

DENDROBIUM AREA 3B SUBSIDENCE MANAGEMENT PLAN Reasons for Approval

In granting a conditional approval of South32 Illawarra Coal's Subsidence Management Plan (SMP) application, I have carefully considered the following:

1. DEVELOPMENT CONSENT STATUS

- The Dendrobium mine was approved following a Commission of Inquiry in 2001, and was subsequently modified by the then Minister in December 2008.
- The existing development consent expressly allows mining in Areas 1, 2, 3A, 3B and 3C. Mining has already occurred in Areas 1, 2, 3A and part of 3B.
- The consent requires a Subsidence Management Plan (SMP) to be approved before mining occurs in each Area.

2. SOCIO-ECONOMIC IMPACTS

- The Dendrobium mine is a significant contributor to regional employment with 406 full time employees and at least another 600 people that are indirectly reliant on the mine.
- Coal from the Dendrobium Mine is a key component in the production of a premium coking coal blend that is used in steel production at Port Kembla and Whyalla, and export markets.
- South32 has advised that it is now facing a future discontinuity in mining as it has been forced to reduce the length of some of the longwalls in its mine plan due to a combination of geological issues and setbacks enforced by government agencies to reduce environmental impacts. This may result in the loss of 80 employees by the end of 2016, and all 406 employees by the end of 2017.
- The Department estimates that the remaining coal in Area 3B would provide up to \$300 million in State Government revenue through royalties, levies and payroll tax.
- The potential loss of employees at the mine would also have significant socio-economic consequences for South32, the Illawarra region and the State of NSW.

3. PERFORMANCE UNDER EXISTING CONDITIONS

- In December 2015, the Department published a report on an interagency investigation into the environmental impacts of mining in Area 3B. It concluded that there had been no breach of the conditions or performance criteria in the consent or SMP approval.
- To date, a total of 122 impacts from mining in Area 3B have been reported to the Department, in accordance with the approved Trigger Action Response Plans (TARPs). The vast majority of these impacts align with predictions and were expected when mining was approved.
- There are a small number of impacts that were greater than predicted, however the Department does not consider that these have breached the development consent or SMP conditions. For these impacts, the Department has directed South32 to undertake remediation in accordance with plans approved in consultation with agencies.
- The Department's independent groundwater expert, Dr Col Mackie, has found that there has been some loss of water (approximately 830 megalitres (ML) per year) into the mine workings, which may have otherwise reported into catchment dams.
- However, Sydney's catchment dams currently hold over 2.3 million ML, and it is estimated that up to 420,000 ML is lost each year in evaporation and environmental flows.
- The Department considers that a loss of up to 830ML of rainfall per year into the mine is negligible in comparison to the total capacity of the catchment dams (0.03%) and annual losses from evaporation and environmental flows (0.19%).

4. AVOIDING AND LIMITING ENVIRONMENTAL IMPACTS

- This SMP approval reflects a precautionary approach and only allows mining to take place in Longwalls 14 and 15. Further approval will be required before any mining can occur in Longwalls 16, 17 and 18.
- The Department also examined 3 key options to reduce mining impacts from Longwalls 14 and 15:
 1. Narrowing panels: the Department's independent subsidence expert, Prof. Jim Galvin, confirmed that the width of panels would need to be narrowed by more than 40% to significantly reduce the environmental impacts to key surface features. This is not considered economically feasible.
 2. Shortening panels: at the request of the Dam Safety Committee (DSC), South32 has agreed to a 320 metre setback of Longwall 14 from Avon Dam to ensure its integrity, and DSC is entitled to enforce further setbacks for Longwalls 14 or 15 at any time. South32 has also agreed to shorten Longwall 14 at the eastern side to reduce impacts to a tributary of Wongawilli Creek (WC15).
 3. Reducing the mining height: the approval restricts the mining height to a maximum of 3.9 metres, which is substantially less than South32's proposed 4.6 metres. Professor Galvin has confirmed that this restriction would decrease the extent of potential fracturing at the surface.

5. REMEDIATING AND OFFSETTING IMPACTS

- The previous SMP approval acknowledged that full avoidance of swamp impacts was not economically feasible, and residual impacts were expected.
- The Department accepts that avoidance of Swamp 14 is not economically feasible as it would result in the sterilisation of over 3 million tonnes of coal and may cause significant mining discontinuities.
- However, this SMP approval requires South32 to undertake a staged remediation trial, commencing with Swamp 1b, and evaluate its success using cutting edge survey technology (condition 19).
- Furthermore, the SMP approval requires offsets to be approved and secured before mining occurs in Longwall 14 (condition 10). South32 has offered to offset the impacts to all swamps in Area 3B by transferring a 598 hectare site (the 'Maddens Plains') to the National Parks estate, which is allowed for under the SMP approval and supported by the Office of Environment and Heritage (OEH).
- This SMP approval also requires South32 to undertake remediation in two streams that have been damaged (WC21 and Donald's Castle Creek) (condition 13).

6. FURTHER RESEARCH AND MONITORING

- In early 2016, the Department engaged an independent expert to undertake a review of the height of fracturing above the mine workings within 4 months. However, due to the complexity of the issues and the significant amount of work required, this report is now not expected to be finalised and peer reviewed until early 2017.
- Consequently, this SMP approval requires South32 to undertake a comprehensive range of additional research and monitoring activities (conditions 17-19). This will ensure that the Government has all the relevant information available to assess future applications for mining at the Dendrobium mine.
- The additional research and monitoring activities that South32 must undertake include:
 - engaging an independent expert to assess the height of fracturing;
 - reviewing and updating the groundwater model, followed by an independent peer review;
 - installing a wide range of monitoring equipment directly above Longwalls 14 and 15;
 - trialling 'electrical resistivity tomography' to measure groundwater levels; and
 - engaging an independent expert to prepare a report on the impacts of mining on the Giant Dragonfly and Littlejohns Tree Frog.

7. CONSULTATION WITH AGENCIES AND COMMUNITY

- The SMP was publicly exhibited for a month in March and April 2016.
- The Department received 70 submissions from the community and Government agencies.
- South32 subsequently provided a formal Response to Submissions, which was placed on the Department's website and forwarded to Government agencies for comment.
- The Department arranged a site inspection and held 2 meetings with key community groups, including the National Parks Association and the Community Consultative Committee.
- The Department has also led 2 interagency meetings and an interagency site visit. All the agencies have reviewed and provided input on the conditions of the SMP approval.



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as nominee of the Secretary

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