



Office of  
Environment  
& Heritage

Your reference: SSD-6875  
Our reference: DOC15/162289-04  
Contact: Robert Gibson, 4927 3154

Mr Matthew Sprott  
Senior Planning Officer, Resource Assessments  
Department of Planning and Environment  
GPO Box 39  
SYDNEY NSW 2001

Dear Mr Sprott

**RE: PROPOSED DRAYTON SOUTH COAL PROJECT (SSD-6875)**

I refer to your e-mail dated 15 May 2015 inviting the Office of Environment and Heritage (OEH) to review the proposed Environmental Impact Statement (EIS) of the Drayton South Coal Project.

OEH understands that the proposed development includes:

- continuing operations at the existing Drayton coal mine, with some minor additional mining, over a period of 15 years
- developing a new open cut mining area, known as Drayton South, south of the existing mine, to enable the extraction of 73 million tonnes of run-of-mine coal at a rate of up to 6.4 million tonnes per year, over a period of 15 years
- utilising a range of existing and additional infrastructure to support the mining operations
- realigning a section of Edderton Road (including its intersection with the Golden Highway)
- exporting coal from the site via the existing Drayton mine rail facilities
- progressively rehabilitating the site.

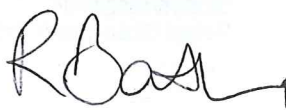
OEH has reviewed the EIS of the proposed development in relation to Aboriginal cultural heritage, flooding and floodplain issues, and threatened biodiversity. OEH acknowledges that this project is a reiteration of two earlier projects that largely met OEH's biodiversity offset requirements. This new application for this project has been assessed under the NSW Biodiversity Offsets Policy for Major Projects which includes the requirement to comply with the Framework for Biodiversity Assessment (FBA). The FBA requirements have not been fully met by this project, however, during the current transitional period of implementation of the new policy the consent authority may use its discretion in the application of the policy for this project.

Further details of OEH's assessment are provided in **Attachment 1**. Due to the number of matters that remain outstanding, OEH will provide recommended conditions of approval once these matters have been resolved.

It should be noted that the Assessment Bilateral Agreement signed by the NSW Government and Australian Government came into effect on 26 February 2015. Matters of National Environmental Significance (MNES) under the *Environment Protection and Biodiversity Conservation Act 1999* are now being assessed by the state government on behalf of the Australian Government. This project was considered to be a 'controlled action' due to its likely impact on several MNES. OEH will provide a separate review on MNES to the Australian Government for their approval.

If you have any enquiries concerning this advice, please contact Robert Gibson, Regional Conservation Planning Officer, on 4927 3154.

Yours sincerely



9 JUN 2015

**RICHARD BATH**  
**Senior Team Leader Planning, Hunter Central Coast Region**  
**Regional Operations**

Enclosure: Attachment 1: OEH assessment of the Drayton South Coal Project

## **ATTACHMENT 1: OEH ASSESSMENT OF THE DRAYTON SOUTH COAL PROJECT**

OEH has reviewed the proposed Drayton South Coal Project in relation to Aboriginal cultural heritage, flooding and floodplain issues, and threatened biodiversity. This review is based on information provided in the 'Drayton South Coal Project Environmental Impact Assessment' (EIS) of May 2015 (Hansen Bailey, 2015).

### **ABORIGINAL CULTURAL HERITAGE**

OEH has reviewed the Aboriginal cultural heritage aspects of this proposed development, particularly Sections 7.6 and Appendix O of the EIS. This assessment was conducted to consider potential impacts of the project on Aboriginal cultural heritage, and was done in accordance with OEH's Aboriginal cultural heritage assessment guidelines and the requirements of Part 6 of the *National Parks and Wildlife Act 1974*.

OEH acknowledges that the Aboriginal cultural heritage assessment has been undertaken in accordance with OEH's Aboriginal cultural heritage assessment requirements. The results of the Aboriginal cultural heritage assessment for the project area are also acknowledged.

OEH notes that the proponent is committed to updating the existing Aboriginal Cultural Heritage Management Plan for the project area to incorporate the additional strategies developed to manage the likely impact on Aboriginal cultural heritage values associated with this project.

### **FLOODING AND FLOODPLAIN MANAGEMENT**

OEH reviewed the Surface Water Assessment (section 7.10 of the main report) and Surface Water Impact Assessment (Appendix Q of the EIS) and provides the following comments.

The site is an extension of existing mining operations that operate under current approvals and have previously disturbed the catchment of Saddlers Creek. The proposed works would further exacerbate these disturbances, including re-routing of additional catchment areas of Saddlers creek which flows adjacent to the north western boundary of the proposed works footprint. There are numerous considerations for impacts on groundwater and surface water flows in non-flood times, and for discharge water quality from overflow of sediment and storage dams. It is assumed that these will be assessed by the Environment Protection Authority (EPA) and/or NSW Office of Water, where appropriate, particularly with regard to the changes in flows indicated in the EIS. Water Quality impacts in the EIS are reliant on no discharge from the operation, however, Appendix Q - Surface Water Management, indicates that some discharge from sediment basins and the Rail Loop Dam can be expected on an annual basis.

Flood assessments currently provided in the EIS are for the pre-development condition only and do not include the existing Drayton Mine or proposed Drayton South Mine. The proponents flood analysis shows the mine working to be outside of the Probable Maximum Flood (PMF) extent of both Hunter River and Saddlers Creek. It is difficult to assess the extent of the off-site flood impacts as a result of (further) modifications to creek sub-catchments included in the proposal. However, with regard to flood impacts, any proposed works must ensure that any adverse impacts are maintained within the boundaries of the land owned by the proponent, up to and including the PMF. This includes peak water levels and velocities and impacts on roads and other evacuation routes. There must be no adverse flood impacts on properties owned by others as a result of the proposed works. The proponent has proposed significant modification to Edderton Road to remove an existing floodway. The EIS states that improvements in road safety will occur as a result of realignment and raising of the road. It must be demonstrated that there is no adverse effect on flood levels or velocities results from these works on external properties. The current flood assessment does not include consideration of these proposed road works.

The clean water diversion system proposed is focussed on high wall dams which will then be pumped to Saddlers Creek. No assessment has been given of these concentrated flows on creek stability and hydraulics. It is assumed these issues will be considered by EPA and/or NSW Office of Water.

The proponent is responsible for flood emergency management procedures within its' own site. The occupation and use of this site should place no extra requirements on the State Emergency Services for assistance during flood times.

## **THREATENED BIODIVERSITY**

OEH reviewed the threatened biodiversity assessment and proposed offset for the project that is presented in Sections 7.8 and 7.9 of the Main Report and Appendices M and N of the EIS. As stated under the Secretary's Environmental Assessment Requirements (SEARs) issued on 19 December 2014 the biodiversity assessment is being assessed under the NSW Biodiversity Offsets Policy for Major Projects (OEH, 2014a) using the Framework for Biodiversity Assessment (FBA) (OEH, 2014b). This project will affect a number of Matters of National Environmental Significance (MNES) and due to its likely impacts on Box-Gum Woodland, Swift Parrot and greater Long-eared Bat it has been assessed as being a 'controlled action' under Australian Government *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). MNES for this project will be assessed under the Assessment Bilateral Agreement between the NSW Government and Australian Government which came into effect on 26 February 2015 (Department of the Environment, 2015).

### **Summary of Proposed Development Impact and Offset Package**

The proposed development has a footprint (identified in the EIS) of about 1,441 hectares (ha) and contains approximately 291 ha of woody vegetation and 7 ha of derived native grassland after two of those woody vegetation communities (270 ha of which meets listed threatened vegetation communities under the TSC Act; and 173 ha meets listed threatened vegetation communities under the EPBC Act). The vegetation communities in the development footprint are summarised in **Table 1** below:

**Table 1.** Summary of Vegetation Communities in the Drayton South Coal Project development footprint and their status under the TSC Act and EPBC Act (from Table 6-2 and App. H in App. M of the EIS).

| <b>Vegetation Communities in the Development Footprint (with Map Unit (MU) No. and PCT)</b> | <b>TSC Act/ EPBC Act</b> | <b>Area (ha)</b> | <b>Ecosystem Credits*</b> |
|---------------------------------------------------------------------------------------------|--------------------------|------------------|---------------------------|
| MU7: Central Hunter Bullock Forest Regeneration (HU906)                                     | -/-                      | 25.9             | 950                       |
| MU8: Hunter Valley River Oak Forest (HU712)                                                 | -/-                      | 2.2              | 71                        |
| MU5: Central Hunter Box-Ironbark Woodland (HU905)                                           | EEC/CEEC^                | 150.9            | 7,961                     |
| MU3: Hunter Floodplain Red Gum Woodland (HU599)                                             | EEC/CEEC                 | 10.9             | 704.4                     |
| MU6: Narrabeen Foothills Slaty Box Woodland (HU618)                                         | VEC/-                    | 97               | 5,323                     |
| MU1: Upper Hunter White Box – Ironbark Grassy Woodland (HU820)                              | EEC/CEEC                 | 3.8              | 323.34                    |
| MU4: Derived Native Grassland – Hunter Floodplain Red Gum Woodland Complex (HU599)          | EEC/CEEC                 | 4.3              | 0                         |
| MU2: Derived Native Grassland - Upper Hunter White Box – Ironbark Grassy Woodland (HU820)   | EEC/CEEC                 | 2.7              | 0                         |
| MU11&12: Other Grassland (HU905)                                                            | -/-                      | 1,140.4          | -                         |
| <b>TOTAL</b>                                                                                |                          | <b>1,438.1</b>   | <b>15,333</b>             |

\* Ecosystem credits generated by vegetation types of the same PCT have been merged.

^ Meets the definition of 'Central Hunter Valley eucalypt forest and woodland' as a 'Critically Endangered Ecological Community' (CEEC), but this listing on 7 May 2015 post-dated lodgement of public exhibition of the EIS.

The proposed development will have a direct impact on two of TSC Act listed threatened plants and one endangered population (see **Table 2** below).

**Table 2.** Summary of threatened species and populations in the Drayton South Coal Project development footprint (sections 6.2.2 and 9.11 of App. M of the EIS).

| Threatened Species and Populations in the Development Footprint                       | TSC Act/ EPBC Act       | Number /                  | Species Credits |
|---------------------------------------------------------------------------------------|-------------------------|---------------------------|-----------------|
| Weeping Myall ( <i>Acacia pendula</i> ) endangered population in the Hunter Catchment | Endangered Population/- | 1 clump of about 15 stems | 1155            |
| Pine Donkey Orchid ( <i>Diuris tricolor</i> )                                         | Vulnerable/-            | At least 30 plants        | 390             |
| Tiger Orchid ( <i>Cymbidium canaliculatum</i> ) population in the Hunter Catchment    | Endangered Population/- | 1 plant                   | 10              |
| <b>TOTAL</b>                                                                          |                         |                           | <b>1,555</b>    |

The proposed Offset Package for the project includes four land-based components: an onsite offset adjacent to the proposed development; a mixture of retained and rehabilitated Red Gum woodland along Saddlers Creek (both of these land areas are referred to as the 'Onsite Offsets'); a larger offsite offset largely in the Namoi catchment; and the revegetation of 1,127 ha of post-mined landscape to two EECs. Details are summarised in **Table 3** below.

**Table 3.** Summary of vegetation communities in the biodiversity offsets proposed for the Drayton South Coal Project (Table 3.1 and Appendix E of Appendix N of the EIS, 2015).

| Vegetation Communities in the Proposed Offsets                                                                                                                                                                  | TSC Act/ EPBC Act           | Area (ha) | Ecosystem Credits* |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------|--------------------|
| <i>Onsite Offsets (Woodland Conservation &amp; conservation buffers and 86 ha of retained and restored Red Gum Woodland along Saddlers Creek) (517.48 ha) [Sections 4.1.1 &amp; 4.1.2 of App. N of the EIS]</i> |                             |           |                    |
| MU5: Central Hunter Box-Ironbark Woodland (HU905)                                                                                                                                                               | EEC/CEEC                    | 112.21    | 3,336              |
| MU9: Cooba Scrub (HU905)                                                                                                                                                                                        | -/-                         | 34.92     | -                  |
| MU3: Hunter Floodplain Red Gum Woodland (HU599)                                                                                                                                                                 | EEC/CEEC                    | 20.2      | 710                |
| MU4: Hunter Floodplain Red Gum Woodland derived native grassland (HU599)                                                                                                                                        | EEC/CEEC                    | 61.99     | -                  |
| MU11&12: Other Grassland around on-site offsets (HU905)                                                                                                                                                         |                             | 124.08    | 0                  |
| <i>Woodland Rehabilitation of Post-mined landscape (1,126.87 ha) [Sections 5.2 of App. N of the EIS]</i>                                                                                                        |                             |           |                    |
| MU5: Central Hunter Box-Ironbark Woodland (HU905)                                                                                                                                                               | EEC/CEEC                    | 471.12    | 1,319              |
| MU6: Narrabeen Foothills Slaty Box Woodland (HU618)                                                                                                                                                             | VEC/-                       | 655.75    | 2,349              |
| <i>Offsite Offset (2,079 ha property of which 1644.99 ha is the offset comprising 872 ha of remnant forest and woodland and 773 ha is derived native grassland) [Sections 4.2 of App. N of the EIS]</i>         |                             |           |                    |
| MU13: Silvertop Stringybark – gum open forest on basalts of the Liverpool Range, Brigalow Belt South and Nandewar (NA353)                                                                                       | -/-                         | 70.61     | 628                |
| MU14: Silvertop Stringybark grassy open forests, eastern Nandewar and New England Tablelands (NA359)                                                                                                            | EEC/CEEC (Box-Gum Woodland) | 243.75    | 2,420              |
| MU15: Box – Stringybark shrubby woodlands, Brigalow Belt South and Nandewar (NA393)                                                                                                                             | -/-                         | 268.04    | 2,748              |
| MU16: Box – Gum grassy woodlands, Brigalow Belt South and Nandewar (NA257)                                                                                                                                      | EEC/CEEC (Box-Gum Woodland) | 54.25     | 488                |
| MU17: White Box grassy woodland, Brigalow Belt South and Nandewar (NA414)                                                                                                                                       | EEC/CEEC (Box-Gum Woodland) | 172.69    | 10,295             |

|                                                                                                                  |                             |                 |               |
|------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------|---------------|
| MU18: Rough-barked Apple – Blakely's Red Gum riparian grassy woodlands, Brigalow Belt South and Nandewar (NA342) | EEC/CEEC (Box-Gum Woodland) | 48.35           | 471           |
| MU19: River Oak riparian woodland, eastern NSW (NA191)                                                           | -/-                         | 13.79           | 128           |
| MU20: Derived grasslands, Brigalow Belt South and Nandewar (NA414)                                               | EEC/CEEC (Box-Gum Woodland) | 676.29          | -             |
| MU21: Low Diversity Derived Native Grassland (NA414)                                                             | EEC/-                       | 97.22           | -             |
| <b>TOTAL</b>                                                                                                     |                             | <b>3,289.34</b> | <b>24,892</b> |

\* Ecosystem credits generated by vegetation types of the same PCT have been merged.

A number of threatened species have been recorded in the proposed offset lands (as per sections 6.2.2 and 9.11 and Table 7.4 of App. M of the EIS), which are summarised in **Table 4** below.

**Table 4.** Threatened species and populations in the Drayton South Coal Project offset lands.

| Threatened Species and Populations in the proposed offsets                                                             | TSC Act/ EPBC Act       | Number / Area            | Species Credits generated | Additional Species Credits Required |
|------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|---------------------------|-------------------------------------|
| Weeping Myall ( <i>Acacia pendula</i> ) endangered population in the Hunter Catchment                                  | Endangered Population/- | 1 clump of about 2 stems | 14                        | 1,141                               |
| Pine Donkey Orchid ( <i>Diuris tricolor</i> ) (in Drayton Wildlife Reserve) – <i>to be covered by an expert report</i> | Vulnerable/-            | Unknown                  | ?                         | 390                                 |
| Tiger Orchid ( <i>Cymbidium canaliculatum</i> ) population in the Hunter Catchment                                     | Endangered Population/- | 1 plant                  | 7                         | 3                                   |
| River Red Gum ( <i>Eucalyptus camaldulensis</i> ) population in the Hunter Catchment                                   | Population/-            | 1                        | 7                         | 0                                   |
| Large-eared Pied Bat <i>Chalinobus dwyeri</i> (Foraging habitat within 500m of breeding habitat)                       | Vulnerable/Vulnerable   | 37 ha                    |                           | 0                                   |
| <i>Tylophora linearis</i> (recorded in the offsite offset)                                                             | Vulnerable/Endangered   | At least 5               | 36                        | 0                                   |
| <b>TOTAL</b>                                                                                                           |                         |                          | <b>326</b>                | <b>1,534</b>                        |

As discussed in sections 8.2.2 and 8.2.3 several measures are proposed to protect threatened species impacted by the project which include pre-clearance checks of hollow-bearing trees prior to clearing, relocation of animals found in areas cleared to appropriate places nearby, possible propagation of threatened plants affected by the project, possible translocation of plants of high conservation value to suitable habitat outside the development footprint, provision of nest boxes or salvaged sections of hollow-bearing trees cleared for the project in numbers proportional to hollows being removed, and the retention and protection, where possible of old canopy trees and medium-sized trees in the development footprint.

#### Assessment against the Framework for Biodiversity Assessment

The FBA has specific requirements that must be met for the methodology to have been considered to have been used appropriately. The FBA generates ecosystem and species credits which may be traded for credits from the same or similar credits under specified rules (OEH, 2014b). The correct running and reporting of the FBA was assessed against various components that are described in Appendix 7 (Table

20) of the FBA document (OEHL, 2014b). The EIS has been assessed against this checklist and the following matters have been identified which are incomplete. These will need to be addressed before OEHL can complete its review of the project in accordance with NSW Biodiversity Offsets Policy for Major Projects. Additional information required for the FBA process are summarised below:

1. **REPORT SECTION: INTRODUCTION.** Not all 'shapefiles' have yet been provided for all maps prepared for the Biodiversity Assessment Report. These are required;
2. **LANDSCAPE FEATURES.** More information is required on: the degree of confidence that cleared areas within the assessment circle are not native vegetation; evidence to support differences between mapped regional extent and aerial photos/ satellite imagery; all rivers and streams must be shown classified according to stream order; connectivity value; area to perimeter ratio; wetlands; native vegetation extent within the full extent of the outer assessment circle; state, regional and local biodiversity links; patch size calculation; area of IBRA regions and subregions;
3. **NATIVE VEGETATION.** Species relied upon for the identification vegetation type and relative abundance; justification of evidence used to identify a PCT; description of vegetation condition class and subcategory; table of survey effort vs FBA survey effort required; table of plot and transect field data; copies of all plot and transect field data sheets; table of current site value scores for each vegetation zone within the development site; inclusion of assigned PCT and Vegetation Formation in each vegetation community description;
4. **THREATENED SPECIES.** Justification for inclusions and exclusions based on habitat features; indication of presence based on targeted survey or expert report; identification of species that cannot withstand further loss; the provision of a table of vegetation zones and landscape Tg values, particularly indicating where these have changes due to species exclusion; the inclusion of a table detailing species and habitat features/components associated with species and their abundance of site; species polygons for species that cannot withstand a loss;
5. **AVOID & MINIMISE IMPACTS.** A table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the project, including actions, outcome, timing and responsibility; maps demonstrating indirect impact zones where applicable (if not applicable then a case is needed to be made why)
6. **IMPACT SUMMARY.** Map of areas not requiring assessment (i.e. where is the 17.3 ha indicated in Table S.2 and what does it comprise?); descriptions of derived native grasslands require more information on species composition and structure (especially areas of woody vegetation recruitment);
7. **BIODIVERSITY CREDIT REPORT.** All requirements met from Table 20, however, the vegetation formations of several vegetation communities in the offsite offset differ from those of the development site. These are unable to be traded and result in unmet credit obligations under the 'Offset rules for biodiversity values' described in Section 10.5 of the FBA (see below);
8. **OFFSET SITE IDENTIFICATION:** Lot and DP numbers are required for all of the offset sites;
9. **IMPROVEMENT IN BIODIVERSITY VALUES AT AN OFFSET SITE:** Future site value scores of each vegetation zone at the offset sites need to be provided with descriptions of why any differ from the standard change in Site Attribute Condition Score; discussion of any change in landscape value score for offsets; a discussion on averted loss at the offset sites; a discussion of existing obligations for proposed offsets, particularly the Saddlers Creek Revegetation area and whether this results in additionality issues;
10. **REHABILITATION SITE IDENTIFICATION:** Rehabilitation credit values for Saddlers Creek revegetation works;

11. **SUPPLEMENTARY MEASURES:** Calculation of the amount of money to be spent on supplementary measures must be based on estimated costs, as described in Appendix B of the 'NSW Biodiversity Offsets Policy for Major Projects'; the estimate of population size of *Diuris tricolor* in the Drayton Wildlife Reserve is still pending;
12. **SUMMARY:** Management plans are required of how proposed management actions will improve biodiversity values of the offset lands. OEH understands that these plans are proposed to be produced after consent has been issued which means that they are unable to be assessed at this stage. Therefore indicated increases in biodiversity, particularly of the post-mine will need to be conditional to any consent issued.

### Additional Matters

13. Consideration of 'Matters requiring further consideration' in the Secretary's Environmental Assessment Requirements (SEARs). The SEARs issued for this project on 19 December 2014 listed Box-Gum Woodland and the Pine Donkey Orchid (*Diuris tricolor*) as 'matters requiring further consideration'. This has been recognised and addressed in the EIS for this project but for which further details of how the required offset for both matters will be met;
14. Format and content of the Biodiversity Assessment Report/ Biodiversity Offset Strategy. The format of the 'Biodiversity Assessment Report' is stipulated in Appendix 7 of the FBA (OEH, 2014b). In this case no 'Biodiversity Assessment Report' was produced. Instead many details of the 'Biodiversity Offset Report' had been provided in previous environmental assessments for earlier development proposals of a Drayton South Mine. Some additional data pertinent to the FBA was provided in the EIS, however, some data has yet to be provided as per dot points 1-12 inclusive above.
15. General Matters from the FBA assessment:
- That the proposed offset package comprises a larger area than the development site (2,162.47 ha vs 1,437.95 ha) that generates more ecosystem credits than the development site (21,224 vs 15,333) and includes vegetation of conservation value. However, the offset package includes vegetation communities of differing vegetation formation than those found on the development site, or of the same vegetation formation but of a lesser extent cleared and they are thus not able to be traded as per the offset rules for biodiversity values (see **Table 5** below) is not fully within Vegetation Formation and is thus outside the offset rules for biodiversity values. This was recognised in Table 7.3 and Section 7.3 of Appendix N of the EIS.

**Table 5.** Ecosystem Credits of the development site and the offset package according the FBA offset rules. This results in a shortfall of about 5,743 ecosystem credits.

| Development Site                             | Credits to be retired | Matching Credits in the Offset Package |
|----------------------------------------------|-----------------------|----------------------------------------|
| MU1 (HU820) White Box Woodland               | 254                   | 0                                      |
| MU2 (HU820 White Box Woodland & Grassland    | 69                    | 0                                      |
| MU3 (HU599) Red Gum Woodland                 | 602                   | 254                                    |
| MU4 (HU599) Grassland after Red Gum Woodland | 103                   | 456                                    |
| MU5 (HU905) Box – Ironbark Woodland          | 7691                  | 4655                                   |
| MU6 (HU618 Slaty Box Woodland                | 5323                  | 2349                                   |
| MU7 (HU906) Bulloak Forest                   | 950                   | 1748                                   |
| MU8 (HU712) River Oak Forest                 | 71                    | 128                                    |
| <b>TOTAL</b>                                 | <b>15,333</b>         | <b>9,590*</b>                          |

\* = approximate figure that do not take into account any un-allocatable surplus credits for any vegetation communities, such as MU4.

Strict application of the FBA rules negates the use of credits from MU16, MU17, MU20 (and credits from MU13, MU14, MU15, MU18 and MU21 do not appear to have been used at all, as per Table 7.3 of Appendix N). This project falls within the transitional period of implementation of this policy and in this situation the Department of Planning and Environment may consider varying the application of the offsetting policy or the FBA for this project.

- b. The four additional mining areas at Drayton Mine (Section 3.2.1 and Figure 3.4) have a total area of about 31 ha have not been assessed in accordance with the FBA. These areas need to be assessed in accordance with the current policy
16. Proposed additional works for threatened species in order to obtain or increase species credit credits must be described as supplementary measures in accordance with Appendix B of the NSW Biodiversity Offsets Policy for Major Projects. OEH recommends consideration of the following matters for three of the species' credit species covered by this project: Weeping Myall, Tiger Orchid and Pine Donkey Orchid.

Conservation measures proposed for the indigenous form of *Acacia pendula* that occurs in the development footprint includes propagation trials from rootstock and the top soil-stripping around the roots (Chapter 6 of Appendix N of the EIS). This based on successful recruitment of *Acacia ausfeldii* plants on the Ulan Coal Mine using such methods. While such techniques may work for the Hunter Valley form of *A. pendula* the ecology of both species of wattle appear to be very different (*A. pendula* – long-lived, suckering, functionally sterile (Bell *et al.*, 2007); *A. ausfeldii* – seed-producing, obligate re-seeder and thus generally short-lived (PlantNet, 2015)). This is not to say that neither mechanisms will not work for the *A. pendula* plants on the development site, but the proponent will need to consider an alternative offset strategy if the proposed works are unsuccessful.

The FBA assessment of the Tiger Orchid (*Cymbidium canaliculatum*) Endangered Population for this project appears to include plants on the offsite offset (Figure 10 of Appendix N of the EIS). These plants, however, occur in the Namoi catchment and are thus not part of the Endangered Population in the Hunter Catchment. OEH notes the proponent's plan to translocate and possibly divide the *Cymbidium canaliculatum* orchid from the development site to a suitable location nearby, such as the Drayton Wildlife Reserve in which case the plant(s) remain part of the endangered population. Translocation of this epiphytic orchid has proven successful on other mining leases in the Hunter Valley, such as at the Mangoola Coal Mine (SLR Consulting, 2015) particularly when done in accordance with best-practice guidelines (Vallee *et. al.*, 2004).

The calculation of species credits of Pine Donkey orchid (*Diuris tricolor*) plants at the Drayton Wildlife Refuge will be provided via an expert report (Page N-34 of Appendix N of the EIS) and that translocation of the 30 or so plants from the development footprint has been ruled out. However, successful translocation of plants of this species has been reported from the nearby Mangoola Mine Site (SLR Consulting, 2015) and this is something that the proponent may consider as a supplementary offset measure (see above). In addition any proposed seed and tissue-culture trials done for this project may wish to tap into the knowledge and expertise at The Australian Botanic Gardens, Mount Annan where research into the ex-situ conservation of threatened orchids has been conducted over many years (Hermon Slade Foundation, 2015).

## References:

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