width have caused 2.5m to 3 m of subsidence, so South 32's prediction may be conservative [8].

The expansion is not consistent with current land use of the area as a water catchment

The impact of this mine expansion will not be neutral or positive, it will leave the water catchment worse off in terms of both quantity and quality of water. Offsets in the form of the payment of money cannot replace a drinking water catchment. No matter how much water is recycled, or how many desalination plants we build before the next drought, our drinking water catchment is essential infrastructure, and should be prioritised over a privately-owned coal mine.

The cracking and dewatering of watercourses, swamps and aquifers is expected to add the loss of many more millions of litres of water each day to the 10 million litres daily water loss from Dendrobium's current and past mining. WaterNSW has been clear that mining in the Special Areas causes loss of yield to the reservoirs and the swamps and water courses that charge them.[9]

This mine expansion impacts on the ability of the water catchment to collect, clean, and store water and negatively impacts on the sustainability and resilience of the supply of drinking water for Sydney and Wollongong, in terms of both water quality and quantity. Water that enters and then flows out of mines picks up contaminants along the way. Current measures for managing this problem have been shown to be insufficient to prevent impacts on waterways [10].

The risk of pollution events in the catchment is real, and is not adequately addressed in the Environmental Impact Statement.

Should this proposal be approved, the mine will still come within 1000m of the Avon Reservoir. It will result in water losses from Avon, which is the only source of water supply to over 310,000 residents and businesses in the Illawarra region[11]. In dry years, the watercourses in the mined area that flow into Avon Reservoir are expected to totally dry up.

The southern catchment is vital to the sustainability and resilience of the supply of drinking water to Sydney and Wollongong. It supplies up to 30% of Greater Sydney's water in normal times, and in times when Warragamba is compromised by water quality (for example the 1998 cryptosporidium and giardia water crisis, or the 2019/20 black summer bushfires which burned the Warragamba catchment) they may supply even more.

DPIE's report on South 32's previous unsuccessful application to expand Dendrobium Mine noted that it will take 100 years for groundwater levels to stabilise in Area 5. Thus the drawdown/dewatering impacts of the mining will remain long after we are gone. This is a problem that we will hand down to future generations, descendants that will be more challenged by climate change, subject to more extreme weather events, longer and more severe droughts and more serious bushfire risk.

The discharge water from the mining will also need to be managed and treated, perhaps in perpetuity, and this is another burden that we leave for future generations. South 32 acknowledges that the mine will continue to discharge water long after that mine has closed. Their own estimate is that the mine will discharge 13 to 15 litres PER SECOND, for the foreseeable future, and certainly long after the mine has closed.

South 32 have said that the size and location of longwalls in Area 5 is necessary for the economic viability of the mine. They provide no

evidence or explanation as to why the profits of a private company should be prioritised over the drinking water supply of people living in Sydney and Wollongong.

## Water quality

According to DPIE's report on South 32's previous unsuccessful application to expand Dendrobium Mine, as water courses fracture due to mining induced subsidence, metals will be dissolved and leach into the water. This will lead to an increase in metals in the water courses and reservoirs. Furthermore, this increase will worsen in the 100 – 200 year period of groundwater recovery.

South 32 use a number of sediment ponds and dams as part of their operations. In the recently approved Modification 9, South 32 noted that management plans for sediment dams meet requirements determined by HEC (2022) in accordance with the Landcom(2004) and the Department of Environment and Climate Change (2008) guidelines, and that "[v]isual inspections of the drainage channels and sediment basins would be undertaken on a monthly basis and following rainfall events in excess of 89.7 mm in 5 days." In March of this year, the Illawarra experienced rain events considerably in excess of 89.7mm, with a number of occasions on which rainfall exceeded 100mm in a single day.

As in the case of bushfire risk, it is essential that mine infrastructure and monitoring is adequate to the real world conditions that we have already experienced, let alone the predicted and modelled increase in heavy rainfall and flooding that could impact sediment ponds and dams as the climate impacts intensify. It is simply not enough to say that the project meets outdated technical requirements, rather than standing up to the conditions that we are all experiencing.

## Damage to Aboriginal Cultural Heritage

There are 31 Aboriginal Heritage sites in and close to Area 5, with 6 of these sites directly over longwalls. Sites named in the Environmental Impact Statement include: 13 axe grinding grooves, 8 shelters with art, 2 shelters with deposits, 1 shelter with art and deposits, 6 shelters with art and potential archaeological deposits and 1 isolated find.

Representatives of the Illawarra Aboriginal Lands Council and other Registered Aboriginal Parties have also reminded South 32 that cultural heritage cannot be confined to specific and isolated 'sites'.

One comment from a Registered Aboriginal Party included in the report expresses it well: "From a cultural values perspective, a lot of importance has been placed on the item's locations, but in terms of cultural values everything that is on the land holds relevance to Aboriginal culture. Sites are the story law, and everything that forms part of the land provides context to the story of the culture. It's about whole of country rather than specific sites. Sadly, the mining company's response to the impact of this mine expansion on Aboriginal people and Aboriginal culture and heritage is that further reducing the impact on Aboriginal culture and heritage "may be less economically viable".

South 32 provide no evidence or explanation as to why the profits of a private company should be prioritised over the cultural heritage of Aboriginal people. Monitoring of Indigenous cultural sites is required but there is no requirement to preserve or avoid these sites, and no penalties to South32 when it destroys them. It is reprehensible for mining interests to desecrate Aboriginal Cultural Heritage whilst the area remains out-of-bounds for the Aboriginal community. [12]

## Impact on koalas and their habitat

Koalas have recently been declared Endangered in NSW. The Environmental Impact Statement notes that there are koalas living in the area that will be undermined, but includes no current survey of koala numbers or locations. There is no management plan for koalas who may be living in the ecosystems that would be cleared for infrastructure, other than offsetting that includes a bio-banking scheme that has not yet been negotiated, and payment to a government trust. It is hard to see how these future arrangements will prevent a devastating impact on actual, living koalas who may be present in land to be cleared for infrastructure.

Water loss and impact on swamps and waterways means that the ecosystems of the catchment are 'dewatered'. This is a real and devastating threat to plants and wildlife in the catchment, including a koala population that remains inadequately documented and studied.

It is very difficult for independent scientists to get access to the Special Areas of the catchment to undertake peer-reviewed research of koala populations in the Special Areas. Access to the Special Areas for independent assessment and preservations of koala populations is an integral part of ensuring the survival of koalas as a species.

## Impact on Aquatic ecosystems

The mine expansion will impact on aquatic habitat and lifeforms, due to both water loss and contamination of water from mine outflows, and leaching of minerals into waterways. It is very difficult for independent scientists to get access to the Special Areas of the catchment to undertake peer-reviewed research of aquatic habitat and lifeforms in the Special Areas.

## Impact on Upland Swamps

The upland swamps of the Woronora Plateau play an important role in the water catchment by capturing and holding water, filtering it and in times of drought releasing it slowly into the creeks and rivers that feed into the reservoirs. These swamps are classified as Endangered Ecological Communities (EEC) and are significant in terms of their biodiversity.

The upland swamps provide a mosaic of permanently wet peaty soil within a dry sandstone landscape. Each swamp is a unique island community containing rare plants and animals. The specialised flora and fauna of the EEC also carry individual protection at species level.

Dewatering the swamps will result in local extinctions in breach of multiple layers of State and Federal legislative protection. In its scoping report South 32 claim to “protect significant stream features”. However, the proposed mining will undermine around connected feeder swamps and smaller streams. This is a concerning misunderstanding of how the ‘significant stream features’ function and how subsidence and cracking around them impacts water storage and flow.

There are 22 swamps in the mining area, with 15 swamps directly above proposed longwalls. When rock beneath upland swamps is cracked, water drains away from swamps into the mining void, the swamps dessicate, the flora and fauna die off, and dryland species take over. The swamps lose their capacity to hold water in drier times. They are more prone to erosion and more prone to bushfire.

Research shows that swamps that have been undermined are less able to recover after bushfire compared to swamps that were not undermined.[13]

Coastal upland swamps also provide carbon capture and storage ecoservices. [14] Neither South32 or DPIE have considered or estimated greenhouse gas emissions associated with expected swamp destruction, or loss of carbon uptake that the swamps currently perform.

## Bushfire risk

Dewatering of the ecosystems of the catchment increases bushfire risk. The water catchment was one of the few unburnt areas of bushland in the 2020 fires and it needs to be protected from mining induced degradation. It is also close to the highly populated residential areas of Wollongong that are located along the Illawarra Escarpment. Making the catchment more fire prone makes the escarpment more fire prone.

The SEARS for this project specifically require that the mining company address climate impacts and hydrological changes in relation to bushfire management in its Environmental Impact Statement. The EIS notes that there are bushfire management plans in place, and discusses historical ignition factors involved in bushfire risk and reduction of fuel load. However it does not address climate or hydrological impacts.

It is concerning that the plan does not specify what methods might be used for fuel reduction, leaving open the possibility that planned burns may themselves become a bushfire ignition risk or that fuel reduction may include further unmonitored clearing of habitat and ecosystems.

Reference is made to the mitigation of methane emissions by 'flaring' of gas released from the mine. The bushfire plan does not discuss risk of ignition of bushfires from flaring of gas from the mine, or plans to mitigate this risk.



## Impact on sustainable jobs

It is claimed that the project will maintain the existing workforce of 650, plus an additional 50 workers, with 100 additional temporary workers during the construction phase. We note that even the non-construction workforce will not have 'jobs for life', but jobs until the end of the lease in 2041, or, more likely, until the mine closes because it is uneconomic to operate.

The real employment argument for this mine has always been the purported '10 000 jobs' at Bluescope steelworks and other businesses in the supply chain for the mine and the steelworks. What this argument fails to address, however, is that sustainable industries such as renewable hydrogen production, renewable energy, recycling of rare earths from e-waste, conventional recycling, and low or zero carbon steel production will also support thousands of jobs, with considerable research indicating that sustainable industries will actually deliver more jobs directly and indirectly, when compared to the fossil fuel industry. [15, 16]

The question for those weighing up how to best ensure employment opportunities now and in the future is whether to continue to risk an essential resource, water, for the sake of a few more years of an industry that is already struggling to find markets for its products, and is putting workers onto short term contracts in order to reduce future liabilities when the mine closes, or whether to prioritise the transition to industries that will inevitably grow as support for the fossil fuel industry rapidly becomes economically unviable and socially untenable.

Impact of coal wash, mine outflow and brine dumping on creeks, waterways, harbours and oceans

In April 2022, South 32 reported that it had stopped sales of coal wash material. This fact does not appear to have been reported in the Environmental Impact Statement. This directly contradicts assurances given in the Environmental Impact Statement that current approvals for the West Cliff Coal Emplacement Area will be adequate to the project because “IMC’s supply of coal wash for engineering purposes (e.g. civil construction fill), or for other beneficial uses, reducing the quantity of coal wash required to be emplaced at the West Cliff Coal Wash Emplacement Area”. [17]

It is concerning that Illawarra Metallurgical Coal reported in April that it would be ceasing sales of coal wash, and yet allowed an Environmental Impact Statement that included sales of coal wash as part of its operations in an Environmental Impact Statement that went on exhibition in May.

One fifth of the Dendrobium mine output is waste material that is trucked through the Special Area to another lease area and dumped into bushland. One million tonnes of coal wash per year will be piled at the head of George’s river in the West Cliff Coalwash Emplacement. Emplacement mounds will leach contaminated water into the headwaters of the Georges River.

Expansion of this mine would mean an increase in water discharged from the mine into Allans Creek, Unanderra. This is the same creek that was recently identified as exceeding safe levels of heavy metals.[9]

### Risk of damage from *Phytophthora cinnamomi*

*Phytophthora cinnamomi* is a mould. It is a soil-borne plant pathogen that can be spread on surfaces such as shoes or vehicles. It is not native to Australia, so our native plants have not evolved resistance. Any activity in the water catchment, including

construction and mining, risks spreading this pathogen to as yet unaffected areas unless stringent infection control measures are used.

## Climate impacts

As the Project is proposing to extract from Area 5 which has “a higher gas concentration”, the Extension project would more than triple current direct (Scope 1) greenhouse gas (GHG) emissions.

In total, the Dendrobium Extension Project would result in ~88 million tonnes CO<sub>2</sub>-e of GHGs. This is equivalent to the emissions of ~280,000 average Australian households over 18 years. The Extension would add between 12.2 – 15.5 million tonnes of CO<sub>2</sub>-e of direct Scope 1 and 2 GHGs to the NSW GHG inventory over the life of the Project.

Based on the average Scope 1 emissions (assuming flaring) of 789,551 tonnes CO<sub>2</sub>-e per annum, the Dendrobium Extension could become the 4th highest emitting coal mine in NSW.

These emissions will primarily be fugitive methane emissions, which must be urgently reduced. The International Energy Agency – in their Net Zero by 2050 report – has called for the “elimination of all technically avoidable methane emissions by 2030”.

It is pertinent to note that GHG modelling is only described during the life of the mine – i.e. estimations of ongoing fugitive emissions after 2041 have not been described in the EIS.

In 2020-21, 33 industrial facilities in NSW reported emitting more than 100,000 t CO<sub>2</sub>-e of GHG emissions (excluding electricity generation). Of these 33 facilities, 24 (~70%) were coal mines.[18].

Despite comprising a significant chunk of NSW's contribution to greenhouse gas emissions and climate change, there is no effective regulation to drive down direct and indirect (Scope 1 and 2) emissions from coal mining.

The NSW Department of Planning admitted in February 2022 in its assessment of GHG emissions at the Narrabri Underground Stage 3 coal project, that “there is no clear guidance on how to assess potential mitigation or abatement measures (e.g. what measures are considered ‘reasonable and feasible’ or ‘best practice’), both for current and future activities”[19]

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[18] The largest Scope 1 GHG emitting facilities in Australia (excluding the electricity sector) are covered by the Australian Government's Safeguard Mechanism. Facilities that emit more than 100,000 t CO<sub>2</sub>-e per annum are required to report to the Clean Energy Regulator.

[19] NSW DPE, January 2022, Narrabri Underground Mine Stage 3 Extension Project (SSD 10269) | Assessment Report , pg 55