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Your ref: SSD-9526

Ms Lauren Evans

Team Leader

Energy and Resource Assessments, Planning and Assessment Division

Department of Planning, Industry and Environment

lauren.evans@planning.nsw.gov.au

Dear Ms Evans

Maxwell Underground Coal Mine Project (SSD 9526) – BCD's Response to Malabar Coal's Correspondence - BAM requirements for Threatened Flora Assessment

I refer to your e-mail dated 17 June 2020 in which the Planning and Assessment Group (P&A) of the Department of Planning, Industry and Environment (the Department) asked Biodiversity and Conservation Division (BCD) to review a letter from Malabar Coal dated 15 June 2020. The letter was in relation to the biodiversity assessment for the Maxwell Underground Coal Mine Project (SSD 9526). It included the response from their ecologist, Dr. Colin Driscoll, to BCD's advice dated 22 May 2020 on the Biodiversity Assessment Method (BAM) assessment of threatened flora for this project. Since your e-mail, BCD has also received an e-mail dated 26 June 2020 from Resource Strategies Pty Ltd with the proponent's estimate of species credits for the threatened plants for this project, and two emails from P&A dated 6 July 2020 and 8 July 2020 with questions on the credit estimate for *Thesium australe*.

BCD has reviewed Dr. Driscoll's response, the credit calculations produced by Resource Strategies Pty Ltd and the queries on the *Thesium australe* credit calculations. BCD's recommendations are provided in **Attachment A**, detailed comments are provided in **Attachment B**, and a summary of estimated credits is provided in **Attachment C**.

If you require any further information regarding this matter, please contact Robert Gibson, Acting Senior Team Leader Planning, on 4927 3154 or via email at rog.hcc@environment.nsw.gov.au

Yours sincerely

JOE THOMPSON

Director Hunter Central Coast Branch

Biodiversity and Conservation Division

Date: 14 July 2020

Enclosures: Attachments A, B and C

BCD's recommendations

Maxwell Underground Coal Mine Project (SSD 9526) – BCD's Response to Malabar Coal's Correspondence - BAM requirements for Threatened Flora assessment

1. Targeted threatened flora surveys should be current and consistent with the 2016 NSW Guide to Surveying Threatened Plants (OEH 2016).
2. BCD recommends that the proponent demonstrates how the targeted flora surveys in the BDAR were undertaken in accordance with NSW Guide to Surveying Threatened Plants (OEH 2016). This would include details on the survey methods used, the survey effort (including timing and seasonality), and the habitats searched. In instances where the BAM accredited assessor deviates from these guidelines then appropriate justification is to be provided.
3. The following threatened flora species require targeted surveys in accordance with the 2016 NSW Guide to Surveying Threatened Plants (OEH 2016) to determine likely absence or presence:

Group 1: Species that can be surveyed at any time of year.

- *Cymbidium canaliculatum* and *Eucalyptus glaucina*

Group 2: Ground orchids that can be surveyed in late spring during flowering. Or an expert report can be prepared if survey conditions are unsuitable (e.g. drought conditions).

- *Diuris tricolor*, *Prasophyllum* species 'Wybong' (*Prasophyllum petilum*) and *Pterostylis chaetophora*

Group 3: Species that can be surveyed during spring/summer.

- *Ozothamnus tessellatus* and *Thesium australe*

4. BCD recommends that information on the surveys for *Thesium australe* habitat is provided in relation to how it meets BCD threatened flora survey guidelines. If this cannot be provided then appropriately targeted surveys need to be undertaken.
5. The potential offset liability for this project is estimated to be \$2,396,573.88.

BCD's detailed comments

Maxwell Underground Coal Mine Project (SSD 9526) – BCD's Response to Malabar Coal's Correspondence - BAM requirements for Threatened Flora assessment

1. Surveys relied heavily on previous surveys

BCD is still of the opinion that the Biodiversity Development Assessment Report (BDAR) and the Environmental Impact Statement (EIS) heavily relied on previous historic surveys to reduce targeted threatened species survey effort and to discount potential candidate species from further survey. This is shown in the recent correspondence, as most species referred to in Dr. Driscoll's letter dated 15 June 2020 use results of previous surveys, including the lack of detection for many species, as justification for not considering some species as 'candidate species' or dismissing additional / further survey requirements under the Biodiversity Assessment Methodology (BAM) for the current project. Although BCD acknowledges that previous surveys may be used to inform survey design and targeted survey effort, they must be current and be compliant with the methodologies detailed in the 2016 *NSW Guide to Surveying Threatened Plants* (OEH 2016).

BCD notes that many of the previous surveys cited in the BDAR are greater than five years old and are thus not considered to be current under the BAM. Nor do they employ methods consistent with the 2016 OEH threatened flora survey guidelines. Most previous surveys would have likely utilised the random meander technique (Cropper 1993), which does not sample all potential habitat. BCD now requires (as per the '*NSW Guide to Surveying Threatened Plants*' (OEH 2016)) spaced parallel transects for all threatened flora species across all suitable habitat, based on the species growth habit, to determine suitable spacing widths for detectability.

BCD's concern is that the reliance on previous surveys may have resulted in the premature removal of a species from being considered a potential candidate species, and may have limited further survey effort for this project.

Recommendation 1

Targeted threatened flora surveys should be current and consistent with the 2016 NSW Guide to Surveying Threatened Plants (OEH 2016).

2. The BAM requires demonstration of the use of the 2016 NSW Guide to Surveying Threatened Plants (OEH 2016)

The proponent has yet to demonstrate how targeted flora surveys were undertaken in accordance with the OEH 2016 threatened flora survey guidelines, given the lack of details in the BDAR and subsequent correspondence. The BDAR does not provide details of the survey methodologies utilised (e.g. parallel transects), the survey effort (including timing, climatic conditions and seasonality), nor the habitats or plant communities surveyed (including a schematic representation). The BAM requires that these details are provided and for any deviation from these survey guidelines the appropriate justification should accompany them. BCD also acknowledges that parallel transects over large areas of habitat may be onerous and

difficult, as may be the case for some 'candidate species' for the Maxwell project. However, the 2016 guideline permits an accredited assessor to submit an alternative approach to BCD after prior consultation and agreement with BCD. No such consultation has occurred with the Maxwell project.

Although Attachment A (page 35) of the BDAR states: '*Targeted surveys were conducted in accordance with the NSW Guide to Surveying Threatened Plants (OEH 2016a)*', this has yet to be demonstrated in the BDAR or subsequent correspondence.

The map of the targeted flora surveys, Figure 2 in Dr. Driscoll's letter, does not appear to be compliant with current guidelines. It appears to show the transects as random meanders rather than parallel tracks, with no obvious spacing or systematic sampling. Based on the coarse map scale attached to this figure, transects are not systematic, are spaced at varying widths without any obvious reasoning and thus they appear to miss large areas of the Project Area, including potential habitat for some threatened flora (e.g. derived grasslands for *Diuris tricolor*).

Recommendation 2

BCD recommends that the proponent demonstrates how the targeted flora surveys in the BDAR were undertaken in accordance with *NSW Guide to Surveying Threatened Plants* (OEH 2016). This would include details on the survey methods used, the survey effort (including timing and seasonality), and the habitats searched. In instances where the BAM accredited assessor deviates from these guidelines then appropriate justification is to be provided.

3. Further targeted flora surveys are required for some of the listed 'candidate species'

BCD is still of the opinion that the seven species listed in Table 1 (below) are still likely 'candidate species'; for the Maxwell Project area. Therefore, appropriate targeted surveying across all potential habitats and plant communities is still required.

Table 1: Summary of timing of survey for seven threatened plant species and potential credit yield

| Threatened flora species that require further field assessment (if not assumed present and in absence of expert report) | Season Survey Timing (month period) | Unit of Measure | Total Potential Habitat Area (ha) |
|---|-------------------------------------|-----------------|-----------------------------------|
| GROUP 1 – Surveys can be undertaken now | | | |
| <i>Cymbidium canaliculatum</i> - population in the Hunter Catchment | All year | Count | 23.4 |
| <i>Eucalyptus glaucina</i> | All year | Count | 13.7 |
| GROUP 2 – Require seasonal survey or expert report | | | |
| <i>Diuris tricolor</i> . Pine Donkey Orchid population in the Muswellbrook local government area | Sept to Oct | Area | 153.5 |
| <i>Prasophyllum</i> species 'Wybong' (<i>P. petilum</i>) | Sept to Oct | Area | 139.8 |
| <i>Pterostylis chaetophora</i> | Sept to Nov | Area | 11.2 |
| GROUP 3 – Spring/Summer survey | | | |
| <i>Ozothamnus tessellatus</i> | Sept to Oct | Area | 12.3 |
| <i>Thesium australe</i> | Nov to Feb | Area | 45.5 |

BCD concurs with Dr. Driscoll's comment that a species must be predicted to occur within the IBRA subregion. As such BCD has refined its list of potential 'candidate species' from our letter dated 22 May 2020 and removed the following taxa which do not require any further survey or assessment: *Androcalva rosea* (formerly *Commersonia rosea*), *Lasiopetalum longistamineum* and *Monotaxis macrophylla*. All other species are known to occur in the Hunter IBRA Subregion and are therefore included as 'candidate species'.

BCD notes that the following contested species have been recorded in the Hunter IBRA Subregion:

- *Ozothamnus tessellatus* – has been recorded within the Ravensworth State Forest which is on the far eastern edge of the IBRA subregion;
- *Prasophyllum* species 'Wybong' (*Prasophyllum petalum*) – has been recorded at Mangoola Mine (sympatrically with *Diuris tricolor*) and along Thomas Mitchell Drive, just south of Muswellbrook; both localities within the IBRA subregion;
- *Pterostylis chaetophora* – a widespread threatened orchid known from a variety of habitats, including dry sclerophyll forests / woodlands inhabited by box and ironbark; has been recorded from Denman, Wingen and Rothbury, all within the Hunter IBRA Subregion. BCD acknowledges that the record at Denman may be mis-identified and that this may actually represent a similar species - *P. praetermissa*. Nevertheless, the NSW Scientific Committee Final Determination for this species lists Denman and Wingen as known localities; and
- *Thesium australe* – has been recorded from the Dartbrook area and from grassland near the Mangoola Mine. Both records are within BioNET and are within the IBRA Subregion. BCD acknowledges that only the small / limited areas of Kangaroo Grass (*Themeda triandra*) grassland offer suitable habitat for this species.

Cymbidium canaliculatum, *Diuris tricolor* and *Eucalyptus glaucina* are all known to occur within the Hunter IBRA Subregion and have potential habitat on the Maxwell site, and therefore require appropriately targeted surveys. BCD is still of the opinion that all three ground orchids (*Diuris*, *Prasophyllum* and *Pterostylis*) have the highest potential to occur on site given their known preference for diverse habitats (e.g. woodlands, and grasslands including derived and to a lesser extent disturbed communities) and as such should form the main species for targeted survey.

It should be noted that Dr. Driscoll in his correspondence included the 'Candidate Species Output' from BAM calculator (BAMC) which were not included in the in the BDAR (its inclusion is a requirement as per Appendix 10 of the BAM). As such BCD did not comment on many of these species in our letter dated 22 May 2020. The candidate species list includes many species that theoretically required survey, or for which a detailed justification is required as to why they were not considered to occur on the project site. It is unclear whether such species were surveyed for under the BDAR as this document does not provide any species' specific information regarding targeted surveying of such species; including details on methodology (e.g. transect spacing widths as per OEH 2016 survey guidelines), habitats searched, timing (e.g. specific dates), and survey effort. Table 10 of the BDAR provides very brief comments on the likely presence of some of these species on the Maxwell Underground Coal Mine Project area, but they are dismissed by generic statements such as 'habitat unsuitable' to potentially discount them; which is not in accordance with the BAM. Nevertheless, when reviewing the BDAR recently, BCD were asked to remove the taxa unlikely to occur; and many of these species were considered. BCD notes that they occur in the Lower Hunter part of the Sydney Basin IBRA region and do not have suitable habitat on site. As such we have no issue with

them being removed from further consideration for this project. This leaves seven species for which further assessment is required (see **Table 1**, above).

Recommendation 3

The following threatened flora species require targeted surveys in accordance with the 2016 *NSW Guide to Surveying Threatened Plants* (OEH 2016) to determine likely absence or presence:

Group 1: Species that can be surveyed at any time of year.

- *Cymbidium canaliculatum* and *Eucalyptus glaucina*

Group 2: Ground orchids that can be surveyed in late spring during flowering. Or an expert report can be prepared if survey conditions are unsuitable (e.g. drought conditions).

- *Diuris tricolor*, *Prasophyllum* species 'Wybong' (*Prasophyllum petilum*) and *Pterostylis chaetophora*

Group 3: Species that can be surveyed during spring/summer.

- *Ozothamnus tessellatus* and *Thesium australe*

4. Data behind the surveys for *Thesium australe* are required

It is unknown if the data provided in the e-mail from P&A dated 8 July 2020 that suggests that *Thesium australe* is not present within the development footprint meet BCD threatened species survey requirements. BCD acknowledge that *Themeda triandra* is an indicator species for *Thesium*, however this grass can be easy to miss within a large grassland area. Therefore, BCD requests further information on the survey work behind this map (and how it meets the requirements of the 2016 threatened flora survey guidelines), particularly in relation to belt transects and survey effort.

Recommendation 4

BCD recommends that information on the surveys for *Thesium australe* habitat is provided in relation to how it meets BCD threatened flora survey guidelines if this cannot be provided then appropriately targeted surveys need to be undertaken.

5. The potential offset liability for the project is estimated to be \$2,396,573.88

With the exception of *Prasophyllum petilum*, BCD agrees with the estimated potential species credit yield for the project calculated by Resource Strategies Pty Ltd (dated 26 June 2020). BCD acknowledges that the Threatened Biodiversity Data Collection currently links *Prasophyllum petilum* (as *P.* 'sp. Wybong') to one Plant Community Type (PCT) on the project area: Fuzzy Box Woodland (PCT 201). However, this species is recorded in other vegetation communities in the upper Hunter Valley, as per the Mangoola Mine Site, and the record on Thomas Mitchell Drive is within Central Hunter Spotted Gum – Grey Box forest, rather than Fuzzy Box Woodland. Therefore, BCD considers that the following PCTs are potential habitat for this species: PCT 201 (woody & DNG), PCT 1604 (woody), PCT 1606 (DNG), PCT 1607 (DNG), PCT 1655 (DNG), and PCT 1691 (DNG). This equates to a total area of 139.8 hectares and generates a maximum of 1,212 species credits.

BCD has also estimated the maximum amount of *Thesium australe* credits from 45.5 hectares of potential habitat to be 34 credits.

The maximum amount of credits with these calculations equates to \$2,396,573.88 under the current version of the Biodiversity Offset Payment Calculator. The maximum potential credit breakdown, and value if paid into the Biodiversity Conservation Trust Fund is provided in **Table 2 (Attachment C; below)**.

Recommendation 5

The potential offset liability for this project is estimated to be \$2,396,573.88.

Attachment C: Table 2. Potential maximum credit yield for seven threatened plant species.

| Threatened flora species that require further field assessment (if not assumed present and in absence of expert report) | Maximum potential area of habitat (ha) | Maximum total credits | Maximum payment to BCT | Stage 1 – area of habitat (ha) | Stage 1 – maximum total credits | Stage 1 – maximum payment to BCT | Stage 2 – area of habitat (ha) | Stage 2 – maximum total credits | Stage 2 – maximum payment to BCT |
|---|--|-----------------------|------------------------|--------------------------------|---------------------------------|----------------------------------|--------------------------------|---------------------------------|----------------------------------|
| GROUP 1 – Surveys can be undertaken now | | | | | | | | | |
| <i>Cymbidium canaliculatum</i> - population in the Hunter Catchment* | 23.4 | 93.4 | \$246,965.48 | 21.1 | 84.2 | \$222,639.11 | 2.3 | 9.2 | \$24,326.36 |
| <i>Eucalyptus glaucina</i> * | 13.7 | 55 | \$17,180.90 | 11.7 | 46.8 | \$14,619.38 | 2 | 8 | \$2,499.04 |
| GROUP 2 – Require seasonal survey or expert report | | | | | | | | | |
| <i>Diuris tricolor</i> . Pine Donkey Orchid population in the Muswellbrook local government area | 153.5 | 1631 | \$509,491.78 | 144.1 | 1474 | \$460,448.12 | 9.4 | 157 | \$49,043.66 |
| <i>Prasophyllum petilum</i> | 139.8 | 1212 | \$1,505,170.68 | 130.7 | 1114 | \$1,383,465.46 | 9.1 | 98 | \$121,705.22 |
| <i>Pterostylis chaetophora</i> | 11.1 | 286 | \$80,497.56 | 8.9 | 229 | \$64,454.34 | 2.2 | 57 | \$16,043.22 |
| GROUP 3 – Spring/Summer survey | | | | | | | | | |
| <i>Ozothamnus tessellatus</i> | 12.3 | 222 | \$33,757.32 | 12 | 217 | \$32,997.02 | 0.3 | 5 | \$760.30 |
| <i>Thesium australe</i> | 45.5 | 34 | \$3,510.16 | 45.5 | 34 | \$3,510.16 | 0 | 0 | 0 |
| TOTAL | | | \$2,396,573.88 | | | \$2,182,133.60 | | | \$214,377.80 |

*species measured by individual. Calculations are based on an arbitrary two plants per hectare.