8 September 2020

Illawarra Coal
South32
Innovation Campus
Enterprise 1 Bldg. Level 3 Squires Way
NORTH WOLLONGONG NSW 2500
PO Box 514
UNANDERRA NSW 2526
T +61 2 4286 3000
south32.net

Stephen O'Donoghue
Director Resource Assessments
Department of Planning, Industry and Environment
12 Darcy Street
Parramatta NSW 2124

via email: stephen.o'donoghue@planning.nsw.gov.au

Dear Stephen,

RE: DENDROBIUM MINE – BIODIVERSITY CONSERVATION DIVISION SUPPLEMENTARY INFORMATION

Following the meeting held between the Department of Planning, Industry and Environment (DPIE), the Biodiversity Conservation Division (BCD) and South32 on 27 August 2020, please find below supplementary information provided by South32.

The purpose of this letter and its enclosures is to provide further clarification in response to key concerns raised by BCD, particularly in regard to the following:

- consideration of avoidance measures in the Project mine layout;
- Upland Swamp offsets; and
- Koala offsets.

South32 maintains that material avoidance measures have been implemented in the Project design, resulting in significant resource sterilisation. Further avoidance measures, including setbacks from Upland Swamps and narrower panels have been considered, but make the Project uneconomic. The adverse socio-economic consequences of the Project not proceeding are significant, particularly to the Wollongong region.

We are of the view that the approach undertaken to calculate the Project's offset liability for potential impacts to Upland Swamps is in accordance with the overarching NSW Offset Policy, which allows calculation of offset requirements based on a 'partial loss' scenario. It is acknowledged that BCD considers the offset liability should be based on a total loss of value, however, this position is not considered to be reflective of the extensive monitoring which demonstrates swamp vegetation persists following undermining.

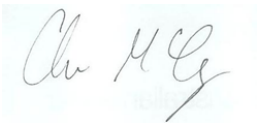
Notwithstanding that the Swamp Offset Policy recommends satisfying the swamp offset liability over time (i.e. per Extraction Plan), South32 would accept a condition that requires the Project's swamp offset liability (based on a partial loss scenario) to be satisfied early in the Project life so that the benefits of securing these offsets can be realised throughout the Project life (and beyond). This could be achieved by applying for a Stewardship Agreement over the South32-owned Biodiversity Offset Property and providing funding to the Biodiversity Conservation Trust of $1,254,444 (ex. GST) (to account for residual credits not provided by the Biodiversity Offset Property at the current credit price of $10,435.70 ex GST).

With respect to the offset liability for the Koala, the additional information provided by BCD on 4 September 2020 has been reviewed. In summary, the Project's offsets for the Koala are considered to be suitable as the Project would provide an offset that comprises ecosystem credits associated with the full 28.5 ha of native vegetation surface distance, and in addition, species credits for the Koala associated with the 1.5 ha of native vegetation surface disturbance where Koalas were determined to be present.

If you have any queries please don't hesitate to contact me (Chris.McEvoy@south32.net or 0407 060 163).

Yours sincerely

SOUTH32 LIMITED



Chris McEvoy
Approvals Manager
Dendrobium Next Domain Project

ENCLOSURE 1

BCD SUPPLEMENTARY INFORMATION

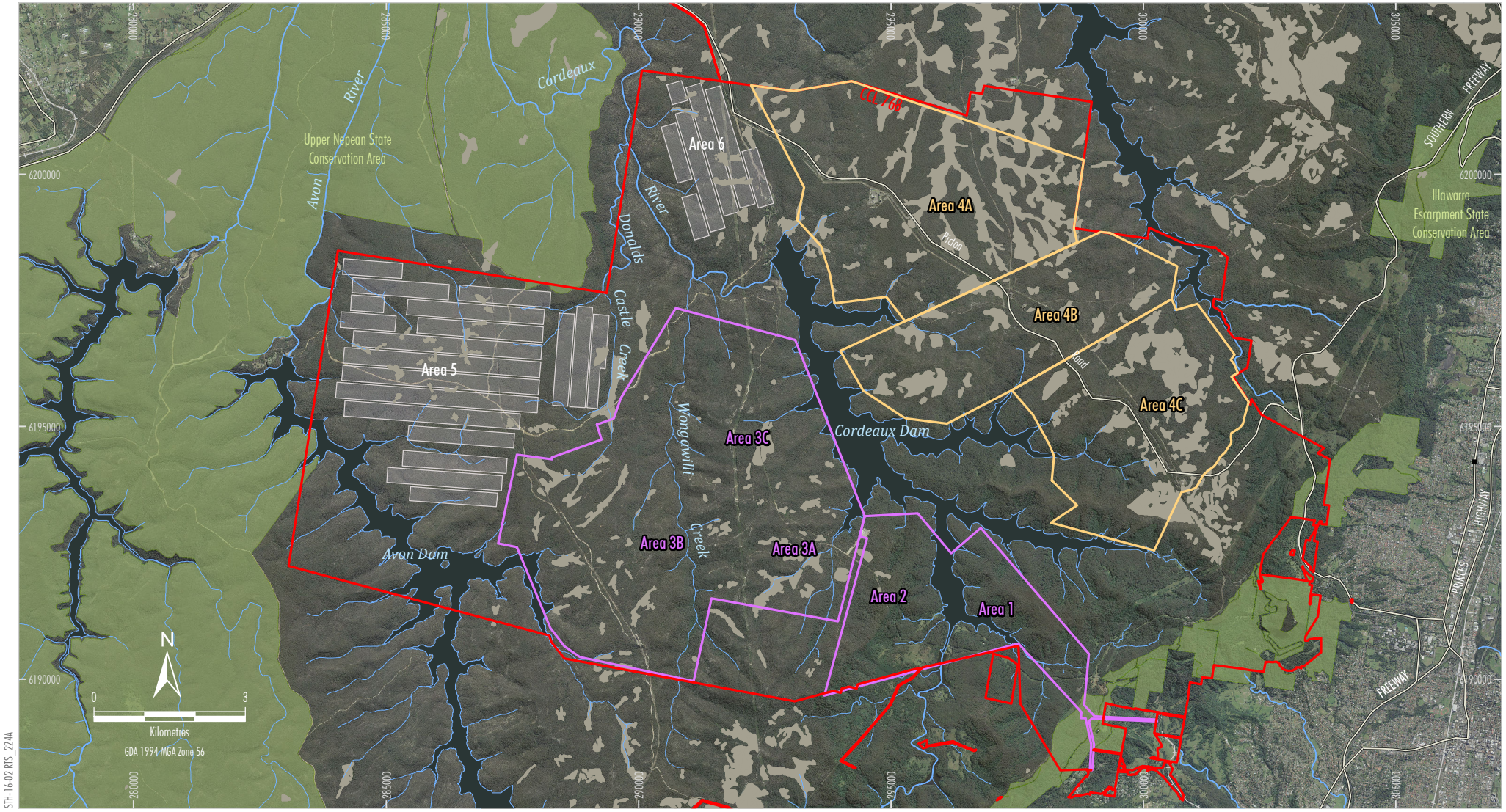
BCD – SUPPLEMENTARY INFORMATION

Consideration of Avoidance Measures in Project Mine Layout

- South32 has incorporated a number of setbacks from built and natural features in the Project mine design which would result in the Project avoiding:
  - Key water assets including the Cordeaux and Avon Dams.
  - Named watercourses (e.g. Avon and Cordeaux Rivers).
  - Key stream features.
- The consequence of the above setbacks is the sterilisation of approximately 25 Mt of run-of-mine (ROM) coal within South32's existing mining tenement (CCL 768) (adjacent to Area 5), worth some $3.58 billion and $222 million in associated royalties.
- The Project has considered avoidance of potential impacts to Upland Swamps:
  - Selection of proposed mining in Areas 5 and 6 as opposed to Area 4 (located within South32's existing CCL 768) (Figure 1).
  - Surface infrastructure has been located to avoid direct impacts to Upland Swamps.
  - The implementation of the mine constraints for the Project would result in avoidance of directly undermining a number of Upland Swamps including Den124, Den115, Den131, Den132, Den119 and Den134.
- South32 has considered additional setbacks in the Project mine design, including a 'minimum' case longwall layout (Figure 2):
  - The minimum case longwall layout adopted setbacks of 50 m (from the ends) and 100 m (from the sides) of longwalls from all Upland Swamps (in addition to the setbacks from key water assets and features).
  - This longwall layout is not considered economically feasible, and is therefore considered unreasonable, given the significant reduction in resource recovery and associated reduction in benefits to NSW (reduction in net benefits to NSW of approximately $220 million in net present value terms).
- Alternative mine plans have also been considered at reduced panel widths (e.g. 163 m panel width as per the Metropolitan Mine):
  - Adverse environmental impacts are still anticipated for reduced longwall widths down to approximately 150 m (MSEC, 2019).
  - Mine plans at significantly reduced panel widths are also considered uneconomic for the Project.
- The direct negative impact of the "no Project" scenario has been considered in the EIS, and would result in the loss of approximately $1,070 million (in net present value terms) in net benefits to NSW.

Upland Swamp Offsets

- Potential impacts to Upland Swamps would be offset by South32 as part of the Biodiversity Offset Strategy for the Project and have been calculated in accordance with:
  - The NSW *Biodiversity Offset Policy for Major Projects* (NSW Offset Policy).
  - Supporting NSW *Framework for Biodiversity Assessment* (FBA).
  - Associated *Credit Calculator for Major Projects and Biobanking (version 4.0)* (BBCC).
- The offset liability has been calculated using the BBCC which allows amendment of site value scores to reflect a "partial impact" (i.e. the assumed hydrological impact to the swamps does not result in a complete loss of value equivalent to clearing).
- As the Swamp Offset Policy forms part of the NSW Offset Policy, the BBCC is available for calculating potential impacts to swamp vegetation.
- The area of Upland Swamps within 60 m of Project longwalls (TEC component) is approximately 21.6 ha.



LEGEND

- Dendrobium Mining Lease
- Road
- National Park, Nature Reserve and State Conservation Area
- Dendrobium Underground Mining Area - Existing Mine (DA 60-03-2001)
- Dendrobium Underground Mining Area - Indicative Area 4 Extent
- EIS Base Plan Longwalls
- Coastal Upland Swamp

Note: Areas 4A, 4B and 4C represent indicative potential future mining domains only, within CCL 768.

Source: Geoscience Australia, (2006); Department of Industry (2018); Department Finance, Services & Innovation (2018)

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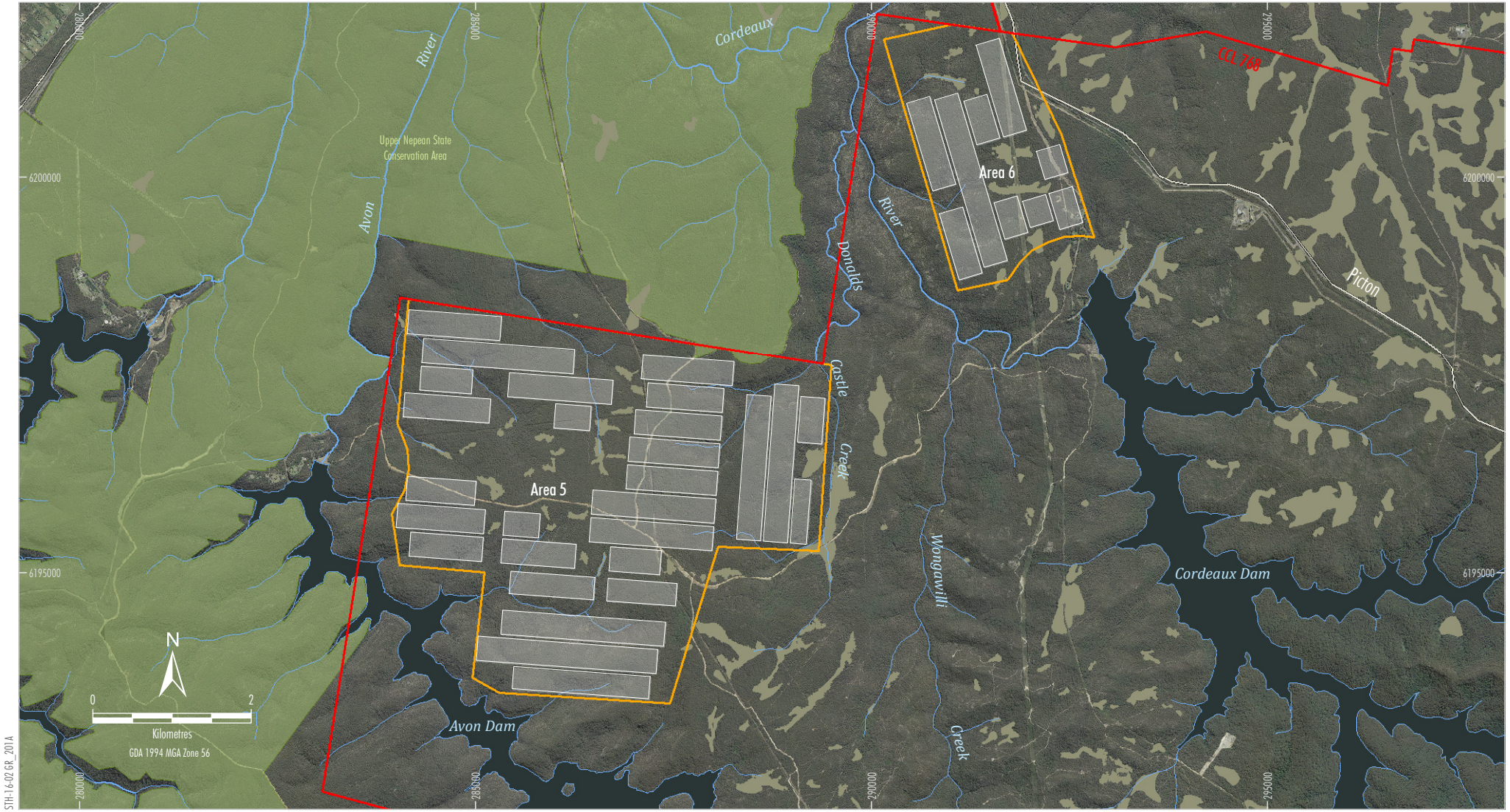
DENDROBIUM MINE

Mining Areas within CCL 768

Figure 1



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LEGEND

- Dendrobium Mining Lease
- Road
- National Park, Nature Reserve and State Conservation Area
- Dendrobium Underground Mining Area - Proposed Project
- EIS 'Minimum' Case Longwalls
- Coastal Upland Swamp

Source: Geoscience Australia, (2006); Department of Industry (2018); Department Finance, Services & Innovation (2018);

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DENDROBIUM MINE

EIS Minimum Case Mine Plan

Figure 2

- The Project would relinquish approval to impact Den02 (0.7 ha) and, therefore, the net area of Upland Swamp to be offset is 20.9 ha, which equates to 305 Biobank credits (for a partial loss scenario).
- The reasonable equivalence of Upland Swamp credits calculated under the Biobanking Assessment Method (BBAM) has been estimated using Equation 1 of the Biodiversity Assessment Method (BAM), using a change in vegetation integrity score as provided in Table 55 of the Project BARBOS and assuming a biodiversity risk weighting of 3.
  - The calculated equivalent offset liability is 196 BAM credits for 20.9 ha of swamps (TEC component) within 60 m of the Project longwalls.
- South32 proposes to satisfy this offset liability by:
  - forming a Stewardship Agreement over the Biodiversity Offset Property – which contains approximately 51.3 ha of Upland Swamp TEC estimated to provide 76 BAM credits; and
  - paying into the Biodiversity Conservation Trust (BCT) Fund, or using other mechanisms available under the BC Act, for the residual offset liability of 120 BAM credits (i.e. total offset liability less Biodiversity Offset Property).
- The Swamp Offset Policy allows for satisfying the offset liability for subsidence impacts to Upland Swamps over the life of a project (i.e. per Extraction Plan). However, South32 would accept a condition to satisfy the entire 'partial loss' offset liability at the start of the Project, such as:
  - Within 1 year of the commencement of the Project:
    - make an application to form a Stewardship Agreement over the Biodiversity Offset Property and subsequently retire all ecosystem credits associated with Uplands Swamps within the Biodiversity Offset Property; and
    - pay the value of the residual Upland Swamp Offset Liability to the BCT Fund (i.e. $1,254,444 ex GST for 120 BAM credits at the current credit price of $10,435.7 per credit ex GST [August 2020])[1].
- The upfront satisfaction of the Project's swamp offset liability (for a partial loss scenario) is considered to provide material benefit, as the security of the offset liability will allow the associated biodiversity benefits of the offset to be realised throughout the life of the Project (rather than progressively).

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Summary of Upland Swamp Offset Liability	
Upland Swamp Offset Liability	• 20.9 ha of Upland Swamp TEC within 60 m of proposed longwalls predicted to be "partially impacted" by the Project (i.e. 21.6 ha minus 0.7 ha of Den02, a swamp approved to be impacted by the Dendrobium Mine which has been explicitly offset, with approval to impact this swamp to be relinquished for the Project). • This equates to an offset liability of 305 credits under the Biobanking Credit Calculator, comprising 227 credits for HN560 and 78 credits for HN662.
Reasonable Equivalence	• Reasonable equivalence of credits (i.e. conversion from FBA to BAM credits) has been estimated using Equation 1 of the BAM, applying changes in site value scores as determined in Table 55 of the BARBOS (11.59 for HN560 and 15.75 for HN662) and assuming a biodiversity risk weighting of 3. • This equates to an equivalent offset liability of 196 BAM credits. **Equation 1: Determine the number of ecosystem credits required for the impact on vegetation that is a TEC or contains threatened species habitat** $\text{Ecosystem credits required for each vegetation zone} = \sum_{i=1}^{n} (\Delta\text{VI Loss} \times BRW \times area) \times 0.25$ *where:* *i = the i^{th} vegetation zone impacted by development at the development site, or on land to be biodiversity certified* *ΔVI Loss = the change (loss) in the vegetation integrity score of a vegetation zone at the development site as determined by Equation 19* *BRW = means the biodiversity risk weighting applied to the vegetation zone. The biodiversity risk weighting for a TEC or a PCT containing threatened species habitat is based on the sensitivity to loss class of the TEC/PCT and the highest sensitivity to gain class of the predicted threatened species. For a PCT or TEC not associated with threatened species habitat, the sensitivity to loss class for the PCT or TEC is used with the low sensitivity gain class* *area = the area in hectares of the vegetation zone*
Offset Property	• Project Biodiversity Offset Property comprises 51.3 ha of Upland Swamp TEC, equivalent to approximately 76 BAM credits. • Project Biodiversity Offset Property would be secured under a Stewardship Agreement, leaving a residual Upland Swamp offset liability of approximately 120 BAM credits.
Residual Offset Cost	• Current credit price for Upland Swamp TEC communities (HN560 and HN662) is $10,435.7 ex. GST (at August 2020). • Cost of retiring residual Upland Swamp offset liability via the BCT Fund is $1,254,444 ex. GST (120 BAM credits).

Koala Offsets

- The document "*Use of Sandstone Forest PCT 1083 by Koalas – Woronora Plateau*" (BCD, 2020) provided following the 27 August 2020 meeting has been reviewed.
- Niche Environment and Heritage conducted surveys to determine the presence of Koalas within the proposed impact areas as required under the FBA (as a component of the NSW Offset Policy). The survey did not attempt to determine Koala feed tree use on a regional or local basis, or across the entirety of any Plant Community Type (PCT). Whilst regional survey programs provide background information, the actual presence of Koalas and use of a given site cannot be determined without specific site survey, as required by guidelines under the FBA and the current *State Environmental Planning Policy (Koala Habitat Protection) 2019* (Koala Habitat Protection SEPP).
- It is not disputed that *E. sclerophylla* or *E. sieberi* are used as feed trees on the Woronora Plateau, however it is noted that these trees occur across many PCTs and are not confined to PCT 1083. Records of Koalas within these trees needs to be considered in the context of the prevailing PCT, soil type and other factors before determining whether an individual stand of trees would constitute important habitat.
- BCD has made reference to *E. sclerophylla* or *E. sieberi* status with Table 23 of *A review of koala tree use across New South Wales* (NSW Office of Environment and Heritage [OEH], 2018) as "High Use". However, it is noted that "High Use" is local high use as determined by "species used at a high level in one or two locations". The same report states:

  > "*Use levels of many tree species varied within KMAs, typically in response to different soil landscapes (e.g. Phillips and Hopkins 2008, Phillips et al. 2011, Phillips 2013) and likely nutrient availability (e.g. E. pilularis (and other species) use in the Central Coast KMA (L Wilmott 2017–18, pers. comm.)). In deriving use levels for tree species within each KMA the highest designated use level was adopted as the regional level*."

- This demonstrates that even if a tree is stated as a local "High Use" tree, that is done so on a conservative basis and site-specific factors need to be accounted for at any given site. Table 10 of OEH (2018) (considered as the intended reference rather than Table 23) demonstrates that use of. *E. sclerophylla* and *E. sieberi* is highly variable.
- Survey effort in the recent survey by Niche Environment and Heritage (2020) is consistent with current survey guidelines which require survey via at least **one** primary method and **one** ancillary method. Spot Assessment Technique (SAT) plots were conducted as the primary method including spotlighting as the ancillary method, which was sufficient to meet the current Koala Habitat Protection SEPP guidelines. Acoustic recording and call playback were also conducted, and while it is acknowledged that these methods were not undertaken in the ideal season, they are still useful to supplement the other two survey methods.
- The current NSW Atlas description of important habitat is (emphasis added):

  > *'Important' habitat (however this is not a mapped important habitat area) is defined by the density of koalas and quality of habitat* ***determined by on-site survey****.*

- The current site survey has determined that Koalas were not present at the site and the material provided by BCD demonstrates that the general density of Koalas within similar habitats is very low (stated by BCD as conservatively 0.02 Koalas/hectare). Therefore, if the importance of Koala habitat is to be determined by Koala density and quality of habitat, it is considered that surveyed areas of PCT 1083 would not constitute important habitat.
- The BCD (2020) document states:

  > *Based on this conservative estimate, PCT 1083 on the Woronora Plateau has a koala density of 0.02 koalas/ha or 1 koala for every 50 ha of vegetation, consistent with many of the other sandstone vegetation communities in the region. Therefore, it is appropriate that a biodiversity offset should be calculated for the 26.9 ha of this PCT that will be impacted.*

- Impacts on the PCT 1083 habitat to be cleared would be offset via ecosystem credits, which would require offsetting from similar PCTs within the adjacent IBRA subregion.
- Therefore, the BCD's assertion that Koalas are generally present at low levels within all sandstone vegetation within the region reinforces that impacts to low quality habitat should be offset via ecosystem credit requirements (which would occur for the Project). This is considered to be the reason why the current Koala assignation under the BAM is as a species/ecosystem credit species.
- It is considered important to make a distinction between low and high density Koala habitats to prevent the ability for low quality offset sites with few Koala records (within areas of PCT 1083 for example) to be used as offsets for impacts within high quality PCTs with known high densities of Koalas (such as areas of Sandstone Transition Forest TEC).

- In summary, the Project would provide an offset that comprises ecosystem credits associated with the full 28.5 ha of native vegetation surface disturbance, and in addition, species credits for the Koala associated with the 1.5 ha of native vegetation surface disturbance where Koalas were determined to be present.

References

Biodiversity Conservation Division (2020). *Use of Sandstone Forest PCT 1083 by Koalas – Woronora Plateau.*

Mine Subsidence Engineering Consultants (2019). *Dendrobium Mine – Plan for the Future: Coal for Steelmaking Influence of longwall void width on the predicted subsidence effects*

Niche Environment and Heritage (2020). *Dendrobium Mine – Plan for the Future: Coal for Steelmaking Supplementary Biodiversity Assessment Report.*

NSW Office of Environment and Heritage (2018). *A review of koala tree use across New South Wales.*