



23 November 2020

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for the Dendrobium Extension Project
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c/o: Julian Ardas via [REDACTED]

Dear Commissioner,

RE: Dendrobium Extension Project (SSD 8194)

Thank you for the opportunity to provide additional information following the videoconference with the Independent Planning Commission on 16 November 2020.

Please find enclosed the additional information.

If you have any queries please don't hesitate to contact me at [REDACTED] or [REDACTED].

Yours sincerely

A handwritten signature in black ink, appearing to read "G. Brassington".

Gary Brassington
Manager Approvals
Illawarra Metallurgical Coal – South32

1. Subsidence Predictions at Swamps

Potential impacts to swamps due to longwall mining are associated with:

1. Subsidence-related effects (e.g. cracking) to rockbars or the base of the swamp.
2. Consequential changes to the hydrology of the swamp.
3. Consequential changes to vegetation communities (e.g. species richness) within the swamp.
4. Potential for increased erosion and scouring.

Recent Dendrobium Mine 'End of Panel' Reports for Longwalls 14 and 15¹ (dated September 2019 and May 2020, respectively) show:

- Monitored subsidence (total vertical subsidence and closure) at swamps is less than subsidence levels predicted by specialist subsidence company MSEC in the relevant Subsidence Management Plans (SMP) for Longwalls 14 and 15.
- Monitoring of swamp water levels and soil moisture levels indicates that the hydrology of mined under swamps has been impacted as predicted in the relevant SMP (e.g. lower soil moisture, lower water levels and increased rate of recession of water levels).
- Monitoring of species composition indicates a statistically significant change in species composition at some swamps mined under, as predicted in the relevant SMP, but no statistically significant change at other mined under swamps.
- Airborne Laser Scanner (ALS) monitoring and observations did not detect erosion in mined under swamps.

The results of monitoring data at the Dendrobium Mine and elsewhere in the Southern Coalfield has informed assessment of impacts to swamps for the Project. In particular, Appendix 12 of the Environmental Impact Statement (EIS) *Biodiversity Assessment Report and Biodiversity Offset Strategy* (Appendix D of the EIS) is a report prepared by specialist hydrogeologist company WaterShed HydroGeo, which included assessment of 73 shallow piezometers located within swamps to determine the extent to which mining has resulted in changes to swamp hydrology at the Dendrobium Mine.

The WaterShed HydroGeo Report indicated that, based on analysis of monitored swamp water levels, there was potential for swamps within 60 metres of the Project longwalls to experience hydrological changes that would be considered greater than 'negligible environmental consequences' as outlined in the *Addendum to NSW Biodiversity Offsets Policy for Major Projects: Upland swamps impacted by longwall mining subsidence*² (Swamp Offset Policy). Greater than 'negligible environmental consequences' in the Swamp Offset Policy is defined as one or more of the following:

- a shallow groundwater level within swamp sediments lower than the baseline level at any monitoring site within a swamp (in comparison to control swamps)
- a rate of shallow groundwater level reduction post-mining that exceeds the rate of shallow groundwater level reduction during the baseline period at any monitoring site (measured as average millimetres per day during the recession curve).

Accordingly, the 25 swamps located within 60 metres of the Project longwalls have been considered to trigger the requirement for offsetting for the Project.

Review of vegetation monitoring (as presented in Appendix 8 of the EIS *Biodiversity Assessment Report and Biodiversity Offset Strategy*) did not indicate a strong link between subsidence and changes in vegetation. On the basis that some change in vegetation composition could occur (as has been

¹ https://www.south32.net/docs/default-source/illawarra-coal/dendrobium/dendrobium-longwall-10-end-of-panel-report/longwall-15/lw15_eop_summary-report_final_v2.pdf?sfvrsn=c8e75e46_4; https://www.south32.net/docs/default-source/illawarra-coal/dendrobium/dendrobium-longwall-10-end-of-panel-report/longwall-14/a_eop_lw14_summary-report_final.pdf?sfvrsn=f69674d2_6

² <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/addendum-biodiversity-offsets-policy-major-projects-upland-swamps-160766.pdf>

observed at previously mined under swamps) but that the swamp community would persist post-mining providing ongoing biodiversity value, the swamp offset liability for the Project was calculated based on a 'partial loss' scenario using the Framework for Biodiversity Assessment (FBA) offset calculator. By comparison to a 'partial loss' scenario, 'total loss' reflect complete removal of the swamp vegetation community and nil residual biodiversity value).

The Department of Planning, Industry and Environment (DPIE) Assessment Report for the Project considered the analysis presented in the *Biodiversity Assessment Report and Biodiversity Offset Strategy* and associated offset liability calculations and concludes:

The Department considers that the BAR's position that the 'worst-case scenario' in upland swamps is partial loss of vegetation is reasonable and supported by the evidence. Further it considers that the BAR's numerical quantification (using the BBCC) of this partial loss of biodiversity value is also reasonable.

It is noted that the recommended conditions of consent provide performance measures for subsidence impacts, including "no environmental consequence greater than has been offset in accordance with Table 5 and Table 6" for threatened ecological communities (see recommended condition C1). As per recommended condition C3, if this performance measure is exceeded then additional offsets must be provided. The effect of recommended conditions C1 and C3 (see Plate 1) is that if greater than partial loss to swamps occurs, then South32 will be required to scale up offset requirements accordingly.

PART C SPECIFIC ENVIRONMENTAL CONDITIONS – UNDERGROUND MINING

SUBSIDENCE

Performance Measures – Natural and Heritage Features etc

C1. The Applicant must ensure that the development does not cause any exceedances of the performance measures in Table 8.

Table 8: Subsidence impact performance measures – natural and heritage features etc

Feature	Performance Measures
Key Water Resources	
Lake Cordeaux Lake Avon	<ul style="list-style-type: none"> Negligible reduction in the quality or quantity of surface water or groundwater inflows to the reservoir
Cordeaux River	<ul style="list-style-type: none"> Negligible reduction in the quality or quantity of surface water flows at its confluence with Wongawilli Creek
Watercourses	
Avon River Cordeaux River	<ul style="list-style-type: none"> No subsidence impact greater than predicted in the EIS Negligible environmental consequences
Donalds Castle Creek Wongawilli Creek Unnamed 1 st , 2 nd and 3 rd order streams	<ul style="list-style-type: none"> No subsidence impact or environmental consequence greater than predicted in the EIS
Biodiversity	
Threatened ecological communities Threatened species	<ul style="list-style-type: none"> No environmental consequence greater than has been offset in accordance with Table 5 and Table 6
Mine workings	
First workings	<ul style="list-style-type: none"> To remain long-term stable and non-subsiding, except insofar as they may be impacted by approved second workings
Second workings	<ul style="list-style-type: none"> To be carried out only within the approved mine plan, in accordance with an approved Extraction Plan

Notes:

- Classification of streams in accordance with Strahler stream order system.
- The Applicant will be required to define more detailed performance indicators (including impact assessment criteria) for each of these performance measures in the various management plans that are required under this consent (see condition C8).

C2. Measurement and monitoring of compliance with performance measures and performance indicators in this consent is to be undertaken using generally accepted methods that are appropriate to the environment and circumstances in which the feature or characteristic is located. These methods are to be fully described in the relevant management plans and monitoring programs. In the event of a dispute over the appropriateness of proposed methods, the Planning Secretary will be the final arbiter.

Additional Offsets

C3. If the Applicant exceeds the performance measures in Table 8 and the Planning Secretary determines that:

- it is not reasonable or feasible to remediate the subsidence impact or environmental consequence; or
- remediation measures implemented by the Applicant have failed to satisfactorily remediate the subsidence impact or environmental consequence,

then the Applicant must provide a suitable offset to compensate for the subsidence impact or environmental consequence, to the satisfaction of the Planning Secretary.

The performance measure for "threatened ecological communities" applies to swamps.

If monitoring shows that impacts to swamps are greater than predicted (i.e. greater than partial loss) then additional offsets must be provided by South32.

Plate 1: Extract from Recommended Development Consent

2. Proportion of Thermal versus Metallurgical Coal

The majority of coal mined for the Project is high-quality, metallurgical coal.

As stated in Section 3.1 of the EIS:

The Bulli Seam is the uppermost seam of the Illawarra Coal Measures (DMR, 2000). The Project would generally mine the full height of the Bulli Seam in Area 5. The seam floor consists of mudstone and carbonaceous mudstone. Generally, the Bulli Seam produces a coking blend coal. There are portions of the Project area where igneous intrusions are in proximity to the Bulli Seam. These portions are termed "heat affected" and produce a thermal or PCI [pulverised coal injection] product.

It is noted that Pulverized Coal Injection coal is defined as a metallurgical coal product, as it is used to provide a source of heat in the steelmaking process, but unlike coking coal it is not used as a "reducing" agent (that is, part of the chemical reaction that removes impurities from iron ore to produce iron).

Area 6 includes a small fraction of thermal coal (less than 10%) although this area is not expected to be mined until the completion of mining in Area 5.

3. Implementation of the Social Impact Management Plan

Recommended condition B74 states:

B74. The Applicant must prepare a Social Impact Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:

- a) be prepared by a suitably qualified and experienced person/s;*
- b) be prepared in consultation with WCC, the CCC, local affected communities and other interested stakeholders;*
- c) be submitted to the Planning Secretary for approval within six months of commencing development under this consent;*
- d) identify both positive and negative social impacts resulting from the development and following mine closure, both locally and regionally;*
- e) specify adaptive management and mitigation measures to avoid, minimise, and/or mitigate negative social impacts;*
- f) identify opportunities to secure and enhance positive social impacts from the development, including opportunities to assist in maintaining community services and facilities;*
- g) include a stakeholder engagement plan to guide the evaluation and implementation of social impact management and mitigation measures, and*
- h) include a program to monitor, review and report on the effectiveness of these measures, including updating the plan 3 years prior to anticipated mine closure.*

South32 would develop the Social Impact Management Plan in consultation with relevant stakeholders, as described in the recommended conditions above. The actions determined through the development of the Social Impact Management Plan would be reasonable and feasible, and representative of the level of impact on the local community and other relevant stakeholders.

Similar to the development and implementation of Dendrobium Mine's other environmental management plans required under the existing development consent, the actions in the plan would be funded through South32's existing community and operational budgets.

The effectiveness of the actions described in the Social Impact Management Plan would be reviewed periodically, in consultation with relevant stakeholders. Feedback on the Plan and the associated actions would be sought from stakeholders and incorporated as part of the periodic review process.

The Social Impact Management Plan would meet the requirements of the proposed draft conditions as recommended by DPIE, including the provision for the Dendrobium Community Enhancement Program

(DCEP), which for the Dendrobium Mine Extension Project, will be funded by AU\$0.04 per saleable tonne of coal from Dendrobium Mine and increased in line with the consumer price index. The purpose and function of which, is described below.

4. Community Funding

The DCEP was established in 2002 to comply with the Dendrobium Mine Development Consent (2001). It is currently funded by AU\$0.03 per saleable tonne of coal from Dendrobium Mine and increases in line with the consumer price index to maintain our commitment for the life of the project, with annual lump sum payments deposited directly into the DCEP account which is administered by an external accountant. Since 2002, Dendrobium Mine has contributed more than AU\$2.2M to the fund, and the most recent annual contribution was AU\$158,792 for FY2020.

The Dendrobium Community Enhancement Committee (DCEC) was established in 2002 to assist with the allocation of the DCEP funding in the communities within the zone of influence of Dendrobium Mine. These communities include Mount Kembla, Kembla Heights, Cordeaux Heights, Figtree and Unanderra.

The DCEC comprises local community and South32 representatives and is governed by a Terms of Reference. The group meets bi-monthly to review and vote on funding applications lodged by community groups, with DCEC members having one vote per funding application and the majority vote being the final outcome. DCEC members also contribute potential community project ideas for South32 to explore and work with community groups to lodge applications.

Examples of projects and activities the DCEC has funded since its inception include:

- Mount Kembla Shared Pathway construction and ongoing maintenance - AU\$2.3 million.
- Various projects and activities at Mount Kembla Public School - AU\$250,000. This includes a new playground (AU\$78,688), STEM Robotics Program (AU\$60,000) and library refurbishment (AU\$47,500)
- Life Education Program for local schools and preschools - AU\$175,500.
- Heritage projects in Kembla Heights and Mount Kembla - AU\$169,562.
- Unanderra Public School activities - AU\$54,000.
- Figtree Community Carols - AU\$17,500.
- Mount Kembla and Farnborough Heights Rural fire brigades - AU\$18,333.

In November this year, the DCEC endorsed AU\$108,000 for a playground upgrade at Ryan Park Mount Kembla, and a further three-year partnership with Life Education worth AU\$63,600. The DCEC is also exploring its pipeline of projects for the rest of FY21 which includes new town entrance signage, Mount Kembla heritage tourism opportunity and shade cover for the Unanderra Swimming Pool.

5. Importance of Dendrobium Mine to BlueScope Steelworks

The independent economic analysis commissioned by DPIE for the Project (prepared by Dr Brian Fisher of BAEconomics³) states:

The BlueScope blast furnace produces around 2.6Mt of liquid iron per year, which when combined with scrap steel, results in the production of around 3Mt of steel per year from the plant.

The production of 3Mt of steel from the Port Kembla plant requires the use of around 2.9Mt of coal which comprises 2.5Mt of hard coking coal and 0.4Mt of PCI coal (PCI coal or pulverised coal injection coal is finely ground coal that is injected directly into a blast furnace). Of the total coal use, 2.4Mt is

³ <https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-8194%2120201102T060302.347%20GMT>

sourced locally from the Southern Coalfield while the remainder is supplied from Queensland. Of the total from local sources, 2.2Mt is hard coking coal and 0.2Mt is PCI coal. Of the 2.2Mt of hard coking coal around 1.5Mt (68 per cent) is sourced from Illawarra Metallurgical Coal, 0.6Mt (27 per cent) from Metropolitan and 0.1Mt (5 per cent) from Tahmoor. Metropolitan also supplies the 0.2Mt of locally produced PCI coal.

...

Because BlueScope Steel and Illawarra Metallurgical Coal were historically part of BHP's steel making operations at Port Kembla there remains strong physical and commercial links between these now separate legal entities. For example, the coal preparation plant (CPP) for Dendrobium Mine's coal is located within the BlueScope yard at Port Kembla and a contract for coking coal supply with an end date of 2032 exists between the two entities.

The Dendrobium Mine provides high quality metallurgical coal to the BlueScope Steelworks on a "just-in-time" basis via the Kemira Valley Rail Line, which transports coal to the Dendrobium Coal Preparation Plant (CPP) located within the BlueScope Steelworks.

IMC provides metallurgical coal product to BlueScope Steelworks from its Appin and Dendrobium mines and relies on the continued operations of the Dendrobium mine to meet operational targets and address customers' requirements.

The Project involves the continuation of mining at the Dendrobium Mine and continued use of the Kemira Valley Rail Line and Dendrobium CPP.

Multiple external sources have explained the importance of a local source of metallurgical coal to the ongoing economic viability of the BlueScope Steelworks, including the Australian Parliamentary Report *Australia's Steel Industry: Forging Ahead*⁴, the Australian Competition and Consumer Commission⁵ and BlueScope themselves in their submission on the Project⁶.

⁴ Commonwealth of Australia (2017). *Australia's Steel Industry: Forging Ahead*. Senate Economics References Committee.

⁵ ACCC (2017). *Statement of Issues: South32 – Proposed Acquisition of Metropolitan*.

⁶ <https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=EXH-1523%2120201109T234730.020%20GMT>