SUBMISSION FOR THE DENDROBIUM MINE EXTENSION SSD-8194

FROM: SUTHERLAND SHIRE ENVIRONMENT CENTRE

DATE: 15 September 2019
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Objection to Illawarra Coal's Proposed Mine Extension for Dendrobium. Project SSD-8194.

South32 proposes to extend the Dendrobium Mine Project for 30 years using aggressive longwall mining in the Special Area of the Sydney Water catchment. Documented evidence confirms the adverse impacts that previous operations at Dendrobium (and other mines in this area) have had on the water catchment. This proposal will result in further damage to the catchment area and loss of irreplaceable water for Australia's largest city.

Sutherland Shire Environment Centre (SSEC) calls for the NSW Government to reject South32's Proposed Mine Extension for Dendrobium Mine.

Water must have Priority

Water is an essential resource for the operation of our society. In this case the Special Areas section of the Catchment Area is vital for the provision of safe drinking water for the largest city in Australia. Responsibility for the provision of water, and hence the management of the Sydney Catchment Area rests with WaterNSW.

In order to fulfil its responsibility, WaterNSW claims that:

> "In Declared Catchment Areas mining and coal seam gas activities must not result in a reduction in the quantity of surface and groundwater inflows to storages or loss of water from storages or their catchments." *(*WaterNSW, *Principles for Managing Mining and Coal Seam Gas Impacts in Declared Catchment Areas*, p2).

The condition that there must not be any loss of surface, ground or storage water has been breached by existing operations. In its submission to the Independent Expert Panel for Mining in the Catchment (IEPMC), WaterNSW state that:

> "It is now clear that subsidence effects over both of the operating mines [Dendrobium & Metropolitan] in the Special Areas are causing impacts on groundwater levels and surface water flows, which is a risk to the quantity of water available in the Special Areas. (WaterNSW, *Submission to The Independent Expert Panel for Mining in the Catchment*, March 2019, p5).

Attachment A, Table A1 of the WaterNSW submission provides an extensive list of observed impacts of mining by Dendrobium and Metropolitan mines in the Metropolitan and Woronora Special Areas that support the conclusion by WaterNSW, that the operation of this mine, 'is a risk to the quantity of water available'. Of special interest is the number of reported cases where the impacts are 'Greater than Predicted'.

The 2018 initial report of the IEPMC states that:

> "Supported by its own analysis, the Panel concludes that in the case of Dendrobium Mine:

- water inflow into all four mining areas (Areas 1, 2, 3A & 3B) exhibits some correlation with rainfall, ranging from weak in Area 3B to strong and rapid for Area 2
- it is very likely that the high rate of influx is associated with a connected fracture regime that extends upwards to the surface
- it is plausible that an average of around 3 ML/day of surface water and seepage from reservoirs is currently being diverted into the mine workings" (Independent Expert Panel for Mining in the Catchment, *Initial report on specific mining activities at the Metropolitan and Dendrobium coal mines*, 12 November 2018, p127)

The IEPMC 2018 report focused on water quantity impacts. The issue of water quality will be addressed in the panel's forthcoming 2019 report. However, the panel in reference to the importance of upland swamps, did comment that: 'The interaction of water with swamp soils and vegetation tends to produce baseflow that is high quality, clear and acidic, and with very low salinity.' (p95)

With respect to water quantity impacts, the *2016 Audit of the Sydney Drinking Water Catchment* reported that: '… there was reduced water availability across the Catchment in 2013-16 compared to the previous audit period and the overall total surface water extraction has increased since the previous audit periods.' (p 13). With respect to Dendrobium, the evidence confirms that Dendrobium mine, has in the past and continues in the present, to impact on surface, ground and storage water resources. With respect to water quality across all Sydney catchments, the 2016 Audit found that the majority of sites monitored had '… good levels of compliance with water quality guidelines …' (p 13). However the four listed storage and catchment areas having the poorest water quality, included the 'Upper Nepean River flowing to Lake Nepean' (p 13). This is part of the Special Area where the Dendrobium proposal is located. A link to bushfire impacts in this area are discussed in more detail below.

Dendrobium estimates the loss of water at '… less than 1% of the Avon and Cordeaux catchment yields' and states that they will compensate WaterNSW for the loss of '… surface water diverted from the Sydney drinking water catchment' (South32, *Dendrobium Mine – Plan for the Future: Coal for Steelmaking – Environmental Impact Statement*, July 2019, p ES ii).

However:

- evidence referred to above confirms that actual impacts have proved to be consistently greater that predicted by Dendrobium;
- compensation for water used does not replace lost water;
- in times of severe water shortage, water restrictions are imposed on users and currently some extreme water restrictions are in place for extreme drought impacted areas in NSW;
- unlike water, coal can easily be sourced from different locations. Australia has ample coal supplies and exports most of its coal production – as does Dendrobium;
- the water catchment is an integral part of our water supply infrastructure;
- it operates as an essential input into the production of the most valuable of all resources for society – water.
- if preserved in its pristine state, the catchment is a renewable and sustainable factor of production that will continue to capture water from rainfall;
- the only impediment to its operation would come from the lack of rainfall - as is being witnessed during the current severe drought. But the catchment would respond when the drought is broken by the return of rain.

- coal extracted from the catchment area is but a temporary resource – it is not a renewable product and hence not a sustainable resource.
- but any damage caused by mining, as documented from the Dendrobium operation, will incur permanent damage to the valuable resource that we have in the form of the Water catchment;
- no amount of monetary compensation for lost water or offsets for destruction of upland swamps or damage to catchment streams can reverse the damage and thus value to society of their water catchment -
  "The available data indicates that there has been a decline in the extent and condition of wetlands in some areas of the Catchment and efforts to rehabilitate wetlands that were impacted by longwall mining have been unsuccessful to date."(*2016 Audit of the Sydney Drinking Water Catchment*, (p 14).
- Catchment damage is permanent and without the catchment the dams cannot be filled!

Water must be given priority over coal mining

Dendrobium's Mining Methods

"The cumulative, and possibly accelerated, impact of mining on flow regimes in the Catchment is likely linked to the increased prevalence of the current longwall methods of underground mining". (Alluvium Consulting Australia, *2016 Audit of the Sydney Drinking Water Catchment*, 2017, p. 21)

Dendrobium claims that 'We will not mine under water supply reservoirs, named watercourses and key stream features.' (South32, *Dendrobium Mine – Plan for the Future: Coal for Steelmaking – Environmental Impact Statement*, July 2019, p ES ii) and yet their operations continue to damage the Water Catchment.

It should be accepted that:

- The water catchment is an integrated entity. Surface water is not restricted to narrow stream beds and reservoir surfaces, it is captured from the entire catchment area. That is why such huge areas were set aside for the catchment in the first place.
- The mining methods employed by Dendrobium are extremely aggressive. Longwall mining was introduced by the Colliery in 2005 and in the past has extended under major tributaries and to the edge of reservoirs.
- The proposed dimensions of each new longwall are again very large and extend under smaller surface water streams and are in close proximity of major water sources and reservoirs.
- The IEPMC reported 'vertical surface subsidence typically of 2.5 to 3m' in existing operations using similar dimension longwalls in the proposed expansion areas.
- With respect to current operations in the catchment that have in-principle approval, WaterNSW requested:
  - 'for Longwalls 17 and 18 at Dendrobium, the mining dimensions should be restricted to prevent increasing the environmental consequences on Wongawilli Creek and Avon Reservoir (e.g. substantial narrowing of longwalls and greater setbacks from Avon Reservoir), particularly given the presence of local geological structures, and
  - for Longwalls 303 to 306 at Metropolitan, a substantial setback from Eastern Tributary should be maintained to prevent any further environmental impacts or consequences, particularly given the performance criteria has already been

exceeded and shear planes and lineaments are likely to exist' (WaterNSW, *Submission to the Independent Expert Panel for Mining in the Catchment*, March 2019, p6)

- No concessions have been offered by Dendrobium to modify the aggressive longwall model they propose to continue to operate. And yet there seems to be a possible correlation between the introduction of this operational model and the increase in adverse impacts on the catchment.
- Recommendations from the *2016 Audit of the Sydney Drinking Water Catchment* to reduce mining risks and impacts in the Special Areas, (including Dendrobium) are listed in Table 6 P 26)
- Regardless of how many studies, risk evaluations and alleviation measures that might be offered, the inevitable conclusion is that mining and water are incompatible within the catchment area.

Coal Mining in the Catchment and Water Supply are Incompatible

Economic Issues

Dendrobium claim significant economic benefits for the Illawarra region and State and Federal governments from their current and proposed future operations. (South32, *Dendrobium Mine – Plan for the Future: Coal for Steelmaking – Environmental Impact Statement*, July 2019) However, these claims need to be put into perspective.

Claim: "Underground coal mining is currently the only major revenue generating industry that is both compatible with the catchment status of the Project area, and permissible with consent." (p ES-5)

Comment: It is FALSE to claim that coal mining is the 'only revenue generating industry' in the catchment. As argued above the catchment is an integral input to the production of water for two of the largest State-owned enterprises in NSW – WaterNSW and Sydney Water. Water supply production is not only one of the largest government operations in the State, it is also an essential service without which the city of Sydney could not operate. The productive capacity / value of the Sydney economy massively exceeds the productive value of all coal mining in the Illawarra, yet alone that of Dendrobium Colliery.

Claim: '… compatible with catchment …' (p ES-5)

Comment: This claim is FALSE – mining is clearly not compatible with the catchment as it imposes permanent damage on this essential piece of economic and social infrastructure and transfers costs to WaterNSW and Sydney Water.

Claim: '… permissible with consent …' (p ES-5)

Comment: This claim is TRUE. But why is this industry given consent to operate when no other activity, not even walking, is banned and the damage it imposes on the catchment renders it incompatible?

Claim: '… essential supply of metallurgical coal to BlueScope Port Kembla Steelworks …' (p ES-ii)

Comment: It is true that Dendrobium is a key supplier of BlueScope. But it is not an 'essential' supplier. There are alternative supplies of coal for BlueScope as Australia has extensive coal mines. There are also other techniques to produce of steel as the new owner of Whyalla Steelworks propose to transition to. However, it is accepted that both supply

and production changes could involve costs for BlueScope. Contrast this operation with the size and scope of Sydney Water and its supply of an essential product for economic and social sustainability.

Claim: Dendrobium is '… primarily producing metallurgical coal for steelmaking …' (p ES-i)

Comment: It is unclear what proportion of Dendrobium coal is high quality and metallurgical. Most Illawarra mines extract a mix of metallurgical and thermal coal and Dendrobium point out that they currently mix their coal from Dendrobium Colliery with coal from other mines and that they export a large proportion of their output.

Claim: Employment of 500 operational staff (including 100 contractors) and up to an additional 200 for the construction of the proposed extensions into areas 5 & 6. (p ES-ii)

Comment: It is true that Dendrobium is a large employer for a single company. But how significant is Dendrobium in the context of the broader Illawarra economy?

The last Census statistics for 2016 for the Illawarra reveal a total of 1,442 employed in mining (assumed to all be coal). But this represents only 1.4% of the total workforce for the region which has a large and highly diversified industry base.

Contrast this with employment data from the Newcastle / Hunter region coal fields where a total of 10,508 persons identified mining as their industry of occupation (assumed to be coal) and in the smaller population Hunter regions, mining employment represented 20% of total employment.

A further contrast can be made with employment numbers of Sydney Water (2,550) for whom the catchment is a critical infrastructure asset.

Claim: $714 million (in real, undiscounted terms) in royalties, taxes and rates for local councils and the NSW and Commonwealth Governments. (p ES-ii)

Comment: This sum is not disputed but needs to be viewed in context.

- It is an estimate that is subject to future economic and other adverse events;
- It represents only $24 million per year based on the proposed 30-year life of the project;
- It is spread over 3 levels of government and thus the royalties share for NSW government would be much less;
- It is less than the return paid to NSW government by WaterNSW ($29m tax plus dividends of $38m in 2017-18) and Sydney Water ($242m in tax plus dividends of $546m in 2017-18); (WaterNSW, Annual Report 2017-18 & Sydney Water Annual Report 2017-18)
- As a proportion of the total royalties received by NSW government (projected $2 billion for 2019-20 State Budget) this is a rather small amount; (*Budget Statement 2019-20 Budget Paper No. 1)*
- The 30-year period extends to the time when Australia has agreed to be carbon neutral. The proposed extension is incompatible with Australia's emissions commitment.
- The cost of mine rehabilitation following closure is a potential liability risk that the NSW government must consider. Bonds provided by mining companies to cover rehabilitation costs are typically inadequate and in the event of company bankruptcy, or premature closure, remediation and compensation costs could flow to the NSW government.
- In the event of a major adverse event, private companies may be unable to afford remediation and / or compensation costs.
- What is the potential for alternative sources of water supply for Sydney? – Warragamba dam wall raising? Doubling the size of the Desalination Plant? At what cost and how quickly

can these investments deliver? What if the current severe drought continues and there is a major breach of a major reservoir in the catchment?

When placed into context this seemingly large economic contribution from Dendrobium mine is relatively small. It is a large company and employer but within the much larger and highly diversified economy of the Illawarra. The two State enterprises, (WaterNSW and Sydney Water) for whom the Sydney Water Catchment Area is a vital infrastructure asset, are considerably larger in terms of employment and financial return to the NSW Treasury. The short-term economic benefits of this project to the State do not justify the risk of longer-term damage to this vital water asset (the catchment).

Dendrobium's Economic Benefits are Exaggerated

Climate Change

Climate change will increase the risks to water quantity and quality in the catchment and with this project. Hotter and drier weather impacts on vegetation and increases the risk of surface damage via erosion. This impacts both water flows and quality. Climate change brings with it increases in the frequency and severity of bushfires. Damage to surface runoff and quality follow.

"Poor water quality recordings, particularly in the Nepean storage, appears to relate to the extensive bushfires across the sub-catchment in 2013 and heavy rainfall the following year." (*2016 Audit of the Sydney Drinking Water Catchment, (*p 22). Changes to normal water supply sources were undertaken to bypass the impacted water at the time.

The Illawarra region along with much of SE Australia is predicted to experience reduced rainfall along with increased temperatures and prolonged periods of drought. Currently, the region is experiencing these predicted effects. At the same time the population of Sydney is predicted to continue to grow.

Taken together climate change with population growth will impose increased pressure on water supply.

Climate Change will Adversely Impact on Sydney's Water Supply

Planning Approval Experience

In the past Coal appears to have been given priority over Water in planning decisions for mining approvals.

The risk of adverse impacts to the catchment from mining have been identified in past approval processes and considered acceptable, subject to various conditions imposed on miners. But experience confirms that adverse impacts do occur and that, the observed severity of these impacts, tend to be greater than predicted. In addition, impacts caused by subsidence may not be immediate – they may take years occur and / or appear.

Scientific analysis of mining impacts continues to improve but prediction of adverse impacts remains a difficult task. The planning decision for mining approval in the catchment therefore continues to be a subjective evaluation of extensive reports, on the risk of adverse impacts on the catchment, weighed against, possible economic gains to miners, community and government.

The critical methodology of risk evaluation has evolved. No longer is the probability of an adverse event simply based on either crude subjective classification or statistical measurement of past adverse impacts. Risk needs to include the potential for unknown adverse events and the severity of the impact of the adverse event plus involve sophisticated computer modelling. An example of an

unknown adverse event would have been the prediction that a tornado would sweep across a narrow part of the Kurnell peninsula and render Sydney's Desalination Plant unusable for several years. An example of a low probability but catastrophic impact, would be the recognition of a potential draining of an entire water reservoir through the entrance of an underground mine, such as Russell Vale, that would inundate several suburbs of the Illawarra.

The risk profile for mining has changed due to a combination of climate change + rapid population growth + more aggressive mining techniques + extension of mining closer to critical tributaries and reservoirs + ongoing permanent damage to catchment (swamps, tributaries, surface subsidence).

This submission argues that:

- ***past mining approvals have reflected a bias towards short term economic gains, claimed by mining companies, against long term permanent adverse impacts, on essential social and economic infrastructure assets, claimed by State water enterprises;***
- ***the parameters and methodologies involved in catchment mining approvals have changed and hence the risks associated with mining under the catchment have increased;***
- ***current mining operations, including Dendrobium's aggressive longwall operations and Metropolitan's approval to mine directly under Woronora Dam reservoir, continue to inflict unacceptable damage on the catchment;***

and therefore, calls for:

- ***a rejection of the proposed Dendrobium Mine Extension***

Further, although beyond the terms of reference for this submission, it is considered that there are grounds for:

- **curtailment of the current approved longwall operations in the catchment; and**
- **development of a transition plan for the end of all coal mining from the catchment.**

Preservation of the Water Catchment is Vital for Sydney's Future

Thank you for considering this submission.

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For and on behalf of Sutherland Shire Environment Centre

15 September 2019

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References

Advisian, *WaterNSW – Literature Review of Underground Mining Beneath Catchments and Water Bodies*, December 2016.

Alluvium Consulting Australia, *2016 Audit of the Sydney Drinking Water Catchment*, 2017.

Independent Expert Panel for Mining in the Catchment, *Initial report on specific mining activities at the Metropolitan and Dendrobium coal mines*, 12 November 2018

NSW Government, *Budget Statement 2019-20 Budget Paper No. 1*, 18 June 2019.

South32, *Dendrobium Mine – Plan for the Future: Coal for Steelmaking – Environmental Impact Statement*, July 2019.

South32, *Dendrobium Mine – Plan for the Future: Coal for Steelmaking – Preliminary Environmental Impact Statement*, December 2016.

Sydney Water, *Annual Report 2017-18*,

WaterNSW, *Submission to the Independent Expert Panel for Mining in the Catchment*, March 2019.

WaterNSW, *Annual Report 2017-18*, 31 October 2018.

WaterNSW, *WaterNSW Principles for Managing Mining and Coal Seam Gas Impacts in Declared Catchment Areas*.