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Rose-Anne Hawkeswood
Resource Assessments
Department of Planning, Industry and Environment
Locked Bag 5022
PARRAMATTA NSW 2124

Dear Ms Hawkeswood

WaterNSW response to Amendment and Supplementary Information – Dendrobium Mine Extension Project (SSD 8194)

WaterNSW appreciates the opportunity to provide further comments on the Dendrobium Mine Extension Project (SSD 8194). WaterNSW has reviewed the supplementary information (dated 7 September 2020), amended project report (dated August 2020) and South32's response to WaterNSW's residual comments (dated 15 June 2020) and outlines its key issues below.

Overview

WaterNSW remains strongly opposed to the project (in its current form) as its previous concerns remain relevant and have largely not been adequately addressed by South32.

WaterNSW reiterates that this project is the first new development application lodged for coal mining in the Special Areas in almost a decade. WaterNSW considers that the mine design does not sufficiently take into account a 'paradigm shift' in scientific understanding and policy settings that has occurred since the last mine was approved in the Special Areas.

In particular, the mine design does not adequately respond to the Final Report of the Independent Expert Panel on Mining in the Catchment, which suggested adopting "*a precautionary approach and bas[ing] mine design on preventing the height of free drainage in the Special Areas from extending to the surface or interacting with surface fracture networks*."

In summary, WaterNSW's key residual concerns are:

1. Mine design and surface water losses
   There has been insufficient consideration of an alternative mine design that would prevent the height of free drainage from extending to the surface or interacting with surface fracture networks. Such an alternative mine design would likely result in a significant reduction in the predicted surface water losses of the project.
2. Water quality
   Uncertainty remains about whether the project would meet the neutral or beneficial effect (NorBE) test for water quality, particularly in relation to post-closure groundwater repressurisation. This is a statutory test that is a pre-condition for approval.
3. Ecological integrity
   The proposed mine design and predicted height of free drainage would fundamentally change the hydrological and ecological characteristics and functions of up to 26 endangered Coastal Upland Swamps.

Mine design and surface water losses

In the declared Sydney catchment area, WaterNSW has a primary function to protect and enhance the quantity of water. WaterNSW considers that the predicted loss of surface water of up to 5.2 megalitres per day from the project (as currently proposed) is unacceptable. WaterNSW also remains concerned about the nature and extent of predicted environmental impacts in various watercourses, including nine major streams (3rd order or above), particularly those in the north-western corner of Area 5.

South32 has not adequately considered WaterNSW's previous recommendations to revise the mine design with narrower longwalls or a reduced mining height in order to reduce surface water losses. Instead, South32 has responded that a revised mine plan with 150 m longwall widths would still have negative surface impacts.

While WaterNSW accepts that some surface impacts would still occur from narrower panels, it is our strong view that narrower panels could largely avoid the height of free drainage from reaching the surface, and thereby significantly reduce surface water losses. It is also noted that remediation of surface impacts is more likely to succeed in the absence of connective cracking.

Importantly, South32 has not provided surface water loss predictions for any alternative mine designs. The supplementary information states that "*there is no definitive methodology to estimate surface water losses at alternative panel widths*" and "*estimating surface water losses for panel widths less than 305 m will be inherently uncertain*".

WaterNSW does not consider that this an adequate response as there will always be some degree of uncertainty based on modelling. It has long been accepted by regulators that modelling of various environmental impacts (e.g. water, air quality, noise, vibration and subsidence) is a necessary part of the environmental impact assessment process.

In fact, South32's environmental assessment for this project relies heavily on various models, including estimates of surface water losses. In that regard, WaterNSW again raises its previous concerns that the groundwater model may underestimate the full extent of surface water losses. The Independent Expert Panel for Mining in the Catchment stated that the surface water component of mine inflows could be in the order of 40-50%, which contrasts with South32's groundwater model that assumes an average of only 15 to 25%.

In summary, WaterNSW maintains that South32 should be required to provide comparisons of estimated surface water losses based on different longwall widths, notwithstanding any inherent uncertainty in modelling efforts.

WaterNSW acknowledges that any such mine design changes can reduce economic benefits, however a significant reduction in environmental impacts may be achievable with relatively minor changes. In that regard, WaterNSW refers to Figure 6-3B of the RTS report titled "S*patial variation in inferred height of connected fracturing Rev. A, dated 04/09/2019*" (based on the Tammetta equation). This figure indicates that there is already a predicted gap between the surface cracking zone and subsurface fractured zone in many areas of the proposed mine.

Water quality

WaterNSW's position remains that South32 must meet the statutory requirement for a NorBE on water quality and should rely on mitigation measures, rather than 'offsets' to address water quality impacts. WaterNSW notes that there is no government policy on water quality 'offsets' and it is particularly difficult to assess the value (or otherwise) of the proposed 'offsets', which are not related to the actual impacts (i.e. they could not be considered 'like-for-like').

WaterNSW disagrees with South32's assertion that the NorBE test applies only at water storages, Licence Discharge Points or WaterNSW's raw water supply points. WaterNSW considers that the NorBE assessment should also take into consideration:

- predicted surface cracking in major watercourses
- vegetation clearing and construction for the establishment of ventilation shafts, and
- post-mining groundwater repressurisation and discharge of contaminated groundwater to streams.

Surface cracking

WaterNSW acknowledges that clause 11A of the *State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011* may be applicable to this development as it could be considered as 'continuing development'.

However, WaterNSW considers that were this project approved under similar conditions to those imposed on previous and current mining operations (under DA 60-03-2001 and Subsidence Management Plan approvals), further defined points on watercourses should be included. The existing conditions of consent include performance measures at the confluence of Wongawilli Creek and Cordeaux River. WaterNSW considers that similar performance measures should be included at other defined points in Avon River, Cordeaux River and Donalds Castle Creek.

WaterNSW also remains concerned that the potential water quality impacts from the extensive stream fracturing downstream of the reservoirs (e.g. in Avon and Cordeaux Rivers) would increase the risk of water quality issues in the water supply.

Vegetation clearing and construction

In its latest amendment to the project, South32 proposes changes to the areas of surface infrastructure. It is likely that the proposed ventilation shafts would be in operation for 20 or more years. In order to achieve a NorBE on water quality, it is essential that each ventilation shaft site includes water quality treatment and management infrastructure during all phases of the development. Further information and assessment are required on these matters.

Post-mining groundwater repressurisation

The additional Groundwater Quality Analysis that was recently provided in the supplementary information presents a range of complex new information.

WaterNSW is currently seeking a meeting with South32's consultants to discuss this new information. In the interim, we provide the following preliminary comments:

- The post-mining groundwater repressurisation profiles (Figures A2 and A3 for Areas 5 and 6, respectively) predict upgradient groundwater movement and discharge in Avon River and Cordeaux River. While the model predicts that deep groundwater would have a relatively low solute load, WaterNSW remains concerned about the solute load in the shallow groundwater.
- The model predicts that there would may be localised increases in arsenic within streams. WaterNSW is concerned that any increase in arsenic (or other heavy metals) may have a negative effect on water quality and aquatic ecology.

Ecological integrity

WaterNSW reiterates its concern that the predicted ecological impacts of the project, particularly impacts on endangered upland swamps, are inconsistent with one of the key purposes for declaring the Metropolitan Special Area, which is to maintain the ecological integrity of the land.

Up to 26 swamps would likely experience serious or irreversible damage from the project due to fracturing of the bedrock beneath the swamps. WaterNSW considers that this would make the swamps more fire-prone and change their ecological (and hydrological) functioning.

Conclusion

If the project is not amended, WaterNSW maintains that it should not be approved.

The project, as currently proposed, is not consistent with WaterNSW's statutory role "*to protect and enhance the quality and quantity of water in declared catchment areas*" or its Mining Principles. The proposed mine design is likely to cause serious or irreversible damage to environmental features, including numerous watercourses and swamps.

Further, WaterNSW considers that additional information and expert review of the new water quality information is required to demonstrate that the project would meet the statutory NorBE test.

Recommendations

In relation to mine design and surface water losses, WaterNSW recommends that, at a minimum, South32 should be required to:

- consider an alternative mine design incorporating the following changes:
  - a reduction in the lengths of longwalls in the north-western corner of Area 5 (e.g. longwalls 508A and 509) and at the eastern extent of Area 5 (e.g. longwall 510)
  - minor to moderate reductions in longwall widths in Area 5 to further increase the distance between the surface cracking zone and subsurface fractured zone, and
  - moderate reductions in longwall widths in Area 6 to prevent surface to seam cracking and increase the distance between the surface cracking zone and subsurface fractured zone, and
- provide revised surface water loss predictions for any alternative mine designs.

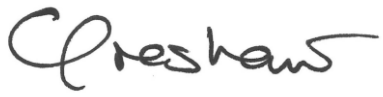
In relation to water quality and ecology, WaterNSW recommends that the Department:

- obtain advice from the newly formed Independent Advisory Panel for Underground Mining (or other independent experts) on:
  - the estimated surface water losses for this project, including consideration of the proportion of surface water in predicted mine inflows, and
  - the additional Groundwater Quality Analysis, and
- obtain advice from the Environment, Energy and Science division of the Department in relation to potential impacts on aquatic ecology associated with potential localised arsenic (As) increases resulting from post-mining groundwater repressurisation.

WaterNSW requests that it be listed as a stakeholder for any further consultation and assessment on this project.

If you wish to discuss this letter or the project more generally, please do not hesitate to contact Jessie Evans on 0436 861 165 or e-mail environmental.assessments@waternsw.com.au.

Yours sincerely



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