



Our ref: DOC20/187484

Senders ref: SSD 8194

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Dear Mr Freeman

Subject: Dendrobium Mine Extension Project – Response To Submissions – SSD 8194

Thank you for your referral dated 19 February 2020 requesting advice on the Response To Submissions for the abovementioned major project.

The South East Branch of the Biodiversity and Conservation Division, in consultation with the Strategy and Science Division and the National Parks & Wildlife Service, have reviewed the applicant's Response To Submissions (RTS). We have provided advice on the matters raised in our EIS submission dated 20 September 2019.

Our advice is detailed in the table at Attachment A. A further detailed review of pertinent aspects of the RTS prepared by Strategy and Science Division can be provided upon request. In summary, the RTS exposes continued substantial shortcomings with the project. Longwall subsidence is almost certain and serious concerns remain about the further long-term adverse impacts that arise and there remains an inability to satisfactorily account for biodiversity impacts:

- There is no change to the proposed mining layout which was presented in the EIS. The RTS comprises limited discussion of alternate mining geometry layouts and extraction methods. However, such alternatives are not outlined in any detail or with transparency. Further detailed evidence regarding alternative layouts, extraction method or measures taken to avoid impacts needed to be presented.
- Accordingly, we maintain that the proposal does not sufficiently demonstrate that the “avoid” principle has been met, having regard to biodiversity assessment policy, guidelines and the SEARs, as per our EIS submission. In its current form the proposal is almost certain to have a significant impact on NSW and Commonwealth-listed water-dependent threatened species and ecological communities. The proposed longwall mining layout remains and the resultant associated subsidence will lead to adverse impacts to all tributaries and associated ecosystems that are adjacent or above.
- The FBA and Coastal Upland Swamp Offset Policy has been incorrectly applied in calculating the maximum predicted offset liability for Coastal Upland Swamps, and as a result the offset liability for Coastal Upland Swamp has been significantly under-estimated. The Upland Swamp Offset Policy requires calculation against a ‘worst-case scenario’ equating to total loss of swamps. This needed to be reflected in the applicant’s approach.
- We note that the offset strategy has been updated to demonstrate that a significant proportion of Coastal Upland Swamp offset liability (>90%) can, according to the proponent’s calculations, be achieved along with other threatened species credits required to offset the project. However, as noted above, we maintain there are significant

shortcomings with the application of the FBA to calculate the swamp offset requirement. This means that the offset liability for this threatened ecological community has been significantly under-estimated, and therefore not satisfactory in that the proposed offset package including the additional site would not meet the offset requirements.

- The proposal to fund research programs within the Dharawal NPWS reserves is not an appropriate approach to meeting obligations for direct offsets, particularly with regard to Coastal Upland Swamps. Successful rehabilitation proposals relate to rehabilitation from the impacts of previous land uses only. Undermined swamps impacted by a significant fire event are extremely likely to be desiccated and incapable of rehabilitation, as informed by recent site visits to impacted swamps on the Newnes Plateau (Attachment B). Furthermore, supplementary measures such as management actions are only to be used in lieu of offsets as a last resort only, as per the NSW Biodiversity Offset Policy for Major Projects.
- The RTS notes that the Maddens Plains Strategic Biodiversity site, set aside as an offset for earlier major projects, will continue to be investigated for threatened amphibian species credits. Our understanding is that further biodiversity offsets for new projects such as the Dendrobium Mine Extension are not available from the Maddens Plains site.
- Issues remain with the FBA calculations for some threatened species, namely Koala, Powerful Owl and Eastern Pygmy Possum. Previous comments highlighted the inadequacy of assessment for areas where new surface infrastructure is proposed, and it is unclear why these have not been addressed.
- We maintain that the proposed longwall layout is likely to harm multiple Aboriginal cultural heritage sites, including a number of sites of high Aboriginal cultural and scientific significance, due to subsidence from undermining. Previous comments requested further clarity on Aboriginal community consultation and updates to the Aboriginal cultural heritage assessment so it is unclear why these have also not been addressed.

If you have any questions about this advice, please do not hesitate to contact Mr Chris Page, Senior Team Leader, Planning (Illawarra) via chris.page@environment.nsw.gov.au or 4224 4180.

Yours sincerely



Michael Saxon

9/3/2020

**Director, South East Branch
Biodiversity & Conservation Division
Environment, Energy and Science**

Attachment A - Dendrobium mine extension Response To Submissions - Key Issues from EES submission 20 Sept 2019
Attachment B – Photos of bushfire impacted swamps on the Newnes Plateau (Feb 2020)

Attachment A - Dendrobium mine extension Response To Submissions - Key Issues from EES submission 20 Sept 2019

Issue No.	Description:	Extent and Timing:	EES Group Recommended action:	RTS Comment:	EES Group Comment:	Response satisfactory:
1	Avoidance of impacts – proposed mining layout does not adequately demonstrate avoidance of impacts, particularly to Coastal Upland Swamp threatened ecological community and threatened frogs	Response to Submissions	<ul style="list-style-type: none"> The proponent undertake subsidence modelling and impact assessment for alternate mining layouts with a focus on narrower longwall widths (100m, 150m, 200m and 250m) and increased chain pillar widths to analyse reduced impacts on significant natural features (including threatened species and communities). Setbacks proposed for significant stream features identified by South32 and other significant natural features be based on predicted valley closure values of <100mm. 	<ul style="list-style-type: none"> The proponent has not undertaken or presented subsidence modelling based on alternate mining geometry. Setbacks to significant streams have not been amended beyond the setbacks to named watercourses incorporated in the project layout presented in the EIS. 	<p>Avoidance of impacts could be achieved by not undermining swamps or by narrowing longwall panel widths to reduce subsidence effects below the surface cracking thresholds. No additional modelling of alternate longwall layouts or mining geometry (e.g. narrowed panels) or impact assessment for threatened species and communities has been completed or presented. There is limited discussion of alternate mining geometry or extraction methods at s6.5 of the RTS.</p> <p>Although it is acknowledged that subsidence and related impacts would be reduced under alternate mine layouts and extraction methods (approximately 150m wide panels), these are dismissed as being not feasible on economic grounds but without evidence or ability to verify the claim. No further evidence or discussion analysing alternatives in further depth has been provided.</p>	No

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					<p>The proponent has not completed alternative assessment of impacts to streams using revised valley closure values. Ecological importance of unnamed tributaries fails to consider presence of threatened frogs, which is a significant omission.</p> <p>The proposed mine layout remains unchanged from the EIS. As such, we remain concerned that the EIS does not adequately demonstrate the “avoid” principle and significant impacts to a number of threatened entities, as listed under both NSW and Commonwealth legislation, are highly likely (this project uses the same mining geometry/methods as previous activities that have resulted in certain and irreversible impacts. As such, adverse impacts from this project are almost certain and proving irreversible).</p>	
2	Offsets for Coastal Upland Swamp TEC incorrectly calculated under the FBA guidelines	Response To Submissions	<ul style="list-style-type: none"> Update biodiversity offset strategy to reflect the “maximum offset liability” required under a worst-case scenario as per the Addendum to NSW Swamp 	<ul style="list-style-type: none"> The approach to calculating swamp offsets remains as per the EIS. The proponent’s approach considers 	The proponent is not able to claim any offsetting liability reduction or benefit for not undermining upland swamps or threatened species habitat in any other area, including Area 3. No credits were calculated, created, purchased or retired	No

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	and Upland Swamp Offset Policy.		Offsets Policy for Major Projects (Upland swamps affected by longwall mining subsidence). This will require credit calculation for total loss all vegetation types aligned with the Coastal Upland Swamp TEC.	the “partial loss” scenario as a worst case. Where existing monitoring data indicates a lack of vegetation response for impacted swamps, site values have been amended to reflect transitional vegetation types.	<p>under earlier approvals and any agreements from previous approvals are not legally tradeable from the DPIE perspective.</p> <p>We strongly disagree with the proponent’s interpretation of the Upland Swamps Offset Policy. Partial loss is only relevant to the spatial extent greater than negligible environmental consequences. This is defined in terms of loss of groundwater only, and has no relevance to vegetation condition at any time following mining. Attempts to reduce credit liability on the basis of short-term vegetation monitoring at other swamps is an incorrect application of the policy.</p> <p>Credit calculation is required under the ‘worst-case scenario’ for swamps, which includes significant erosion and scouring, equating to total loss of swamps. Recent examples of this type of impact have occurred in Newnes Plateau Shrub Swamps affected by fires in January 2020.</p> <p>In Carne West and Gang Gang swamps that have been undermined and</p>	

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					<p>dessicated, peat has been turned to ash by fire, with ash beds 30cm or more thick in places and channelization commencing. This is the likely irreversible outcome for undermined Dendrobium swamps and threatened species within them (e.g. giant dragonfly) when they are affected by future fires.</p> <p>Application for reduction in maximum predicted offset liability is available only in relation to a measured negligible change in shallow groundwater regime at an undermined swamp after it is undermined (pp 10-11 of Upland Swamp Offset Policy). Reduction in credit calculation prior to mining is not permitted under the Swamp Offset Policy.</p>	
3	Offsets for Coastal Upland Swamp TEC	Response To Submissions	<ul style="list-style-type: none"> Update the biodiversity offset strategy to demonstrate that suitable offsets for Coastal Upland Swamps can be sourced in accordance with the Addendum to NSW Swamp Offsets Policy for Major 	<ul style="list-style-type: none"> The RTS notes that an additional offset property in Maddens Plans has been sourced, meaning that > 90% of the offset liability for Coastal 	<p>We note that an additional Maddens Plains offset site has been sourced.</p> <p>However, as detailed under Key Issue 2 above, we maintain that the FBA and supporting swamp offset policy has been incorrectly applied and needs to calculate the maximum offset liability</p>	Partial

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			<p>Projects (Upland swamps affected by longwall mining subsidence), NSW Biodiversity Offsets Policy for Major Projects and Appendix 7 of the FBA.</p> <ul style="list-style-type: none"> This includes recognition that Maddens Plains is not available as an offset site for this proposal, and that track rehabilitation within the NPWS estate is not supported as an offset mechanism. 	<p>Upland Swamps can be sourced.</p> <ul style="list-style-type: none"> The Maddens Plains Strategic Biodiversity Site will continue to be investigated for threatened amphibian species credits. Programs for threatened species research within the Dharawal State Conservation Area, is currently being investigated. Successful rehabilitation of swamps has occurred elsewhere, such as Happy Valley in the Newnes Plateau. Taking into account, the range of offsets now 	<p>for swamps. The proponent has therefore not demonstrated to date that like-for-like offsets for all swamps impacted can be sourced, even when including the preliminary credit analysis for the recently acquired property.</p> <p>DPIE maintains that the Maddens Plains Strategic Biodiversity Site cannot be used to source credits for new projects.</p> <p>The conditions for the BSO and Dendrobium projects legally prevent this property being used for offset obligations for these earlier projects (and subsequent modifications) only.</p> <p>The NSW Biodiversity Offsets Policy for Major Projects states that residual impacts must source like-for-like offsets. And, "Supplementary measures", such as research and management actions, can only be used as a "last resort" once all "reasonable steps" have been taken to secure like-for-like offsets (Appendix A, p22 & Appendix B, p26).</p> <p>Supplementary measures cannot be targeted for Commonwealth EPBC Act-</p>	

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				<p>available, impacts for the entire project are capable of being offset.</p>	<p>listed matters, such as Coastal Upland Swamps, unless directed to the entity impacted (Appendix B, p28).</p> <p>NPWS, as the Government land owner, does not support research or management measures (Table 10-6A) in the Dharawal reserves being used to source direct offsets for impacted swamps or threatened species. This assertion should not have been made in the RTS as the matter, while discussed with NPWS, was not advanced and never supported.</p> <p>The RTS significantly overstates the potential effectiveness of swamp rehabilitation for undermined, drained and desiccated swamps. Rehabilitation of swamps that has occurred elsewhere, such as Happy Valley (see Attachment B) are not relevant as they were not undermined and were still supported by intact hydrological regimes.</p> <p>None of the swamps impacted by Dendrobium undermining have been remediated and the proponent has not initiated remediation action in any</p>	



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					<p>previously undermined upland swamp, despite being a condition of consent for previous approvals. Impacts to swamp EECs are considered irreversible and will remain in perpetuity.</p> <p>Undermined swamps subject to hydrological changes are almost certain to be completely desiccated resulting in peat incineration and total loss of vegetation during a significant fire event. These swamps are not capable of rehabilitation, as confirmed in recent site visits to the bushfire-affected Newnes Plateau (see Attachment B).</p> <p>Species credits for giant burrowing frog and Littlejohn's Tree Frog require the species to be present at the proposed offset site. No evidence of presence is provided. Assumed presence in habitat is not consistent with the NSW Biodiversity Assessment Method (BAM) and credits cannot be created where the species does not exist.</p> <p>As such, it is considered that subsidence impacts should be revisited through alternate mine layouts or coal extraction methods to limit what are</p>	

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					almost certain to be further irreversible impacts of significant magnitude in areas with an in-perpetuity legacy of cumulative adverse outcomes.	
4	Peer review of upland swamp shallow groundwater monitoring data	As soon as practicable	<ul style="list-style-type: none"> We request access to all raw swamp monitoring data to review. 	<ul style="list-style-type: none"> Not addressed. 	This data was supplied shortly after close of the EIS exhibition period.	Yes
5	Review the use of original Incremental Profile Model to assess subsidence predictions in Areas 5 and 6.	Response To Submissions	<ul style="list-style-type: none"> The proponent undertake revised modelling of subsidence predictions for the proposal using a model that includes data from 305m wide longwall panels in Dendrobium Area 3B, as well as recent Metropolitan Mine longwalls in the vicinity of Eastern Tributary. 	<ul style="list-style-type: none"> The proponent considers use of the IPM is considered appropriate and has been supported by the IESC in their EIS submission. 	<p>Subsidence impacts and consequences are significantly underestimated for the project, especially in Area 5.</p> <p>The 200mm closure criterion is inappropriate as a risk or set back design criterion for Type 3 pool impacts, and the IEMPC has recommended this criterion be “revised downwards” for watercourses.</p> <p>IESC support for use of the IPM in subsidence assessment in the Southern Coalfields is noted, and we agree in principle the IPM is appropriate for measuring subsidence impacts.</p> <p>Notwithstanding, the subsidence predictions for Dendrobium Area 5 use</p>	No

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					<p>the 'old' IPM subsidence model, which does not adequately account for recent experiences at Area 3B and underestimates the subsidence due to 305m longwalls (potentially by approximately 30%).</p> <p>The argument that the 'original IPM' provided 'reliable predictions' is not sound for 305m longwalls, since the database used to develop predictions for the 'original IPM' included very few if any 305m longwalls.</p> <p>Longwalls used in the strain analysis for Area 5 (Table 4.5 in Subsidence Assessment) contain no longwalls greater than 200m in width or depths of cover greater than 250m.</p> <p>The EIS and RTS underestimates likelihood and consequence (i.e. risk) of Type 3 pool impacts occurring.</p> <p>The Type 3 pool impacts assessment ignores experiences in the Upper Georges River and Eastern Tributary. It therefore underestimates likelihood and consequence (i.e. risk) of Type 3 pool impacts occurring.</p>	

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6	Assessment of ancillary aspects of development	Response To Submissions	<ul style="list-style-type: none"> Threatened flora and fauna surveys must be undertaken for all ancillary elements, including car parking, transmission line easements and boreholes prior to approval, including avoidance, resultant mitigation measures and offset requirements. 	<ul style="list-style-type: none"> Targeted fauna survey of Pit Top Carpark extension was not required due to degraded nature of habitat and small area of disturbance. Location of certain infrastructure cannot be defined as it is dependent on further design that cannot occur prior to approval and development of project. 	<p>The response in the RTS does not demonstrate that the FBA has been appropriately applied in relation to the Pit Top Carpark extension and further information is still required.</p> <p>The FBA must be applied to all aspects of the proposed development as presented. The development includes an allowance for clearing 9.5 ha of vegetation in ancillary areas that have not been determined. Key aspects of the FBA, including avoidance, mitigation and offsetting cannot be addressed in the absence of necessary details.</p>	No
7	Avoidance of native vegetation clearing impacts	Response to Submissions	<ul style="list-style-type: none"> Map hollow bearing trees at all areas of surface impact to inform detailed design of infrastructure and demonstrate that significant biodiversity values have been avoided. Avoidance of all significant native vegetation (specifically Shale Sandstone Transition 	<ul style="list-style-type: none"> Not addressed. 	<p>To date no map of hollow bearing trees has been supplied. A map of hollow bearing trees is required to ensure the key FBA component of avoiding biodiversity values is met, in addition to determining whether certain species credit species occur (eg powerful owl).</p>	No

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			Forest TEC) must be demonstrated.			
8	Extent of offset requirements for Koala	Response to Submissions	<ul style="list-style-type: none"> The BAR needs to provide offsets for all Koala habitat being directly impacted, which includes the extent of native vegetation proposed to be cleared for surface infrastructure. 	<ul style="list-style-type: none"> Scribbly gum not listed on SEPP 44 as a koala use tree Koalas not identified on clearing sites Koala recorded adjacent to Vent Shaft 5A dismissed as transient male by consultants. 	<p>SEPP 44 has been revised to reflect improved understanding of regional koala habitat use trees in the new Koala Protection SEPP. Scribbly Gum (<i>E. sclerophylla</i>) is recognised as a key koala habitat use tree in this region (OEH 2018 – A review of koala tree use across NSW – link here) and PCTs with this as a dominant species, including PCT 1083, must be included in calculations for koala habitat. Koala was recorded during surveys for the EIS and is known to be present.</p> <p>The proponent has not confirmed that the Koala is not present or unlikely to be present at the development site, as required by s6.5.1.11 of the FBA. We therefore maintain that all Koala habitat must be offset.</p>	No
9	Updates to species credit species	Response to Submissions	<ul style="list-style-type: none"> The BAR needs to demonstrate the extent of survey effort for all species credit species, including Giant Dragonfly, 	<ul style="list-style-type: none"> The RTS provides justification for not carrying out further survey of listed species. The 	Inadequate assessments have been undertaken given the magnitude of potential loss of threatened aquatic and swamp species.	No

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			Rosenberg's Goanna and Powerful Owl is appropriate and a complete and comprehensive offset calculated for these species. Presence can be assumed and offset accordingly in lieu of additional survey effort.	RTS also justifies survey effort by treating the whole site as a single stratification unit for the purposes of determining the required survey effort.	<p>No electrofishing was conducted in areas of the streams above the proposed longwalls for Dendrobium Area 5 & 6.</p> <p>We do not agree with the proponent's rationale to treat all surface development areas as a single stratification unit, thus eliminating the need to carry out targeted surveys at individual development sites.</p> <p>Stratification should not be based purely on PCT type. Other factors including landscape position, disturbance and fire history, distance to water etc. must be considered when determining survey effort.</p> <p>There is considerable distance between each ventilation shaft (up to 5km), and all sites are easily accessible and of a size able to be surveyed.</p> <p>The FBA requires a proponent to determine if a candidate species is present on a development site or is likely to use the potential habitat on that site.</p> <p>If adequate surveys are not carried out to determine whether a candidate</p>	

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					<p>species is present or likely to use potential habitat on that site, the species should either: 1) be assumed present, or 2) an expert report prepared to confirm that it does not occur.</p> <p>The BAR needs to provide clarity that all candidate species credit species were adequately surveyed at each ventilation shaft (and other surface areas to be cleared).</p> <p>Specific advice for relevant species is provided below:</p> <ul style="list-style-type: none"> Powerful owl: The proponent has not provided detail on hollow bearing trees so it is difficult to conclude the site does not contain breeding or roosting habitat for this species. We do not accept the conclusion that landscape positioning was not appropriate for breeding and roosting habitat for this species. Niche (2019a) states powerful owls roost and nest "in sheltered gullies....within 100m of streams or minor drainage lines...". All ventilation 	

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					<p>shafts contain either sheltered gullies or watercourses.</p> <ul style="list-style-type: none"> • Rosenberg's goanna: This species is listed as a species credit species under the FBA. A species polygon is required. The proponent should determine if biobanking credits are available for this species and describe evidence of efforts to source these credits. If credits are unavailable this species may be offset via ecosystem credits. • Eastern pygmy possum: The RTS relies on the rationale that adequate survey was done based on combined survey effort across the project area. We do not consider this is adequate to confirm the species does not occur at sites where targeted survey was not done. • Survey effort, as shown in Figure 10 and detailed in Section 6.3 of the EA, still requires clarification. Further targeted surveys may be required for surface areas that were not adequately surveyed. 	

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10	Updates to biodiversity assessment	Response to Submissions	<ul style="list-style-type: none"> Miscellaneous updates to credit calculations are required as detailed in our submission. Shapefiles are also required to verify the extent of identified TECs, particularly for Coastal Upland Swamps. 	<ul style="list-style-type: none"> Not addressed. 	To date, no credit calculator updates or shapefiles have been provided.	No
11	Performance measures for Coastal Upland Swamps	Response to Submissions	<ul style="list-style-type: none"> Detailed measurable & enforceable performance measures for impacts to Coastal Upland Swamps are required. These should be consistent with the Upland Swamp Offset Policy that requires negligible environmental consequences to be defined in relation to: <ul style="list-style-type: none"> shallow groundwater level within swamp sediments lower than the baseline level rate of shallow groundwater level 	<ul style="list-style-type: none"> The RTS acknowledges the full range of likely impacts to swamps. The RTS argues that the approach to calculating impacts Coastal Upland Swamps is appropriate. 	<p>These measures are capable of being conditioned into any approval should consent be granted. We reiterate our request for opportunity to input into conditions.</p> <p>However as detailed above, the credit calculation for a number of threatened species including notably Coastal Upland Swamps remains unsatisfactory.</p> <p>As noted above, it is considered that subsidence impacts should be revisited through alternate mine layouts or coal extraction methods to limit what are almost certain to be further irreversible impacts. Assessing performance</p>	No

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			reduction that exceeds the baseline period.		measures should occur within that context.	
12	Performance measures for threatened species	Response to Submissions	<ul style="list-style-type: none"> Detailed measurable & enforceable performance measures for impacts to all threatened species identified as impacted by the proposal. Where relevant, these should be consistent with the Upland Swamp Offset Policy. 	<ul style="list-style-type: none"> Not addressed. The RTS argues that the approach to calculating impacts to species credit species is appropriate. 	<p>These measures are capable of being conditioned into any approval should consent be granted. We reiterate our request for opportunity to input into conditions.</p> <p>However as detailed above, the credit calculation for a number of threatened species, including notably associated with Coastal Upland Swamp habitats, remains unsatisfactory.</p> <p>As noted above, it is considered that subsidence impacts should be revisited through alternate mine layouts or coal extraction methods to limit what are almost certain to be further irreversible impacts. Assessing performance measures should occur within that context.</p>	No
13	Establishment of an Independent Expert Panel for the Southern Coalfields	Post-approval	<ul style="list-style-type: none"> DPIE establish a standing independent expert panel as per the Upland Swamp Offset Policy. Its role 	<ul style="list-style-type: none"> Not addressed 	Comment remains valid but can be addressed post-approval.	Partial

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			would be to provide advice to the consent authority on environmental consequences of mining under Coastal Upland Swamps, and to ensure that monitoring of impacts is rigorous and scientifically robust. Consideration be given to requiring the proponent (and potentially other miners in the Southern Coalfields) to fund the panel.			
14	Review of hydrological modelling	Response to Submissions	<ul style="list-style-type: none"> Further details are provided outlining how the hydrology model has been calibrated, to verify that loss of water/flows as a result of subsidence has been accurately estimated. 	<ul style="list-style-type: none"> The groundwater model has been developed with regard to best practices, including historic, current and proposed mining operations in the drinking water catchment. 	<p>As of May 2018, direct longwall mining impacts at Dendrobium (fracturing, flow diversions and/or pool water loss) had or were highly likely to have occurred in approximately 36 km of watercourses.</p> <p>None of these impacts have been remediated and it is very unlikely that appropriate remediation will be applied to much of the impacted stream network.</p> <p>Approximately 37 km (5%) of watercourses located above the</p>	No

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				<ul style="list-style-type: none"> • Appropriate setbacks have been incorporated to named watercourses and key stream features including pools with volume >100m³ and steps/waterfall greater than 5m in height. • Some parameters are unable to be directly measures and have been conservatively measures eg. high of sub-surface connective fracturing, depth of surface cracking, surface water loss from ephemeral tributaries. • All surface water is considered in 	<p>proposed longwalls for the Dendrobium Area 5 and Area 6 would be expected to experience direct mining induced impacts.</p> <p>All of these stream networks lie within the Metropolitan Special Areas, an important part of the Sydney Drinking Water Catchment, and are in addition to other serious mine impacts within other areas of Sydney's Drinking Water Catchment.</p> <p>Overall, this represents around 14 % of the total length of watercourse within the upper Avon River and Cordeaux River catchments.</p> <p>It is unlikely that these impacts can or will be appropriately remediated. The impacts will be irreversible. Therefore, the proponent cannot feasibly or reasonably be accepted to commit to remediation of the entire length of streams currently affected (36km) or proposed to be affected (37km) by Dendrobium Mine.</p>	

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				<p>the model as “lost”, despite a portion being likely to re-emerge downstream.</p> <ul style="list-style-type: none"> The biodiversity offset strategy will accommodate potential losses of habitat due to hydrological changes to watercourses. 	<p>It is highly unlikely that any of the proposed actions (eg. remediation) will lead to either:</p> <ul style="list-style-type: none"> Restoration of key habitat and ecosystems; or Restoration of flows and pool holding capacity to WC21 and DCC <p>The proposed flow losses will have a very significant impact on availability of aquatic habitat and threatened species. There is no rigorous scientific evidence available that demonstrates diverted water returns to the stream network above longwall mining operations.</p> <p>The groundwater assessment indicates widespread surface to seam fracturing will occur above Dendrobium Areas 5 & 6. The level of such impacts could easily be mitigated against by a reduction in panel width and increase in pillar width.</p> <p>Despite assertions to the contrary, there is no rigorous scientific evidence available that demonstrates diverted water returns to the stream network above longwall mining operations.</p>	

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					Remediation measures will not fully address water losses and many of these losses will likely remain in perpetuity.	
15	Consider alternatives to avoid or limit harm to Aboriginal cultural heritage	Response to Submissions	<ul style="list-style-type: none"> Measures to avoid or limit the impact of the proposed longwalls on Aboriginal cultural heritage be developed that consider changes to the longwall layout. As a minimum, we recommend the applicant is required to reduce the impacts of these long walls on Aboriginal heritage sites: <ul style="list-style-type: none"> LW514 – likely to harm sites 52-2-1780, 52-2-1779 and 52-2-1782. LW516 – likely to harm site 52-2-1752. LW603 – likely to harm sites 52-2-1456 and 52-2-1466. 	<ul style="list-style-type: none"> It is not considered feasible to avoid undermining all Aboriginal heritage sites within Area 5 and Area 6 (RTS, p.113). The RTS (p.113) maintains the argument that harm to structures may not harm heritage values of sites including rock art and grinding grooves, that occur on those geological structures. 	The proposed mine layout and extraction method remains unchanged from the EIS. The feasibility aspect is not detailed nor demonstrated beyond a claim. Hence, there is no capacity to understand alternatives and what balances there are to any decision making beyond such a claim.	No

Issue No.	Description:	Extent and Timing:	EES Group Recommended action:	RTS Comment:	EES Group Comment:	Response satisfactory:
16	Subsidence impacts on sites of Aboriginal cultural heritage significance	Response to Submissions	<ul style="list-style-type: none"> Measures be put in place to reduce subsidence levels to a minimum or imperceptible level at all affected Aboriginal heritage sites, particularly at sites 52-2-1780, 52-2-1752 and 52-2-1456. 	<ul style="list-style-type: none"> Structural change does not necessarily cause an 'adverse consequence' for Aboriginal heritage sites (RTS p.113). 	<p>No measures to reduce subsidence are proposed. No alternatives have been detailed.</p> <p>Subsidence predictions for all of the sites predicted to be harmed in the ACHAR, as requested in our detailed comments, have not been provided in the RTS.</p>	No
17	Preparation of Aboriginal Heritage Management Plan	Pre-approval	<ul style="list-style-type: none"> An Aboriginal heritage management plan (AHMP) must be prepared at an early stage in consultation with the Registered Aboriginal Parties that includes and addresses recommendations of the Aboriginal cultural heritage assessment report (Niche, 2019). We would welcome the opportunity to review a draft AHMP prior to any project approval being issued. 	<ul style="list-style-type: none"> The proponent will prepare an AHMP in consultation with the Registered Aboriginal Parties and will provide DPIE with an opportunity to review the draft AHMP (RTS p.114). 	Response noted.	Yes

Issue No.	Description:	Extent and Timing:	EES Group Recommended action:	RTS Comment:	EES Group Comment:	Response satisfactory:
			<ul style="list-style-type: none"> • A protocol be developed to provide for appropriate Aboriginal community access to cultural heritage sites on Water NSW land as part of the AHMP. • A condition be imposed requiring updates to AHIMS site cards where new or amended site information is documented. 			
18	Extent of Aboriginal cultural heritage consultation	Response to Submissions	<ul style="list-style-type: none"> • The consultation process with the Aboriginal community to date should be clarified as detailed below, and the consultation continued throughout the life of the project. <ul style="list-style-type: none"> ○ Consultation must continue over the life of the project ○ The AHMP must be prepared in consultation with the Aboriginal community. 	<p>The Aboriginal community has been consulted in accordance with the NPW Regulation (RTS p.110).</p> <p>The proponent will consult the RAPs in preparation of an AHMP, including about access to sites.</p> <p>Some additional survey data is provided in the RTS (p.111).</p>	<p>Comments on consultation not adequately addressed.</p> <p>The following technical requests have also not been addressed:</p> <ul style="list-style-type: none"> ○ update the ACHAR to correct identified errors ○ provide a single map overlay of recorded sites with the proposed longwall layout, and ○ submit updated AHIMS site cards 	No



Issue No.	Description:	Extent and Timing:	EES Group Recommended action:	RTS Comment:	EES Group Comment:	Response satisfactory:
			<ul style="list-style-type: none">○ We support appropriate Aboriginal community access to cultural heritage sites.○ The applicant must provide evidence of an appropriate response to the request from Cubbitch Barta Native Title Claimants for detailed survey data.○ Clarify the consultation that has occurred with the South Coast Native Title Claimants.○ Clarify reference to consultation with a RAP 'Walnuja' as referenced in the ACHAR (Niche 2019a, p.15).	No response to some of our specific comments on the consultation process is provided.		

Attachment B – Photos of bushfire impacted swamps on the Newnes Plateau (Feb 2020)



Figure 1: Happy Valley Swamp. Currently subject to rehabilitation. The swamp was not undermined but subject to physical disturbance from 4WD and motorbike tracks. Whilst physically disturbed hydrology was not significantly altered.



Figure 2: Sunnyside Swamp. Not undermined.



Figure 3: Carne West Swamp. Undermined and desiccated before fires.



Figure 4: Carne West Swamp. Undermined and desiccated before fires. Photo illustrates ash depth.



Figure 5: Gang Gang East Swamp. Undermined and desiccated before fires.



Figure 6: Broad Swamp. Not undermined.