DOC21/337357-6 – Bayswater Power Station Upgrade Project EPBC Bilateral Assessment - BCD Assessment

Assessment of EPBC Act-listed threatened species and communities for projects

Suggested information for inclusion in the advice to DPIE

Bayswater Power Station Upgrade Project (SSD-9697) EPBC Bilateral Assessment – BCD Assessment

All section, table, figure and appendix references in this document (below) refer to sections, tables, figures and appendices in the revised Biodiversity Development Assessment Report (BDAR – Appendix C of the Response of Submissions report – dated 9 December 2020 and authored by Kleinfelder Australia Pty Ltd). The EIS dated 4 June 2020 contains an earlier version of the BDAR.

1. Identifying MNES

(a) **Confirm** whether all the EPBC Act-listed threatened species and communities that occur on the project site, or in the vicinity are identified in the EIS. Note which species and/or communities have not been identified.

The Environment Protection and Biodiversity Conservation (EPBC) Act 1999-listed threatened species and communities that occur on the project site or in the vicinity as generated from the Protected Matters Search Tool (10 kilometre radius search dated 4 June 2019, as stated in the EIS on page 57) have been identified in the Bayswater Power Station Upgrade Project Environmental Impact Statement (EIS). Table 3-3 in the EIS provides a brief summary (namely quantum of potentially affected species – 41 species and 6 ecological communities; whilst Appendix C – Biodiversity Development Assessment Report (BDAR), and Appendix 2 - Threatened Species Database Search, provides specific details on all these threatened species and ecological communities.

A copy of the Protected Matters Search Tool results has not been provided by the proponent

An assessment of the likelihood of each entity occurring has been undertaken and a decision as to whether an assessment of significance is required has been made by the proponent (Appendix 2 of the BDAR). Four threatened ecological communities (TEC), five flora species and twelve fauna species were considered to have the potential to occur within Impact Area.

The following species and communities recorded in the general locality were considered not at risk of significant impact because the species were unlikely to be present in the Project area or surrounds, based on previous and targeted surveying or habitat assessment:

- Hunter Valley Weeping Myall (*Acacia pendula*) Woodland;
- Lowland Rainforest of Subtropical Australia;
- *Allocasuarina glareicola*;
- *Androcalva procumbens*;
- *Asperula asthenes*;
- *Cryptostylis hunteriana*;
- *Cynanchum elegans*;
- *Dichanthium setosum*;
- *Eucalyptus glaucina*;
- *Eucalyptus nicholii*;
- *Euphrasia arguta*;
- *Homoranthus darwinioides*;
- *Olearia cordata*;
- *Philotheca ericifolia*;
- *Pomaderris brunnea*;
- *Prostanthera cineolifera*;
- *Prostanthera cryptandroides* subsp. *cryptandroides*;
- *Rhodamnia rubescens*;
- *Thesium australe*;
- *Wollemia nobilis*;
- Australasian Bittern;
- Australian Painted Snipe;
- Booroolong Frog;
- Brush-tailed Rock-wallaby;
- Curlew Sandpiper;
- Eastern Curlew;
- Giant Burrowing Frog;
- Greater Glider;
- Littlejohn's Tree Frog;
- New Holland Mouse;
- Painted Honeyeater; and
- Red Goshawk.

Potential impacts on the following species and communities were further assessed in the BDAR (Appendix 9 – Assessments of Significance [EPBC Act]):

- White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland;
- Central Hunter Valley Eucalypt Forest and Woodland;
- *Ozothamnus tesselatus*;
- *Prasophyllum* sp. Wybong;
- Brush-tailed Rock-wallaby;
- Corben's Long-eared Bat;
- Green and Golden Bell Frog;
- Grey-headed Flying-fox;
- Koala;
- Large-eared Pied Bat;
- Pink-tailed Worm Lizard;
- Regent Honeyeater;
- Spotted-tailed Quoll;
- Stripped Legless Lizard; and
- Swift Parrot.

The White-throated Needletail, a potential migratory species was also assessed under Appendix 9 of the BDAR.

The Department of the Agriculture, Water and the Environment (DAWE) (EPBC 2018/8287) based on their Environment Reporting Tool and information provided by the Species Profiles and Threats Database (SPRAT), considered that the following matters are possibly at risk of being impacted:

- Central Hunter Valley Eucalypt Forest and Woodland (CHVEFW) – Critically Endangered.
- White Box-Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered.
- *Ozothamnus tesselatus* – Vulnerable.
- Wybong Leek Orchid (*Prasophyllum* sp. Wybong) – Critically Endangered.
- Regent Honeyeater (*Anthochaera phrygia*) – Critically Endangered.
- Pink-tailed Worm-lizard (Aprasia parapulchella) – Vulnerable.
- Large-eared Pied Bat (*Chalinolobus dwyeri*) – Vulnerable.
- Spot-tailed Quoll (*Dasyurus maculatus*) – Endangered.
- Striped Legless Lizard (*Delma impar*) – Vulnerable.
- Swift Parrot (*Lathamus discolor*) – Critically Endangered.
- Brush-tailed Rock Wallaby (*Petrogale penicillata*) – Vulnerable.
- Koala (*Phascolarctos cinereus*) – Vulnerable.
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – Vulnerable.

DAWE further refined this list, and suggest the following entities would be significantly impacted by the Project (as per Commonwealth Department of Environment and Energy assessment requirements):

- Central Hunter Valley Eucalypt Forest and Woodland (CHVEFW) – Critically Endangered.
- Regent Honeyeater (*Anthochaera phrygia*) – Critically Endangered.
- Swift Parrot (*Lathamus discolor*) – Critically Endangered.
- Striped Legless Lizard (*Delma impar*) – Vulnerable.

The four likely impacted species or TECs listed on the DAWE advice (as per above) have been assessed within the BDAR (Section 7 and Appendix 9), with a further nine of the possible species / communities (White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, *Ozothamnus tesselatus*, Wybong Leek Orchid, Pink-tailed Worm-lizard, Large-eared Pied Bat, Spot-tailed Quoll, Striped Legless Lizard, Brush-tailed Rock-wallaby, Koala and Grey-headed Flying-fox) also assessed.

BCD is satisfied that the BDAR has identified all EPBC Act listed species and ecological communities likely to occur within the vicinity of the Study Area.

2019-2020 Bushfire Impacts

In February 2021, Planning and Assessment (P&A, DPIE) requested further information from the proponent with respect to potential impacts to Matters of National Environmental Significance (MNES) in the context of the 2019-2020 bushfires. They specifically requested:

- The percentage and total area (hectares) of habitat that was lost as a result of the bushfires from the Sydney Basin Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and the Hunter subregion (Version 7, as specified in BAM 2020) and what percentage of the remaining habitat the study area comprises. If a 'species credit' species the *Threatened Species Data Collection* database should be consulted to ensure the appropriate type of habitat (e.g. foraging, roosting) is assessed.
- Whether the regional extent (Sydney Basin IBRA region and Hunter subregion) of the habitat has reduced to an extent that the habitat within the study area is of increased importance for recovery of the species or community.
- Updated Assessments of Significance under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in accordance with the MNES Significant impact guidelines 1.1.

On 16 April 2021, Kleinfelder Australia Pty Ltd provided a response to P&A, answering all the three dot points listed above.

The approximate area of habitat (i.e. within the 50km radius Assessment Area) for each of the above listed biota was estimated using a Geographical Information System (GIS). The following regional vegetation mapping was used to determine the extent of habitat for each species:

- State Vegetation Type Map: Upper Hunter v1.0. VIS_ID 4894, and
- Lower Hunter and Central Coast Regional Vegetation Survey VIS_ID 2225.

An estimate of the area of habitat impacted by bushfires was calculated as a percentage for each threatened species. A revised impact assessment was then undertaken against the Matters of National Environmental Significance – Significant impact guidelines 1.1 (DoE, 2013).

A summary of the impacts of the 2019/20 bushfires on threatened species habitat is presented in Table 1 (Kleinfelder report 2021). Based on this assessment, bushfires had the greatest impact on the habitat of the swift parrot (31% habitat loss), spotted-tailed quoll (26% habitat loss), large-eared pied bat (33% habitat loss), Corben's long-eared bat (53% habitat loss), grey-headed flying fox (31% habitat loss) and the brush-tailed rock wallaby (34% habitat loss). However, none of these species were detected within the Development Site and the habitats present within the site are not considered to be important to the long-term survival of any of these species in the locality. Threatened flora known to occur on the subject site or predicted to occur only had very limited habitat across its range affected by the bushfires – all below 5%; and therefore, did not greatly impact on the broader populations or its geographic extent.

Kleinfelder (2021) provided updated Assessments of Significance under the EPBC Act in accordance with the MNES Significant impact guidelines and their significant impact criteria. These are summarised after each MNES species below in Section (d). This includes details in relation to the regional context of habitat lost.

(b) **Comment** on whether the Biodiversity Assessment Method (BAM) has been applied to all EPBC Act-listed threatened species and communities that occur on the project site or in the vicinity.

All entities that were identified as requiring an assessment of significance have been assessed (Section 7 and Appendix 9), comprising:

- Central Hunter Valley Eucalypt Forest and Woodland (CHVEFW)
- White Box-Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland
- *Ozothamnus tesselatus*
- Wybong Leek Orchid
- Regent Honeyeater
- Pink-tailed Worm-lizard
- Large-eared Pied Bat
- Spot-tailed Quoll
- Striped Legless Lizard
- Swift Parrot
- Brush-tailed Rock Wallaby
- Koala
- Grey-headed Flying-fox

Two additional EPBC species were also assessed: Corben's Long-eared Bat and Green and Golden Bell Frog.

Impacts to all threatened species or threatened ecological communities (TEC) were assessed and impacts that were significant were identified and credit liabilities were determined. The Biodiversity Assessment Method (BAM) has been correctly applied to all EPBC Act-listed threatened species and communities that occur on the project site or in the vicinity. Both species and ecosystem credits have been generated for all EPBC Act-listed threatened species likely to be significantly impacted (as per Tables 16 and 17 of the BDAR). Following is a summary of the application of the BAM to each of the above listed entities.

Significant impact assessments were undertaken for all the above 13 threatened species and communities and are presented in Appendix 9 of the BDAR, and are summarised below:

Central Hunter Valley Eucalypt Forest and Woodland CEEC (Appendix 9):

Approximately 32.39 hectares of Central Hunter Valley Eucalypt Forest and Woodland CEEC was identified within the Study Area, of which 13.72 hectares will be cleared. This TEC is represented by two plant community types (PCT): (i) PCT 1691 – 'Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter' (8.19 hectares – vegetation zone 1) and (ii) PCT 1692 – 'Bull Oak grassy woodland of the central Hunter Valley' (5.53 hectares – vegetation zone 8). Only vegetation zones 1 and 8, which represent the high quality intact zones of these two PCTs were considered to match the CEEC listing criteria. The remaining areas of the two PCTs were assessed of lower quality and contain large patches of derived grasslands, regrowth and poor condition vegetation which do not meet the listing requirements for this CEEC (e.g. minimum number and type of eucalypts present), or the minimum condition threshold. As such the Project will result approximately 13.72 hectares of this CEEC being removed, which equates to a total removal 42% within the Study Area, and 1.9% within the broader Bayswater Site. The proponent concluded that whilst the proposal will reduce the extent of the CEEC within the Study Area, it is unlikely to significantly impact on the occurrence of the CEEC in the locality, given the relatively small impact at this scale.

The BDAR was assessed by BCD to have been conducted correctly and in accordance with the BAM. The direct clearance of 13.72 hectares of this TEC was considered a significant impact (i.e. reduced extent and some fragmentation) that requires the retirement of 217 ecosystem credits matching PCT 1691 and 100 ecosystem credits matching PCT 1692 (as per Table 16 in the BDAR).

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC (Appendix 9):

No areas of White-Box Yellow-Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC were identified within the Study Area. The Project will not result in the clearance of this TEC, nor will it be indirectly impacted upon. As such, the proponent concluded a significant impact to this community is unlikely. BCD have reviewed the PCT present within the Study Area and concluded the CEEC is unlikely to be present. No PCTs identified for the Project match the CEEC floristic description.

Ozothamnus tesselatus (Appendix 9)

This species was not detected within the Study Area during the assessment and was determined to have a low likelihood of occurrence. Targeted surveys were conducted in a small area of suitable habitat (14.64 hectares) within Central Hunter Box – Ironbark Woodland (Vegetation Zones 1 and 2 – PCT 1691) between 22 to 26 July, and 23 to 25 September 2019. These were completed in accordance with DPIE threatened flora survey guidelines - *NSW Guide to Surveying Threatened Plants* (OEH 2016). As the species was not detected in the study area, none of the significant assessment criteria are triggered, and the proponent concluded a significant impact to the species is unlikely. BCD agrees with this view.

Wybong Leek Orchid (Appendix 9)

An expert report (Dr. S Bell 2019) has been prepared for the project which determined that *Prasophyllum* sp. Wybong, may be potentially affected by the Action due to the presence of potentially suitable habitat within the Study Area. *Prasophyllum* sp. Wybong is known to occur within grassy woodlands and grasslands derived from Narrow-leaved Ironbark and Grey Box woodlands (PCT 1691), particularly grasslands of *Dichanthium sericeum*, *Sporobolus creber* and *Chloris ventricosa*, or *Aristida vagans*, *A. ramosa* and *Cymbopogon refractus* (Dr. S. Bell 2019). Within the Study Area areas of Central Hunter Box – Ironbark Woodland, the following areas were assessed as potential habitat as they generally meet the description outlined above (as identified in the BDAR):

- An area of potential habitat was identified in Zone 3 (Regrowth), excluding all of the Salt Cake Landfill portion which was heavily disturbed and dominated by exotic grass species, and other areas dominated by exotic species; a total of 18.23 ha of this Zone was assessed as moderate-low quality habitat (none along the Ravensworth Ash Line); and
- Potential habitat for the species was identified in Zone 4 (Grassland). A total of 147.77 ha of this zone was assessed as moderate to low quality habitat.

Based on the above assessment, approximately 166 ha of habitat for *Prasophyllum* sp. Wybong occurs within the impact area. Dr. S Bell's expert report made the following specific statements:

- the most likely habitat for *Prasophyllum* sp. Wybong within the Study Area to comprise vegetation communities mapped in the BDAR as Derived/ Modified Native Grasslands (Zone 4) or Acacia Regrowth (Zone 3). This differs from the suggested orchid habitat contained in the BDAR (Kleinfelder 2020), where all areas of PCT1691 (Zones 1-6) were included with the exception of lands subjected to higher levels of historical disturbance as evidenced by higher weed occurrence. *Prasophyllum* sp. Wybong is susceptible to disturbance and would be void of these areas. As such, Dr. Bell, concluded that only the two areas of the moderate condition derived grasslands in Zones 3 and 4 (as described above) would be considered suitable habitat.
- Dr. Bell also noted that the overall 166 hectares of potential orchid habitat was a conservative estimate, and he considered it unlikely that the Study Area would support large populations (if any), given other populations of *Prasophyllum* in the Hunter supported grasslands with different species composition and soil landscapes supporting richer soils that were less disturbed.

Despite the low probability of the orchid being present on site, targeted surveys across the 166 hectares were undertaken within the Study Area from 15-18 September 2020. No individuals of the species were detected within the Study Area. The proponent concluded a significant impact to the species is unlikely. BCD agrees with this view.

BCD supported the findings of the expert report and notes that the targeted surveys were undertaken in accordance with BCD guidelines for surveying threatened plants. Furthermore, surveys were conducted at an optimal time when the species should have been flowering. BCD acknowledges that multiple survey periods may be more effective in detecting more plants, but this is not a requirement of BCD's survey guidelines. Given the surveys failed to find any orchids, the BAM assumes the species is not present and did not generate a credit liability for this species.

Regent Honeyeater (Appendix 9):

The Project will result in the direct clearance of approximately 14.64 hectares of potential foraging habitat for the Regent Honeyeater based on the clearing of moderately - good condition PCT 1691 – 'Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter' (8.19 hectares – vegetation zone 1 and 6.45 hectares – vegetation zone 2 [Table 16]). This species is classified as a dual credit species, 'species credit' for breeding and 'ecosystem credit' for foraging in the Threatened Biodiversity Data Collection (OEH 2019a). Given that there is no important habitat (i.e. breeding habitat – as per Biodiversity Values Mapping) mapped in the Study Area based on DPIE 'Important Area Mapping' there is no 'species credit' retirement obligation required and the species will be offset with ecosystem credits calculated for PCTs associated with potential habitat for this species, namely the woodland form of PCT 1691 (Vegetation Zones 1 and 2). Some small areas of Central Hunter Box – Ironbark Woodland (PCT 1691) (ranging from 0.7 to 1 ha) within Borrow Pit 4 are reasonably connected to larger areas of this vegetation to the north-west. However, given the small area of these patches, such loss is unlikely to contribute to the reduction in the size of a population of these species. Further, much of the habitat within the Study Area is highly disturbed due to current and historical agricultural practices.

In accordance with the criteria set out in the Matters of National Environmental Significance Significant Impact Guidelines 1.1. (DotE 2013) the BDAR assessed the project could have a significant impact on the Regent Honeyeater given potential habitat present. However, the proponent has concluded that the Project will not result in a significant impact.

The BDAR was assessed by BCD to have been conducted correctly and in accordance with the BAM. The removal of potential habitat will be offset through the retirement of 443 ecosystem credits calculated for PCTs associated with potential habitat for this species, namely the woodland form of PCT 1691.

Pink-tailed Legless Lizard (Appendix 9):

Targeted surveys identified no evidence of a population of Pink-tailed Legless Lizard within the Study Area. Furthermore, very few areas occur within the Study Area that support rocky outcrops or scattered, partially buried rocks which the TBDC database identifies as important habitat. The proponent concluded that due to a lack of evidence of occurrence and large areas of unsuitable habitat, impacts on the species are unlikely to be significant.

Large-eared Pied Bat (Appendix 9):

No potential roosting habitat for the Large-eared Pied Bat (caves or similar structures) was located within the Project area or surrounds.

The Project will result in the direct clearance of approximately 82.13 hectares of potential foraging habitat for the Large-eared Pied Bat based on the clearing of Central Hunter Box – Ironbark Woodland, Rehabilitation, Plantation, Central Hunter Bull Oak Forest, and Swamp Oak within Vegetation Zones 1, 2, 5, 6, 7, 8 and 9 (Table 16).

The Large-eared Pied Bat has a high likelihood of occurrence within the Study Area, given eighteen records occur within the locality (OEH 2019 – BioNet). The BDAR concluded that the Project will not likely have a significant impact on the Large-eared Pied Bat due to the lack of roosting habitat. BCD supports this conclusion. Surveys in December (2019) detected no suitable roost sites.

The species is a 'species credit' species and no offset is required for this species as no suitable roosting habitat will be impacted upon. Though, general foraging and movement habitat will be offset through the Project's PCT ecosystem credit retirements, as per the credit calculations for the Project (Table 16).

Spotted-tailed Quoll (Appendix 9):

Targeted surveys for the species were conducted using remote sensor cameras baited with chicken wings and fish sauce. No individuals were detected during the field surveys (cameras established for 14-consecutive nights from 3/12/2019 to 17/12/2019). Additionally, the Study Area does not contain large areas of suitable denning habitat. Hollow bearing trees are present within the Study Area; however, patches of vegetation are typically small. The largest patch

of vegetation, within Borrow Pit 4 primarily consists of Bull Oak Woodland which does not contain a high density of hollows or hollows large enough for the species. The proponent concluded that it is unlikely that the Study Area forms part of the breeding habitat/range for a local population of the species.

However, the Study Area could still provide foraging habitat and/or dispersal habitat for the species. Suitable habitat for the species was assessed as occurring within the majority of the vegetation types, with the exception of the Grasslands and Acacia Regrowth, due to the lack of woodland habitat features. The species may still disperse and move through the open areas of the site. Approximately 82.13 ha of habitat for this species occurs within the Impact Area based on the clearing of Central Hunter Box – Ironbark Woodland, Rehabilitation, Plantation, Central Hunter Bull Oak Forest, and Swamp Oak within Vegetation Zones 1, 2, 5, 6, 7, 8 and 9 (Table 16).

Potential habitat for this species is widespread. Though, the majority of habitat onsite comprises small, isolated patches with a low-level of connectivity to surrounding habitat, or patches located at the extremities of larger patches. While the Action will impact on habitat for this species, due to the large amount of surrounding, higher quality, habitat within the Bayswater Power Station Site, it is unlikely that the Action will lead to the long-term decrease of any potentially occurring local population of the species. The BDAR concluded that the Project will not likely have a significant impact on the Spotted-tailed Quoll in consideration of the Matters of National Environmental Significance Significant Impact Guidelines 1.1. (DotE 2013), due to extensive areas of similar habitat in the vicinity. BCD supports this conclusion.

No offset is required for this species based on the above. However, this species is classified as an 'Ecosystem Credit Species' in the Threatened Biodiversity Data Collection (OEH 2019a) and as such would be offset through the Project's PCT ecosystem credit requirements, as per the credit calculations for the Project (Table 16).

Striped Legless Lizard (Appendix 9):

This species was recorded in the Study Area. Within the Study Area it is estimated that of the 184.43 ha of available habitat occurs, approximately 116.74 ha will be removed for the Project. All areas of vegetation, with the exception of the grasslands, were assessed as suitable habitat for the species. Grassland areas were excluded due to the lack of grass cover, and/or other refugia (i.e. logs, fence posts, rocky area) within these areas

In accordance with the criteria set out in the Matters of National Environmental Significance Significant Impact Guidelines 1.1. (DotE 2013) the BDAR assessed the project would likely have a significant impact on the Striped Legless Lizard in the short to medium-term, given the Project may provide a physical barrier to movement and it may reduce the area of occupancy of a population that may represent an 'important population' according to the DotE (2013) given the population is near the limit of the species range. The Conservation Advice for the species identifies the Muswellbrook population as an important population.

The BDAR was assessed by BCD to have been conducted correctly and in accordance with the BAM. The direct clearance of 116.74 hectares of this species habitat was considered by the proponent to be a significant impact (i.e. reduced extent and some fragmentation) the BAM requires the retirement of 2,102 Striped Legless Lizard species credits.

Swift Parrot (Appendix 9):

The Project will result in the direct clearance of approximately 14.64 hectares of potential foraging habitat for the Swift Parrot based on the clearing of moderately - good conditioned PCT 1691 – 'Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter' (8.19 hectares – vegetation zone 1 and 6.45 hectares – vegetation zone 2 [Table 16]). This species is classified as a dual credit species, 'species credit' for breeding (of which none exists in NSW) or important / key foraging areas (based on 'Important Area Mapping) and 'ecosystem credit' for other foraging habitat in the Threatened Biodiversity Data Collection (OEH 2019a).Given that there is no important habitat (i.e. breeding / important foraging habitat – as per Biodiversity Values Mapping) mapped in the Study Area based on DPIE 'Important Area Mapping' there is no 'species credit' retirement obligation required and the species will be offset with ecosystem credits calculated for PCTs associated with potential habitat for this species. Only foraging habitat will be impacted upon. This species breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland.

In accordance with the criteria set out in the Matters of National Environmental Significance Significant Impact Guidelines 1.1. (DotE 2013) the BDAR assessed the project could have a significant impact on the Swift Parrot given potential habitat present. However, none of the development footprint has been mapped on DPIE 'Important Area Mapping' for Swift Parrot, and as per BAM this impact does not require further assessment.

The BDAR was assessed by BCD to have been conducted correctly and in accordance with the BAM. The removal of potential habitat will be offset through the retirement of ecosystem credits calculated for PCTs associated with potential habitat for this species, namely the woodland form of PCT 1691.

Brush-tailed Rock-wallaby (Appendix 9):

The species was not considered in the Study Area due to the lack of habitat. The Study Area does not contain rocky escarpments, outcrops, cliffs or other habitat features consistent with the preferred habitat of this species. The proponent concluded it is unlikely that the Project will lead to the long-term decrease of any potentially occurring local population of the species and no significant impact

Koala (Appendix 9):

Koalas were not recorded within the Study Area. Two tree species listed under SEPP for *Koala Habitat Protection* (2020) occur within the Study Area: *Eucalyptus tereticornis* and *Eucalyptus punctata*. Within the Study Area, these two tree species constitute >15% of the canopy cover within small portions of the site (within Vegetation Zone 1 – PCT 1691: Moderate-Good-CEEC, and Vegetation Zone 6 – PCT 1691: Plantation). These areas were surveyed, coupled with SAT analysis.

No evidence of Koala activity was identified during surveys conducted within the Study Area. Due to the limited extent of habitat and the patchy occurrence of feed trees within the Study Area, it is unlikely that the Study Area represents Core Koala Habitat. BCD assessed the level of koala survey and concurs it was undertaken in accordance of DPIE guidelines and the BAM.

Due to a lack of Core Koala Habitat or evidence of a resident population of koalas, the proponent concluded it is unlikely that the Project will lead to the long-term decrease of any potentially occurring local population of the species and a significant impact is unlikely.

Grey-headed Flying-fox (Appendix 9):

No Grey-headed Flying-fox camps are located within the Study Area or surrounds.

The Project will result in the direct clearance of approximately 18.05 hectares of potential foraging habitat for the Grey-headed Flying-fox based on the clearing of PCT 1691 - Central Hunter Box – Ironbark Woodland, Rehabilitation, Plantation within Vegetation Zones 1, 2, 5 and 6 (Table 16).

This species is classified as a dual credit species, 'species credit' for breeding (e.g. a camp) and 'ecosystem credit' for foraging habitat in the Threatened Biodiversity Data Collection (OEH 2019a). Given that there is no important breeding habitat (i.e. camps) in the Study Area (the species will be offset with ecosystem credits calculated for PCTs associated with potential foraging habitat for this species). No species credit offset is required for this species based on the above.

The BDAR concluded that the Project is unlikely to have a significant impact on Grey-headed Flying Fox due to the lack of a breeding camp and that there are numerous areas of suitable foraging habitat within the surrounds. BCD supports this conclusion.

Corben's Long-eared Bat (Appendix 9):

Corben's Long-eared Bat has been recorded in the locality; however, this is a historical record of nearly 20 years ago (to the west). Surveys for the project did not record the species. The Study Area does represent potential roosting and foraging habitat for the Corben's Long-eared Bat.

Suitable foraging habitat for both these species within the Study Area consists of Central Hunter Box – Ironbark Woodland, Rehabilitation, Plantation, Central Hunter Bull Oak Forest, and Swamp Oak Forest. Within the Study Area there is a total of 82.13 ha of habitat. The habitat onsite comprises small, isolated patches with a low-level of connectivity to surrounding habitat, or patches at the extremities of larger patches. The BDAR concluded that the Project is unlikely to have a significant impact on Corben's Long-eared Bat due to the poor quality of habitat available in comparison to the surround s which has higher quality (not being impacted upon). Although BCD agrees with this conclusion, it is noted that some minimal roosting habitat may be on site (i.e. tree hollows), however, similar habitat will likely be offset via retirement of PCT ecosystem credits. No species credit offset is required for this species based on the above.

Green and Golden Bell Frog (Appendix 9):

Suitable habitat is present within the Study Area consisting of constructed dams which contain permanent water and suitable wetland vegetation (primarily *Typha* and *Juncus acutus*). A total of eight dams were identified within the Study Area (total of 4.99 hectares). One area occurs within the existing ash dam (3.90 hectares; within the approved disturbance area of the dam), two occur within the Study Area outside the disturbance area (0.35 hectare, and 5 dams occur within the Study Area (total of 0.74 hectares).

Surveys were completed across eight different water bodies checked once over a 3 night period in November 2019 (8hrs) and checked 3 times on three separate nights in January 2020; which meets BCD's survey requirements. No population or individuals of the Green and Golden Bell Frog were detected. However, here are historical records of the species in the locality; with last confirmed record of the species occurring in the Upper Hunter was from the Bayswater Sewage Treatment Plant Polishing Ponds in the early 2000's (DECC, 2007).

In light of no recent records and that the targeted surveys resulted in a nil result, the proponent concluded that it is highly unlikely that the Action will result in a significant impact on the species.

General:

BCD in its review of the EIS indicated that the BDAR was undertaken correctly and in accordance with the BAM.

Section 7 and Appendix 9 of the BDAR addresses impacts to MNES species and TECs. Apart from the above comments, each potentially impacted species or TEC has been included in the text and addressed the following principles:

- discussion of the likely direct, indirect, cumulative and consequential impacts relevant to MNES;
- description of the quantum and nature of the impacts on the species, the populations and/or the extent of the community (including discussion of the scale of impact in relation to local, regional, state and national populations / habitat);
- discussion of the nature and significance of impacts in the context of any relevant Approved Conservation Advice;
- details of specific measures to avoid, mitigate and/or offset impacts to relevant MNES;
- broad statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible; and
- reference to any relevant policies or plans such as Conservation Advice, Recovery Plans and Threat Abatement Plans.

The Project results in a total of 5,117 ecosystem credits (Table 1) and 3,681 species credits (Table 2) that will need to be retired (see below for further breakdown) based on Tables 16 and 17 in the BDAR.

Table 1: Ecosystem Credit Requirements

PCT	Name	Condition	Vegetation Zone	Hectares	Total Credits
1691	Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	Mod. - Good CEEC	1	8.19	276
1691	Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	Mod. - Good	2	6.45	167
1691	Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	Regrowth	3	37.03	825
1691	Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	DNG	4	145.56	2434
1691	Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	Rehab.	5	3.27	74
1691	Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	Plantation	6	0.14	4
1692	Bull Oak grassy woodland of the central Hunter Valley	Mod. - Good	7	56.13	1176
1692	Bull Oak grassy woodland of the central Hunter Valley	Mod. - Good CEEC	8	5.53	100
1731	Swamp Oak – Weeping Grass grassy riparian forest of the Hunter Valley	Mod. - Good	9	2.41	30
1691	Paddock Trees	-	-	-	31
TOTAL					**5117**

Table 2: Species Credit Requirements

Species	Species Polygon Hectares	Total Credits
Delma impar (Striped Legless Lizard)	116.74	2102
Myotis macropus (Southern Myotis)	8.11	233
Petaurus norfolcensis (Squirrel Glider)	55.08	1346
TOTAL		**3681**

Table 18 (Credit liability for each stage of the proposed development) further breaks down the credit obligation for the Project based on each individual stage of development.

Section 7 (including Table 20) and Appendix 9 of the BDAR provides a broad explanation on how the BAM was applied to EPBC Act matters, and how the four likely significantly impacted species and communities were assessed, including credit liabilities. For species where ecosystem credits were linked to PCTs, Tables 16 provides details on the credit obligations for each PCT. Table 17 provides a summary of the 'species credit'' requirements.

- Central Hunter Valley Eucalypt Forest and Woodland ecosystem credits calculated for PCT 1691 – Vegetation Zone 1 (CEEC) and PCT 1692 – Vegetation Zone 8 (376 ecosystem credits).
- Striped Legless Lizard Species credits (2102).
- Swift Parrot ecosystem credits calculated for PCTs associated with potential habitat for this species, namely the woodland form of PCT 1691 – Vegetation Zones 1 and 2 (443 ecosystem credits).
- Regent Honeyeater ecosystem credits calculated for PCTs associated with potential habitat for this species, namely the woodland form of PCT 1691 – Vegetation Zones 1 and 2 (443 ecosystem credits).

BCD confirms that the minimum number of BAM transects/plots were undertaken for each vegetation zone / PCT (as per Appendix 13 of the BDAR [BAM Plot Datasheets]), which is in accordance with the BAM. BCD's review of the EIS and the BDAR also concluded that targeted surveys were undertaken in accordance with BCD survey guidelines (both flora and fauna). Targeted threatened flora surveys were also undertaken during the appropriate season, especially for cryptic species that require flowers or fruits for identification. Table 22 lists the EPBC Act species targeted for surveying; including which species were recorded on the Project area during surveys.

The BAM (OEH 2017a) does not require a formal Biodiversity Offset Strategy (BOS) to be presented in a BDAR, however, a Biodiversity Offset Strategy is required to be included in this BDAR in accordance with the SEARs for the

EIS. This has been provided in Section 6.2.3 (Retirement of Biodiversity Credits) of the BDAR. Effectively, this section outlines the potential offset mechanisms available and the potential likelihood of use, ranging from payment into the Biodiversity Conservation Trust, purchase and retirement of open market available biodiversity credits, to establishment of a Biodiversity Stewardship Site.

With respect to MNES matters, the proponent (as per the BDAR) has not indicated how the offset obligation for EPBC listed entities will be met. Section 6.2.3 of the BDAR only provides the mechanisms available for offsetting and does not specifically define which will be used for each MNES.

2019-2020 Bushfire Impacts

The BAM assessment has not assessed the impacts of the 2019/2020 bushfires with respect to MNES threatened species. Section (d) of this document provides details of the updated assessment of significance for these species, including context of regional habitat lost.

(c) In the circumstance where there are EPBC Act-listed species that are not addressed by the BAM (i.e. migratory species) **comment** on whether these species have been assessed in accordance with the SEARs and provide references to where the assessment information is detailed in the EIS.

The Protected Matters Search (as detailed in the EIS on page 57 and in Table 3-3) identified 14 migratory species that are not assessed by the BAM (though Appendix 2 lists 16 species) as potentially occurring in the locality, namely (as detailed in Appendix 2 of the BDAR):

- Black-faced Monarch
- Common Greenshank
- Common Sandpiper
- Curlew Sandpiper
- Eastern Curlew
- Eastern Osprey
- Fork-tailed Swift
- Latham's Snipe
- Marsh Sandpiper
- Pectoral Sandpiper
- Red-necked Stint
- Rufous Fantail
- Satin Flycatcher
- Sharp-tailed Sandpiper
- White-throated Needletail
- Yellow Wagtail

Appendix 2 of the BDAR provides a broad assessment of these migratory species based on known habitat preferences and history of records, and all but one (1) species was considered likely on the Study Area and maybe significantly impacted upon by the Project.

The White-throated Needletail (*Hirundapus caudacutus*) is listed as a migratory species under the EPBC Act (also listed as 'vulnerable' under the EPBC Act). This species was not identified during the assessment; however, based on habitat availability, the species has a moderate to low likelihood of occurrence in aerial habitat within the Study Area. The BDAR concluded that the action is unlikely to have a significant impact on this species, given: - the lack of breeding habitat for this species within the Study Area; this species is almost exclusively aerial and unlikely to utilise the terrestrial habitat present onsite; this species is highly transitory and able to move between different habitats easily; and the Project is unlikely to introduce or increase the number of invasive pest species or a disease that may cause the species to decline.

Nevertheless, the DAWE referral advice (including the ERT [Environmental Reporting Tool]) did not consider the proposal would significantly impact on this species or other migratory entities, as the proposed project area does not contain important habitat for migratory species or support a significant population. No further assessment is required.

2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

Given that this species is mainly an aerial forager, assessing the potential impacts of the 2019/2020 bushfires is difficult and impact assessment mapping has not been conducted. Note that this species is not listed under the BC Act and therefore BioNet Threatened Species to Plant Community Types Association data (DPIE 2020) is not available. Based

on the broad range of habitat types utilised by this highly mobile species, it is likely that large areas of habitat, which were unaffected by the 2019/20 bushfires, occur within the Hunter IBRA subregion.

Conclusion

The action is unlikely to have a significant impact on this species, given:

- The lack of breeding habitat for this species within the Study Area.
- This species is almost exclusively aerial and unlikely to utilise the terrestrial habitat present onsite.
- This species is highly transitory and able to move between different habitats easily.
- The Action is unlikely to introduce or increase number of invasive pest species or a disease that may cause the species to decline.
- Large areas of habitat unaffected by the 2019/20 bushfires occur throughout the Hunter IBRA subregion.

(d) **Verify** that the proponent has expressed a statement about the potential impact i.e. likely significant, low risk of impact, not occurring, for each listed threatened species and community protected by the EPBC Act referred to in 1(a). Note which species and/or communities have not been addressed in this manner.

An assessment of whether each threatened species and ecological community is likely to occur in the proposal area and whether a subsequent assessment of significance is required has been undertaken in Appendix 9 of the BDAR.

Outcomes of the assessment are:

- *Central Hunter Valley Eucalypt Forest and Woodland* - the Project will result in the direct clearance of various woodland patches of this TEC totalling approximately 13.72 hectares, represented by PCT 1691 (vegetation zones 1) and PCT 1692 (vegetation zone 8). The direct clearance of 13.72 hectares of this TEC was considered a significant impact (i.e. reduced extent and some fragmentation) that requires the retirement of 376 ecosystem credits.

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

  An assessment of potential impacts of the 2019/2020 bushfires determined that a very small area of the CEEC was adversely affected by the fires (i.e. approximately 1% within a 50km radius of the Development Site). The affected area occurs approximately 40km southeast of the Development Site near the borders of the Hunter and Yengo IBRA subregions. The CEEC mainly occurs in the Central Hunter Valley, in the Muswellbrook, Singleton and Cessnock LGA. It is therefore unlikely that this CEEC was directly impacted by the bushfires.

  Conclusion

  Approximately 32.39 ha of the CEEC has been mapped within the Study Area. A total of 13.72 ha will be removed by the Action. It is unlikely that this removal will cause a significant impact to the CEEC given that:

  - The CEEC is well represented in the locality in a similar state to that represented in the Study Area.
  - The Action will not cause significant fragmentation of the CEEC given that it already exists in the Study Area in a highly fragmented state.
  - No indirect impacts of the Action have been identified that are likely to have a significant impact on the area of the CEEC that will be retained within the Study Area and the adjacent areas.
  - The existing weed and feral animal threat levels are unlikely to change significantly following completion of the Action.
  - It is unlikely that the CEEC was directly impacted by the 2019/20 bushfires.

- *White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grasslands (DNG)* - No areas of this TEC was identified within the Study Area. The Project will not result in the clearance of this TEC, nor will it be indirectly impacted upon. No offset is required.

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

N/A.

- *Ozothamnus tesselatus* - This species was not detected within the Study Area during the assessment and was determined to have a low likelihood of occurrence. As such none of the significant assessment criteria are triggered, a significant impact to the species is unlikely. No offset is required.

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

  An assessment of potential impacts of the 2019/2020 bushfires determined that a very small area of habitat for the species was adversely affected by the fires (i.e. approximately 1% of the habitat within a 50km radius of the Development Site). The affected area occurs approximately 40km southeast of the Development Site near the borders of the Hunter and Yengo IBRA subregions. Populations of the species are mainly restricted to a few locations north of Rylstone. It is therefore unlikely that this species was directly impacted by the bushfires.

  Conclusion

  Surveys conducted within the Study Area for the proposed Action did not identify the species. The habitat present is not considered to be important to the long-term survival of the species. Large areas of habitat unaffected by the 2019/20 bushfires occur to the north of the Hunter IBRA subregion. The proposed Action is unlikely to have a significant impact on the species.

- *Wybong Leek Orchid* - an expert report (Dr. S Bell 2019) was prepared for the project which determined that *Prasophyllum* sp. Wybong, may be potentially affected by the Project due to the presence of potentially suitable habitat within the Study Area. Approximately 166 hectares of habitat for *Prasophyllum* sp. Wybong occurs within the Study Area. Targeted surveys were undertaken within the Study Area Which resulted in no individuals being detected. Therefore, the project is unlikely to lead to a significant impact based on the proponent's assessment. No offset is required.

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

  An assessment of potential impacts of the 2019/2020 bushfires determined that a very small area of habitat for the species was adversely affected by the fires (i.e. approximately 1% of the habitat within a 50km radius of the Development Site). The affected area occurs approximately 40km southeast of the Development Site near the borders of the Hunter and Yengo IBRA subregions. Populations of the species mainly occur near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell, Tenterfield, Currabubula and the Pilliga area. It is therefore unlikely that this species was directly impacted by the bushfires.

  Conclusion

  The expert report determined that approximately 166 ha of habitat for the species occurs within the Development Site. Surveys of this area indicate that a population of the species does not occur. Large areas of habitat unaffected by the 2019/20 bushfires occur throughout the Hunter IBRA subregion. The action is therefore unlikely to constitute a significant impact on this species.

- *Regent Honeyeater* - the Project will result in the direct clearance of approximately 14.64 hectares of potential foraging habitat for the Regent Honeyeater (PCT 1691 – vegetation zones 1 and 2). This species is classified as an dual credit species in the Threatened Biodiversity Data Collection (OEH 2019a); however, given that there is no important habitat (i.e. breeding) in the Study Area based on DPIE 'Important Area Mapping', the species will be offset with only ecosystem credits calculated for PCTs associated with potential foraging habitat for this species. The impact was assessed as not significant by the proponent.

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

An assessment of potential impacts of the 2019/2020 bushfires determined that moderate to large areas of habitat for the Regent Honeyeater and Swift Parrot were adversely affected by the fires (i.e. approximately 15% of the habitat for the Regent Honeyeater and 31% of habitat for the Swift Parrot within a 50km radius of the Development Site). The affected areas of Regent Honeyeater habitat occur mainly to the southwest in the Yengo IBRA subregion. Areas of Swift Parrot habitat were also affected in this area, including areas in the northwest near the Mummel Escarpment. Large areas of unaffected habitat for these species occur throughout the Hunter IBRA subregion and to the north. Given the low/moderate suitability of habitats within the Development Site for either species, it is unlikely that the loss of habitat (as a result of bushfires) across the Study Area is expected to increase the value of habitats within the Development Site.

Conclusion

Regent Honeyeater has moderate to low likelihood of occurrence within the Study Area. Approximately 14.64 ha of potential foraging habitat is present within the Development Site. One record occurs within the locality. The Action is unlikely to result in a significant impact to this species given:

- Only foraging habitat for this species would be impacted.
- The majority of areas of habitat within the Study Area comprise small, isolated patches with a low-level of connectivity to surrounding habitat, or small patches at the extremity of larger patches.
- Habitat resources for this species would remain outside of the Study Area within the surrounding Development Site.
- The species is highly mobile and any local population which may be present is likely to persist, should the Action proceed.
- The Action is unlikely to introduce or increase number of invasive pest species or a disease that may cause the species to decline.
- The Action would not interfere substantially with the recovery of this species.
- Large areas of habitat unaffected by the 2019/20 bushfires occur throughout the Hunter IBRA subregion

- *Pink-tailed Legless Lizard* - targeted surveys identified no evidence of a population of Pink-tailed Legless Lizard within the Study Area due to the lack of habitat. As such impacts on the species were assessed as unlikely to be significant. No offset is required.

2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

An assessment of potential impacts of the 2019/2020 bushfires determined that a very small area of habitat for the species was adversely affected by the fires (i.e. approximately 1% of the habitat within a 50km radius of the Development Site). The affected area occurs approximately 40km southeast of the Development Site near the borders of the Hunter and Yengo IBRA subregions, and to the north-east in the Mummel escarpment. Populations of the species occur in the Central and Southern Tablelands, and the South Western Slopes. There is a concentration of populations in the Canberra/Queanbeyan Region. Other populations have been recorded near Cooma, Yass, Bathurst, Albury and West Wyalong. Populations are also known in the Goulburn, Yass, Queanbeyan, Cooma, Muswellbrook and Tumut areas. The species also occurs in the ACT, Victoria and south-eastern South Australia.

Conclusion

No records of the Pink-tailed Worm-lizard (*Aprasia parapulchella*) occur within the locality. Targeted surveys for this species within the Study Area identified no individuals. Large areas of habitat within the Hunter IBRA subregion were unaffected by the 2019/20 bushfires. As such, the proposal is unlikely to significantly impact the species in the locality.

- *Large-eared Pied Bat* - no potential roosting habitat for the Large-eared Pied Bat (caves or similar structures) were located within the Study Area or surrounds. The Project will result in the direct clearance of approximately 82.12 hectares of potential foraging habitat for the Large-eared Pied Bat. The Project is unlikely to have a significant impact on the Large-eared Pied Bat due to the lack of roosting habitat. The species is a species

credit species; and no offset is required for this species as no suitable roosting habitat is being impacted upon. Though, general foraging and movement habitat will likely be offset through the PCT ecosystem credit retirement of the Project.

2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

An assessment of potential impacts of the 2019/2020 bushfires determined that large areas of habitat for the Large-eared Pied Bat and Corben's Long Eared Bat were adversely affected by the fires (i.e. approximately 33% and 53% of habitat respectively within a 50km radius of the Development Site). The habitat affected by the fires is likely to represent both foraging and breeding habitat for these species. The affected areas mainly occur in the Yengo IBRA Subregion to the southwest. Habitat for the Large-eared Pied Bat was also affected by bushfires in the Mummel Escarpment to the northeast.

Conclusion

Large-eared Pied Bat has a high likelihood of occurrence within the Study Area. Eighteen records occur within the locality (OEH, 2019). Targeted surveys for this species were conducted in December 2019. These surveys did not detect any individuals or breeding habitat. The Action is unlikely to have a significant impact on this species given:

- The lack of breeding habitat for this species within the Study Area.
- Evidence of this species within the locality indicates this species has the potential to occur in the adjacent habitat.
- No habitat critical to the survival of this species occurs within the Study Area.
- The habitat onsite comprises small, isolated patches with a low-level of connectivity to surrounding habitat, or patches at the extremities of larger patches.
- The Action is unlikely to introduce or increase number of invasive pest species or a disease that may cause the species to decline.
- The Action would not interfere substantially with the recovery of this species.
- Large areas of habitat unaffected by the 2019/20 bushfires occur throughout the Hunter IBRA subregion.

- *Spotted-tailed Quoll* - the Project will result in the direct clearance of approximately 82.13 hectares of potential habitat for the Spotted-tailed Quoll. The Project is unlikely to have a significant impact on the Spotted-tailed Quoll in consideration of the Matters of National Environmental Significance Significant Impact Guidelines 1.1, due to extensive areas of similar habitat in the vicinity (DotE 2013). This species is classified as an ecosystem credit species in the Threatened Biodiversity Data Collection (OEH 2019a) and as such foraging and movement habitat would be offset through the PCT ecosystem credit retirement (e.g. PCT 1691, 1692 and 1731 – Vegetation Zones 1, 2, 5, 6, 7, 8 and 9) of the Project (Table 16).

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

  An assessment of potential impacts of the 2019/2020 bushfires determined that moderate to large areas of habitat for the Spotted-tailed Quoll were adversely affected by the fires (i.e. approximately 26% of the habitat within a 50km radius of the Development Site). The affected areas of habitat mainly occur to the southwest in the Yengo IBRA subregion and in the northwest near the Mummel Escarpment. Large areas of unaffected habitat for this species occurs throughout the Hunter IBRA subregion and to the north. Given the low/moderate suitability of habitats within the Development Site for the species, it is unlikely that the loss of habitat (as a result of bushfires) across the Study Area is expected to increase the value of habitats within the Development Site.

  Conclusion

  The species was assessed as having a moderate-low likelihood of occurrence within the Study Area. Approximately 82.13 ha of habitat for this species occurs within the Development Site. Sixty-five records occur

within the locality. Targeted surveys for this species did not identify the species. The Study Area was assessed as providing potential foraging and dispersal habitat of the Spotted-tailed Quoll; however, it was not assessed as providing breeding habitat for the species. Large areas of habitat unaffected by the 2019/20 bushfires occur throughout the Hunter IBRA subregion.

As there is a large amount of higher quality habitat within the surrounding areas of the Development Site, the removal of the habitat within the Study Area is unlikely to have a significant impact on any potentially occurring local population of the species.

- *Striped Legless Lizard* – this species was recorded in the Study Area footprint. Within the Study Area it is estimated that of the 184.43 hectares of available habitat occurs, approximately 116.74 hectares will be removed for the Project. The direct clearance of 116.74 hectares of this species habitat was considered a significant impact (i.e. reduced extent and some fragmentation) that requires the retirement of 2,102 species credits.

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

  An assessment of potential impacts of the 2019/2020 bushfires determined that a very small area of habitat for the species was adversely affected by the fires (i.e. approximately 2% of the habitat within a 50km radius of the Development Site). The affected area occurs approximately 40km southeast of the Development Site near the borders of the Hunter and Yengo IBRA subregions. Populations of the species occur in the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma, Muswellbrook and Tumut areas. The species also occurs in the ACT, Victoria and south-eastern South Australia.

  Conclusion

  Approximately 184.43 ha of suitable habitat for this species occurs within the Study Area, approximately 122.97 ha will be removed for the Action. Twenty-three records occur within the locality (OEH, 2019). Targeted surveys for this species within the Study Area identified one to two individuals at the same location (on different days) within Borrow Pit 4. Due to the lack of bushfire impacts in the Hunter IBRA subregion, it is unlikely that populations were affected by the fires in the locality. Due to the uncertainty around the status of the population within the Study Area (size, importance, breeding potential), the potential for the proposal to have a significant impact on the species is uncertain.

- *Swift Parrot* - the Project will result in the direct clearance of approximately 14.64 hectares of potential foraging habitat for the Swift Parrot (Figure 30) (PCT 1691 – vegetation zones 1 and 2). This species is classified as an ecosystem credit species in the Threatened Biodiversity Data Collection (OEH 2019a); however, given that there is no important habitat (i.e. breeding) in the Project area based on DPIE 'Important Area Mapping', the impact was assessed as not significant. The removal of potential habitat will be offset through the retirement of ecosystem credits calculated for PCTs associated with potential habitat for this species, namely the woodland form of PCT 1691.

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

  An assessment of potential impacts of the 2019/2020 bushfires determined that moderate to large areas of habitat for the Regent Honeyeater and Swift Parrot were adversely affected by the fires (i.e. approximately 15% of the habitat for the Regent Honeyeater and 31% of habitat for the Swift Parrot within a 50km radius of the Development Site). The affected areas of Regent Honeyeater habitat occur mainly to the southwest in the Yengo IBRA subregion. Areas of Swift Parrot habitat were also affected in this area, including areas in the northwest near the Mummel Escarpment. Large areas of unaffected habitat for these species occur throughout the Hunter IBRA subregion and to the north. Given the low/moderate suitability of habitats within the Development Site for either species, it is unlikely that the loss of habitat (as a result of bushfires) across the Study Area is expected to increase the value of habitats within the Development Site.

Swift Parrot has moderate to low likelihood of occurrence within the Study Area. Approximately 14.64 ha of potential foraging habitat present within the Development Site. Nine records occur within the locality. The Action is unlikely to result in a significant impact to this species given:

- Only foraging habitat for this species would be impacted.
- The majority of areas of habitat within the Study Area comprise small, isolated patches with a low-level of connectivity to surrounding habitat, or small patches at the extremity of larger patches.
- Habitat resources for this species would remain outside of the Study Area.
- The species is highly mobile and any local population which may be present is likely to persist, should the Action proceed.
- The Action is unlikely to introduce or increase number of invasive pest species or a disease that may cause the species to decline.
- The Action would not interfere substantially with the recovery of this species.
- Large areas of habitat unaffected by the 2019/20 bushfires occur throughout the Hunter IBRA subregion and broader area (50 km radius of the Development Site).

- *Brush-tailed Rock-wallaby* - The species was not considered for the Study Area due to the lack of habitat. The Study Area does not contain rocky escarpments, outcrops, cliffs or another habitat features consistent with the preferred habitat of this species. As such impacts on the species are unlikely to be significant. No offset is required.

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

  An assessment of potential impacts of the 2019/2020 bushfires determined that moderate to large areas of habitat for the Brush-tailed Rock Wallaby were adversely affected by the fires (i.e. approximately 34% of the habitat within a 50km radius of the Development Site). The affected areas of habitat mainly occur to the southwest in the Yengo IBRA subregion and in the northwest near the Mummel Escarpment. Large areas of unaffected habitat for this species occurs throughout the Hunter IBRA subregion and to the north. Given that the Study Area lacks preferred habitat attributes of the Brush-tailed Rock Wallaby, loss of habitat through bushfire is unlikely to have increased the value of habitat within the Development Site.

  Conclusion

  The species was assessed as having a low likelihood of occurrence within the Study Area due to the lack of suitable habitat present. Large areas of habitat unaffected by the 2019/20 bushfires occurs throughout the Hunter IBRA subregion. The Activity is unlikely to have a significant impact on a local population of the species.

- *Koala* - no evidence of Koala activity was identified during surveys conducted within the Study Area. Due to the limited extent of key foraging habitat and the patchy occurrence of feed trees within the Study Area, it is unlikely that the Study Area represents Core Koala Habitat. As such impacts on the species are unlikely to be significant. No offset is required.

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

  An assessment of potential impacts of the 2019/2020 bushfires determined that a moderate to large area of habitat for the Koala was adversely affected by the fires (i.e. approximately 38% of the habitat within a 50km radius of the Development Site). The affected areas of habitat mainly occur to the southwest in the Yengo IBRA subregion and in the northwest near the Mummel Escarpment. Large areas of unaffected habitat for this species occurs throughout the Hunter IBRA subregion and to the north. Due to the limited connectivity between areas of habitat within the Study Area and areas of higher quality habitat (with recent records of Koala) in the locality, it is unlikely that the value or importance of Koala habitat onsite has increased as a consequence of habitat loss from bushfire within the broader region.

  Conclusion

The species was assessed as having a low likelihood of occurrence within the Study Area. Targeted surveys for this species did not identify evidence of Koalas. The Study Area was assessed as providing mainly dispersal habitat for the species. As there is a large amount of higher quality habitat within the surrounding areas of the Development Site that were unaffected by the 2019/20 bushfires, the removal of the habitat within the Development Site is unlikely to have a significant impact on any potentially occurring local population of the species.

- *Grey-headed Flying-fox* - no Grey-headed Flying-fox camps are located within the Project area or surrounds. The Project will result in the direct clearance of approximately 18.05 hectares of potential foraging habitat for the Grey-headed Flying Fox (PCT 1691 – vegetations 1, 2, 5 and 6). The Project is unlikely to have a significant impact on Grey-headed Flying Fox due to the lack of a breeding camp and that there are numerous areas of suitable foraging habitat within the surrounds. This species is classified as both an ecosystem/species credit species in the Threatened Biodiversity Data Collection (OEH 2019a) and foraging habitat (ecosystem credits) will be offset through the ecosystem credit retirement of the Project.

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

  An assessment of potential impacts of the 2019/2020 bushfires determined that moderate to large areas of habitat for the Grey-headed Flying Fox were adversely affected by the fires (i.e. approximately 31% of the habitat within a 50km radius of the Development Site). The affected areas of habitat mainly occur to the southwest in the Yengo IBRA subregion and in the northwest near the Mummel Escarpment. Large areas of unaffected habitat for this species occurs throughout the Hunter IBRA subregion and to the north. Given that roosting camps are generally located within 20kms of regular food sources, it is unlikely that bushfires within Yengo will have any impact on populations that frequent the Study Area.

  Conclusion

  The Grey-headed Flying-fox has a moderate to high likelihood of occurrence within the Study Area. The Action is unlikely to have a significant impact on this species, given:

  - The lack of breeding habitat for this species within the Study Area.
  - Evidence of this species within the locality indicates this species has the potential to occur in the adjacent habitat.
  - The habitat onsite comprises small, isolated patches with a low-level of connectivity to surrounding habitat, or patches at the extremities of larger patches.
  - The Action is unlikely to introduce or increase number of invasive pest species or a disease that may cause the species to decline.
  - The Action would not interfere substantially with the recovery of this species.
  - Large areas of habitat unaffected by the 2019/20 bushfires occur throughout the Hunter IBRA subregion.

- *Corben's Long-eared Bat* - the Project will result in the direct clearance of approximately 82.13 hectares of potential habitat (and a reduction in tree hollows) for this species. The Project will not likely have a significant impact on Corben's Long-eared Bat due to the lack of suitable roosting habitat and the lack of positive records. This species is classified as an ecosystem credit species in the Threatened Biodiversity Data Collection (OEH 2019a) and as such would be offset through the ecosystem credit retirement associated with PCT 1691, 1692 and 1731.

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

  An assessment of potential impacts of the 2019/2020 bushfires determined that large areas of habitat for the Large-eared Pied Bat and Corben's Long Eared Bat were adversely affected by the fires (i.e. approximately 33% and 53% of habitat respectively within a 50km radius of the Development Site). The habitat affected by the fires is likely to represent both foraging and breeding habitat for these species. The affected areas mainly occur in the Yengo IBRA Subregion to the southwest. Habitat for the Large-eared Pied Bat was also affected by bushfires in the Mummel Escarpment to the northeast.

Conclusion

Corben's Long-eared Bat has a moderate likelihood of occurrence within the Study Area due to potentially suitable habitats, however, very few records are known from the locality. Approximately 122.70 ha of suitable habitat is identified within the Study Area. One record occurs within the locality (OEH, 2019). Targeted surveys for this species were conducted in December 2019. These surveys did not detect any individuals or breeding habitat. The Action is unlikely to have a significant impact on this species, given:

- Evidence of this species within the locality indicates this species has the potential to occur in the adjacent habitat.
- No habitat critical to the survival of this species occurs within the Study Area.
- The habitat onsite comprises small, isolated patches with a low-level of connectivity to surrounding habitat, or patches at the extremities of larger patches.
- The Action is unlikely to introduce or increase number of invasive pest species or a disease that may cause the species to decline.
- The Action would not interfere substantially with the recovery of this species.
- Large areas of habitat unaffected by the 2019/20 bushfires occur throughout the Hunter IBRA subregion.

- *Green and Golden Bell Frog* - suitable habitat is present within the Study Area consists of constructed dams which contain permanent water and suitable wetland vegetation (primarily *Typha* and *Juncus acutus*). Surveys were completed across eight different water bodies detected no population or individuals of the Green and Golden Bell Frog. However, there are historical records of the species in the locality. In light of no recent records and that the targeted surveys resulted in a nil result, it is highly unlikely that the Project will result in a significant impact on the species. No offset required.

  2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

  An assessment of potential impacts of the 2019/2020 bushfires determined that a very small area of habitat for the species was adversely affected by the fires (i.e. approximately 3% of the habitat within a 50km radius of the Development Site). The affected area occurs approximately 40km southeast of the Development Site near the borders of the Hunter and Yengo IBRA subregions.

  Conclusion

  The Green and Golden Bell Frog has previously been recorded within the Sewage Treatment Plant Polishing Ponds within the Bayswater Site (directly to the west of the Study Area), approximately 20 years ago. Surveys conducted within the Study Area for the proposed Action did not identify the species. As with many historic populations of the Green and Golden Bell Frog, chytridiomycosis has resulted in broadscale range contractions and is now extinct over much of the former range of the species. As such, no location populations of the species are known in recent years and no individuals were detected during surveys. Large areas of habitat for the species were unaffected by the 2019/20 bushfires within the Hunter IBRA subregion. The proposed Action is unlikely to have a significant impact on the species.

2019-2020 Bushfire Impacts

The proponent has concluded that for the majority of the EPBC listed threatened species, ecological communities and migratory species identified within the Development Site or identified as having suitable habitat within the disturbance footprint, the Project is unlikely to have a significant impact. Following the review of potential impacts of the 2019/20 bushfires, this conclusion remains unchanged due to the lack of habitat impacted by the fires within the Hunter IBRA sub region and within a 50 km radius of the Study Area. As such, the value of habitats, for each threatened species, within the Development Site is unlikely to have increased in value or importance, as a result of bushfire impacts within the broader region.

(e) I**dentify** where further information from the proponent is critical to the assessment of MNES particularly in relation to mapping Table 1 (A), analysis of impacts Table 1 (F) and Table 2 (F), avoidance, mitigation and offsetting, and 6.

Further information was sought during the BAM assessment (i.e. exhibition of the EIS), with respect to:

(i) the lead / principal BAM accredited assessor must be identified in the BDAR and on the BAM calculator;
(ii) the BAM accredited assessor must submit the credit calculator via the NSW Biodiversity Accredited Assessor;
(iii) the BAM accredited assessor includes the plot field data sheets in the submitted BDAR;
(iv) the BAM accredited assessor certifies that the BDAR was finalised within 14 days of the exhibition of the EIS;
(v) detailed justification as to why the Plant Community Type 1691 and their variants do not meet the listing criteria for the NSW listed Central Hunter Grey Box – Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions endangered ecological community;
(vi) following threatened flora species require targeted surveys: *Cynanchum elegans* (White-flowered Wax Plant), *Rhodamnia rubescens* (Scrub Turpentine), and *Thesium australe* (Austral Toadflax);
(vii) the red goshawk requires further justification of its exclusion from further assessment or targeted surveys or an expert report be undertaken;
(viii) if the credit obligations for the threatened ground orchids, *Diuris tricolor* and *Prasophyllum petilum* (syn. *Prasophyllum* species Wybong), are reassessed prior to project approval, then the targeted surveys need to be undertaken;
(ix) the geographic distribution for *Prasophyllum petilum* be updated in the BDAR and expert report to include the record from Thomas Mitchell Drive, south of Muswellbrook;
(x) the accredited assessor demonstrates that the native vegetation within vegetation zones described as Non-native Vegetation - Exotic Grasslands is non-native and permissible for use under the Paddock Tree Calculator;
(xi) the credit obligation for each clearing stage under the proposed clearing plan be outlined in the BDAR; the accredited assessor updates the BDAR to include measures proposed to address the offset obligations; and
(xii) the BDAR and BAM calculator be updated to reflect possible changes requested during this review stage from the above recommendations.

All these matters were adequately addressed in the Response to Submissions (RTS), except the justification for the use of Paddock Tree Calculator. BCD is currently awaiting further correspondence. BCD requested further clarification on the use of the Paddock Tree Calculator, as requested on 29 January 2021 (DOC21/1055712-7) as part of the Response to Submissions Report review.

2019-2020 Bushfire Impacts

In February 2021, P&A (DPIE) requested further information from the proponent with respect to potential impacts to Matters of National Environmental Significance (MNES) in the context of the 2019-2020 bushfires (*Details above).

On 16 April 2021, Kleinfelder Australia Pty Ltd provided a response to P&A, answering all the three dot points listed above.

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2. Assessment of the relevant impacts

All EPBC Act-listed species and/or communities that the Commonwealth consider would be significantly impacted (as noted in the referral documentation) should be assessed and offset. These are referred to as relevant impacts.

(a) **Verify** [by ticking the following boxes]:

✓ the nature and extent of all the relevant impacts has been described

✓ measures to avoid and mitigate have been described

✓ an appropriate offset for any residual adverse significant impact has been determined.

DoE determined that the following threatened species and TEC are likely to be significantly impacted:

- Central Hunter Valley Eucalypt Forest and Woodland (CHVEFW) – Critically Endangered.
- Regent Honeyeater (*Anthochaera phrygia*) – Critically Endangered.
- Swift Parrot (*Lathamus discolor*) – Critically Endangered.
- Striped Legless Lizard (*Delma impar*) – Vulnerable.

Central Hunter Valley Eucalypt Forest and Woodland - the Project will result in the direct clearance of various woodland patches of this TEC totalling approximately 13.72 hectares, represented by PCT 1691 (vegetation zones 1) and PCT 1692 (vegetation zone 8). The direct clearance of 13.72 hectares of this TEC was considered a significant impact (i.e. reduced extent and some fragmentation) that requires the retirement of 376 ecosystem credits.

Regent Honeyeater - the Project will result in the direct clearance of approximately 14.64 hectares of potential foraging habitat for the Regent Honeyeater (PCT 1691 – vegetation zones 1 and 2). This species is classified as a dual credit species in the Threatened Biodiversity Data Collection (OEH 2019a); however, given that there is no important habitat (i.e. breeding) in the Study Area based on DPIE 'Important Area Mapping', the species will be only offset with ecosystem credits calculated for PCTs associated with potential foraging habitat for this species. The impact was assessed as not significant by the proponent.

Swift Parrot - the Project will result in the direct clearance of approximately 14.64 hectares of potential foraging habitat for the Swift Parrot (Figure 30) (PCT 1691 – vegetation zones 1 and 2). This species is classified as a dual credit species in the Threatened Biodiversity Data Collection (OEH 2019a); however, given that there is no important habitat (i.e. breeding / key foraging) in the Study Area based on DPIE 'Important Area Mapping', the impact was assessed as not significant. The removal of residual habitat will be offset through the retirement of ecosystem credits calculated for PCTs associated with potential habitat for this species, namely the woodland form of PCT 1691.

Striped Legless Lizard – this species was recorded in the Study Area footprint. Within the Study Area it is estimated that of the 184.43 hectares of available habitat occurs, approximately 116.74 hectares will be removed for the Project. The direct clearance of 116.74 hectares of this species habitat was considered a significant impact (i.e. reduced extent and some fragmentation) that requires the retirement of 2,102 species credits.

Two other 'credit species' species under the BC Act were found to be significantly impacted by the proposal and requiring credits to be retired: Southern Myotis and Squirrel Glider (as shown in Table 17 of the BDAR). However, these species are not listed on the EPBC Act and are not MNES matters.

Although, advice documents from DAWE suggested that the proposal may have a significant impact on Regent Honeyeater and Swift Parrot, the BDAR and EIS adequately showed that the impact to these entities are unlikely to be significant. BCD noted that these species are both classified as Dual Credit Species (i.e. both 'Ecosystem / Credit Species' in the Threatened Biodiversity Data Collection (OEH 2019a); however, given that there is no important habitat (i.e. breeding / key foraging habitat) in the Study Area based on DPIE 'Important Area Mapping' no species credits are required to be retired and they would be offset with ecosystem credits calculated for PCTs associated with potential foraging habitat for these species.

A BOS was submitted with the BDAR and is in accordance with the BAM. The Project results in a total of 5,117 ecosystem credits (Table 1 - above) and 3,681 species credits (Table 2 - above) that will need to be retired based on Tables 16 and 17 in the BDAR. Section 6.2.3 of the BDAR provides the mechanisms available for offsetting but does not specifically define which will be used. Potential offset mechanisms available range from payment into the Biodiversity Conservation Trust, purchase and retirement of open market available biodiversity credits, and establishment of a Biodiversity Stewardship Site. With respect to MNES matters, the proponent (as per the BDAR) has not indicated how the offset obligation for EPBC listed entities will be met.

2019-2020 Bushfire Impacts

Assessment of the relevant impacts for all EPBC Act-listed species and/or communities is presented in Section (d) in the context of the 2019/2020 bushfires.

The proponent has concluded that the value of habitats, for each threatened species, within the Development Site is unlikely to have increased in value or importance, as a result of bushfire impacts within the broader region.

(b) **Note** if information in relation to any of these boxes has not been provided for any relevant EPBC Act-listed species and communities.

BCD considers that the Assessment of MNES in the BDAR is adequate.

(c) There may be listed threatened species and communities for which the proponent will claim that the impact will be **not** significant in accordance with the *EPBC Act Significant Impact Guidelines*. Please **provide** advice for cases where OEH disagrees with this finding.

Not applicable. BCD is satisfied with the assessment of MNES provided the BDAR.

(d) Provide references to where specific lists or tables are detailed in the EIS

EIS (AGL Macquarie Pty Ltd – 4 June 2020 [*Note this predates the revised BDAR and as such some credit calculations and PCT extent has changed as shown in the revised BDAR]**)**

- Appendix C – Biodiversity Development Assessment Report
- Figures Ea to Ef: Environmental Constraints
- Statutory Context – EPBC Act, pg. xxv
- EPBC Act Approach, pg. 56-57
- Section 7 – Biodiversity, pg. 89-110
- Section 7.7.2 – Plant Community Types (PCTs) present, pg. 90
- Figures 7-1a to 7-1g – Plant community types and vegetation zones (maps), pg. 91-97
- Table 7-1 – Plant Community Types and other areas within the Project area, pg. 98
- Table 7-2 – Threatened Ecological Communities within the Project area, pg. 98
- Section 7.2.5 – Threatened Flora, pg. 99-100
- Section 7.2.8 – Threatened Fauna, pg. 101-102
- Table 7-3 – Summary of Assessment of Significance for MNES, pg. 104-107
- Table 7-4 – Environmental management measures – biodiversity impacts, pg. 107-109
- Section 7.5 – Offsets, pg. 109-110
- Table 7-5 – Summary of ecosystem credit requirements, pg. 109 (*Note: figures have been amended since the review of the EIS; the current BDAR (dated 9 December 2020) contains the figures which the Bilateral Assessment is based on)
- Table 7-6 – Summary of species credit requirements, pg. 110

Appendix E (to EIS) – Biodiversity Development Assessment Report (BDAR) - Revised BADR (dated 9 December 2020)

- Table 1: Summary of Key Components of the Proposed Action, pg. 3-5
- Figure 2: Development Site Location Map, pg. 7
- Figure 3A: Development Site Map A, pg. 8
- Figure 3B: Development Site Map B, pg. 9
- Figure 3C: Development Site Map C, pg. 10
- Figure 3D: Development Site Map D, pg. 11
- Table 2: Landscape features of the Development Site, pg. 16-17
- Table 4: Plant Community Types and other areas within the Development Site, pg. 24
- Figures 4A to 4D (maps): Plant Community Types, Vegetation Zones and Plot Locations, pg. 25-28
- Table 5: Threatened Ecological Communities within the Development Site, pg. 46
- Figures 5A to 5D (maps): Threatened Ecological Communities, pg. 47-50
- Table 6: Key diagnostic characteristics for the Central Hunter Valley eucalypt forest and woodland ecological community Key diagnostic characteristics for the ecological community, pg. 51
- Table 7: Condition categories (classes) and thresholds for Central Hunter Valley eucalypt forest and woodland ecological community, pg. 52
- Figures 6A to 6D (maps): Paddock Trees within the Development Site, pg. 55-58
- Figures 7A to 7D (maps): Habitat Features, pg. 63-66
- Table 10: Survey of requirements and timing conducted for candidate flora species, pg. 69-70
- Figures 8A to 8D (maps): Flora Survey Effort 22-26 July 2019, 23-25 September 2019 & 06 January 2020, pg. 71-74
- Figures 9A to 9D (maps): Flora Survey Effort 8-9 October 2019, pg. 75-78
- Figures 10A to 10D (maps): Flora Survey Effort 21-24 October 2019, pg. 79-82
- Figures 11A to 11D (maps): Flora Survey Effort 15-18 September 2020, pg. 83-86
- Table 11: Survey of threatened fauna species, pg. 87-89
- Figures 12A to 12D (maps): Fauna Survey Effort, pg. 92-95

- Figures 13A to 13D (maps): Threatened Flora and Fauna Identified within the Study Area, pg. 100-103
- Figures 16A to 16D (maps) Striped Legless Lizard Habitat, pg. 115-118
- Table 14: Assessment of the Project on Prescribed Impacts, pg. 130
- Table 15: Summary mitigation and management measures for the Project, pg. 135-137
- Table 16: Summary of ecosystem credit requirements, pg. 138
- Table 17: Summary of species credit requirements, pg. 139
- Table 18: Credit liability for each stage of the proposed development, pg. 141
- Table 19: Summary of supplementary assessment requirements, pg. 143-147
- Section 7.1.2.2 Relevant Matters of National Environmental Significance (including threatened species and TEC), pg. 147-148
- Table 20: Potential habitat on site of potentially occurring Commonwealth listed threatened species, populations, and ecological communities, pg. 149-151

Appendix 1 (to the BDAR) – Paddock Trees and Paddock Tree Report
Appendix 2 (to the BDAR) – Threatened Species Database Search
Appendix 5 (to the BDAR) – Predicted and Candidate Species Reports
Appendix 6 (to the BDAR) – Fauna Survey Effort within the Study Area
Appendix 7 (to the BDAR) – Biodiversity Credit Reports
Appendix 8 (to the BDAR) – Expert Report / Advice – Dr. S Bell Threatened orchid surveys for the Bayswater Water and Other Associated Operational Works Project
Appendix 8 (to the BDAR) – Assessments of Significance (EPBC Act)
Appendix 13 (to the BDAR) – bam Plot Datasheets

Report: Bayswater Power Station Upgrade (SSD 9697) – Review of Response to Submissions (RtS) Report– Response to RFI to address bushfire impacts to Matters of National Environmental Significance (MNES) – Commonwealth Assessment (Kleinfelder April 2021)

- Figure 2: Areas Impacted by 2019-2020 Bushfires, pg. 6
- Table 1: 2019/20 Bushfire Impact Assessment Summary, pg. 6
- Figure 3: Impact of 2019-2020 Bushfires on *Prasophyllum* sp. Wybong Habitat, pg. 10
- Figure 4: Impact of 2019-2020 Bushfires on Regent Honeyeater (*Anthochaera phrygia*) Habitat, pg. 15
- Figure 5: Impact of 2019-2020 Bushfires on Swift Parrot (*Lathamus discolor*) Habitat, pg. 16
- Figure 6: Impact of 2019-2020 Bushfires on Spotted-tailed Quoll (*Dasyurus maculatus*) Habitat, pg. 20
- Figure 7: Impact of 2019-2020 Bushfires on (*Ozothamnus tesselatus*) Habitat, pg. 23
- Figure 8: Impact of 2019-2020 Bushfires on Green and Golden Bell Frog (*Litoria aurea*) Habitat, pg. 28
- Figure 9: Impact of 2019-2020 Bushfires on Large-eared Pied Bat (*Chalinolobus dwyeri*) Habitat, pg. 33
- Figure 10: Impact of 2019-2020 Bushfires on Corben's Long-eared Bat (*Nyctophilus corbeni*) Habitat, pg. 34
- Figure 11: Impact of 2019-2020 Bushfires on Grey-headed Flying Fox (*Pteropus poliocephalus*) Habitat, pg. 38
- Figure 12: Impact of 2019-2020 Bushfires on Koala (*Phascolarctos cinereus*) Habitat, pg. 42
- Figure 13: Impact of 2019-2020 Bushfires on Brush-tailed Rock Wallaby (*Petrogale penicillata*) Habitat, pg. 45
- Figure 14: Impact of 2019-2020 Bushfires on Striped Legless Lizard (*Delma impar*) Habitat, pg. 50
- Figure 15: Impact of 2019-2020 Bushfires on Pink-tailed Worm-lizard (*Aprasia parapulchella*) Habitat, pg. 54
- Figure 16: Impact of 2019-2020 Bushfires on Central Hunter Valley Eucalypt Forest and Woodland CEEC Habitat, pg. 58

Table 1 Impact Summary Relevant EPBC Act – listed Ecological Communities (refer to section 3)

A	B	C	D	E		F	G
EPBC Act -listed EEC	**Y/N**	**PCTs**	**Y/N/comment**	**Ha**	**Credits**	**Comment**	**Relevant page numbers in the EIS**
Central Hunter Valley Eucalypt Forest and Woodland - Critically Endangered	Y	PCT 1691: Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter – Vegetation Zone 1 (CEEC) PCT1692: Bull Oak grassy woodland of the central Hunter Valley – Vegetation Zone 8	Y	13.72	376	N/A.	EIS – Main Report: Figures Ea to Ef, pgs. xxxi, 90-99, 103-105 & 137. Appendix C – BDAR (6 December 2020): pgs. 20-21, 24-28, 30-31, 33, 35-36, 46-52, 124, & 148-151. Appendix 2, 7, 9 & 13 (incl. credit reports). Report: Bayswater Power Station Upgrade (SSD 9697) – Review of Response to Submissions (RtS) Report– Response to RFI to address bushfire impacts to Matters of National Environmental Significance (MNES) – Commonwealth Assessment (Kleinfelder April 2021) – 55-59.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered	N		N	0	0	The Project will not result in the clearance of this TEC, nor will it be indirectly impacted upon. No offset is required.	EIS – Main Report: pgs. 105. Appendix C – BDAR (6 December 2020): pgs. 148-149. Appendix 2 and 9.

(A) **List** the relevant EPBC Act listed ecological communities that will be significantly impacted in accordance with the referral documentation.
(B) **Verify** that there is evidence in the EIS that listed EEC and species habitat has been mapped in accordance with relevant listing guidelines (Yes/No). *Proponents are required by the SEARs to ensure that EPBC-listed communities are mapped in accordance with EPBC Act listing criteria. It is important that any derived native grassland components of an EPBC listed EEC are included in the mapping of native vegetation extent.*
(C) **List** the Plant Community Types (PCTs) associated with the ecological communities in accordance with Chapter 5 of the BAM.
(D) **Confirm** that the identification of PCTs has been correct (Yes/No) and comment if not correct.
(E) **Record** the area of impact (ha) and credits required.

(F) **Comment** on the analysis of the impacts in relation to the nature and extent of the impact and whether or not the EIS includes an analysis of the direct and indirect impacts to the EEC. Note whether further information might be required.

(G) **Cite** relevant page numbers for details provided the EIS and Appendices for each EEC.

Table 2 Impact Summary Relevant EPBC Act – listed Species (refer to section 4)

*NOTE: DAWE Referral Document listed three species of MNES that may be significantly impacted (plus the CEEC in Table 1 above): Regent Honeyeater, Swift Parrot and Striped Legless Lizard. All other potentially affected species were considered to be unlikely impacted upon by the proponent. BCD confirmed that these species have been assessed correctly and in accordance with the BAM and associated guidelines.

A	B	C	D	E		F	G
Threatened species (listed under the EPBC Act)	**Credit Type (SC/EC)**	**Record PCTs associated with ecosystem credits**	**Y/N/Comment**	**Hectares (total species habitat)**	**Credits (total species habitat)**	**Comment**	**Relevant page numbers in the EIS and Appendices**
Striped Legless Lizard	Species	N/A	Y	116.74	2102	Detected within the Study Area during baseline fauna surveys.	EIS – Main Report: pgs. xxxi, xxxii, 100-101, 106-108 & 110. Appendix C – BDAR (6 December 2020): pgs. 89, 97, 99, 101, 106, 115-118, 129, 135, 139, 141, 143, 148, & 151-152. Appendix 2, 7 & 9 (incl. credit reports). Report: Bayswater Power Station Upgrade (SSD 9697) – Review of Response to Submissions (RtS) Report– Response to RFI to address bushfire impacts to Matters of National Environmental Significance (MNES) – Commonwealth Assessment (Kleinfelder April 2021) – 46-50.
Regent Honeyeater	Species / Ecosystem	PCT 1691: Narrow-leaved Ironbark – Grey Box Grassy Woodland of the central and upper Hunter	N/A.	N/A.	N/A.	This species is classified as an 'Ecosystem / Credit Species' in the Threatened Biodiversity Data Collection (OEH 2019a); however, given that there is no important habitat (i.e. breeding) in the Study Area based on DPIE 'Important Area Mapping' the species will be offset with ecosystem credits calculated for PCTs associated with potential habitat for this species, namely the woodland form of PCT 1691.	EIS – Main Report: pgs. 105. Appendix C – BDAR (6 December 2020): pgs. 68, 143, 147 & 150. Appendix 2 and 9. Report: Bayswater Power Station Upgrade (SSD 9697) – Review of Response to Submissions (RtS) Report– Response to RFI to address bushfire impacts to Matters of National Environmental

A	B	C	D	E		F	G
Threatened species (listed under the EPBC Act)	**Credit Type (SC/EC)**	**Record PCTs associated with ecosystem credits**	**Y/N/Comment**	**Hectares (total species habitat)**	**Credits (total species habitat)**	**Comment**	**Relevant page numbers in the EIS and Appendices**
							Significance (MNES) – Commonwealth Assessment (Kleinfelder April 2021) – 12-16.
Swift Parrot	Species / Ecosystem	PCT 1691: Narrow-leaved Ironbark – Grey Box Grassy Woodland of the central and upper Hunter	N/A.	N/A.	N/A.	This species is classified as an 'Ecosystem / Credit Species' in the Threatened Biodiversity Data Collection (OEH 2019a); however, given that there is no important habitat (i.e. breeding) in the Study Area based on DPIE 'Important Area Mapping' the species will be offset with ecosystem credits calculated for PCTs associated with potential habitat for this species, namely the woodland form of PCT 1691.	EIS – Main Report: pgs. 105. Appendix C – BDAR (6 December 2020): pgs. 68, 143, 147 & 150. Appendix 2 and 9. Report: Bayswater Power Station Upgrade (SSD 9697) – Review of Response to Submissions (RtS) Report– Response to RFI to address bushfire impacts to Matters of National Environmental Significance (MNES) – Commonwealth Assessment (Kleinfelder April 2021) – 12-16.

(A) **List** the relevant threatened species that will be significantly impacted in accordance with the referral documentation.
(B) **Record** whether the relevant threatened species is classified as "species credit species" of ecosystem credit species for the purposes of the BAM.
(C) **List** the PCTs associated with the ecosystem credit species.
(D) Verify that the habitat polygons for MNES have been mapped appropriately representing the foraging and/or breeding habitat for the species that will be impacted by the development.
(E) **Record** the area of impact (ha) and credits required. For impacts associated with ecosystem credit species identify the total credit requirements associated with the cleared PCTs identified as habitat for the species.
(F) **Comment** on the adequacy of the analysis of the impacts in relation to the nature and extent of the impact and whether or not the EIS includes an analysis of the direct and indirect impacts to the species. Note if further information is required.
(G) **Cite** relevant page numbers for details provided in the EIS and Appendices for each threatened species.

3. Avoid, mitigate and offset

Comment on whether or not the EIS identifies measures to avoid and minimise impacts on the relevant EPBC Act-listed threatened species and communities. Section 8 of the BAM requires that proponents detail these efforts and commitments in the EIS. Identify gaps in the discussion on measures to avoid and minimise impacts on Commonwealth matters. Provide references to sections and page numbers in the EIS.

EIS

Under Section 3.10 of the EIS it states in relation to biodiversity, measures to avoid, mitigate and offset impacts in accordance with the BC Act and the BAM are addressed in Chapter 5 of the BDAR.

Appendix C – BDAR (6 December 2020)

Section 5.1. of the BDAR specifically addresses the avoid and minimise aspects of the Project that are relevant MNES.

Section 5.1.1 specifically deals with avoid and minimising impacts to native vegetation and habitat.

The proposed upgrade works are considered essential to the future functionality of the power station and therefore a 'Do Nothing' option, where the upgrades would not occur, was not considered to be feasible. The Proponent states,

'*The existing Ash Dam is forecast, based on current emplacement and beneficial reuse of ash rates, to reach capacity within approximately two years. To enable the ongoing operation of Bayswater it is critical to augment the existing Ash Dam to provide additional emplacement capacity for fly ash and bottom ash from Bayswater as well as increasing the opportunity for beneficial reuse of coal ash. Further, not replacing or upgrading the ageing water and wastewater infrastructure on site would result in disproportionately high maintenance costs and potential environmental costs associated with infrastructure failures. Accordingly, the 'Do Nothing' option could jeopardise the ongoing functionality and performance of Bayswater*'.

Avoid and minimise considerations have been applied by the proponent to the following elements of the project (and are discussed in detail in Section 5.1.1 in the proponent's BDAR):

- Ash Dam Augmentation: - The following avoid, and mitigation options were considered:
  - *Do Nothing* - The existing Ash Dam is forecast, based on current emplacement and beneficial reuse of ash rates, to reach capacity within one to two years. To enable the ongoing operation of Bayswater it is critical to augment the existing Ash Dam to provide additional emplacement capacity for fly ash and bottom ash from Bayswater. Without augmentation of the Ash Dam occurring, there would be inadequate storage capacity on site.
  - *Option 1* - increasing the western levee and saddle dam heights until they provided enough storage capacity, up to the best-case estimates. This option was not selected as it did not have sufficient capacity to meet worst case ash storage requirements. Option 1 would result in one large and exposed ash beach, that has potential to emit dust and little opportunity to supress dust once it starts.
  - *Option 2* - increasing the western levee and saddle dam heights until they provided enough storage capacity, up to the worst-case estimates. Ash discharges would be from the western levee wall. Similarly, to Option 1, this option has the potential to emit dust.
  - *Option 3* – using ash terracing to progressively stack the ash in one metre increments. This option would also require the construction of ash terraces to a final height of Reduced Level (RL) 190 m Australian Height Datum (AHD) (under worst case ash generation estimates). This option was not selected as the continual raising of the ash would increase the operational costs, and there would be impacts to existing services to the west of the Ash Dam. It would also present difficulties in accessing the ash surface to construct terraces safely.
  - *Option 4* - dividing the ash storage into two cells using a central embankment and discharging the ash from this central embankment. The central embankment would be progressively raised by one metre at a time. It is preferential to not build retaining walls on the ash surface due to possible stability limitations.

- Salt cake landfill facility:
  - *Do Nothing* – continue to store salt in the brine concentrator decant basin and Lake Liddell using the *Hunter* River salinity trading scheme to discharge. This is not a preferred option as the brine concentrator decant basin is almost at capacity and there is a risk that Lake Liddell would significantly increase in salinity if this option were to be implemented.
  - *Ocean* Disposal – transfer the salt cake to ocean either in liquid or solid form. Investigations to date have been unable to identify any existing ocean disposal process which could lawfully take the salt cake.
  - *Offsite Landfill Disposal* - transfer the salt cake to an offsite landfill. This is not considered a viable option as it is unlikely offsite disposal locations would commit to taking the salt cake for the remaining life of Bayswater.
  - On Site Disposal (the preferred approach) - transfer the salt cake to an onsite landfill, in solid form. This is the preferred approach causing the least environmental impact with waste being wholly contained and managed on site in an environmentally responsible manner.

- Coal handling plant (CHP) water management:
  - The proponent is currently reviewing the management of water and wastewater materials within the *CHP* settling basin and associated drainage system at Bayswater to improve the quality of water in Tinkers Creek.

- Borrow pits:
  - Four Borrow Pit locations have been identified to provide material for the construction of the proposed improvements of the Project. The selection of the sites for the Borrow Pits has largely been dependent upon the availability of suitable material for construction works such as augmentation of the Ash Dam wall and the Salt cake landfill. Locations close to the works area (Borrow Pits 1 and 2) also reduce the transportation requirements of the sourced material, and where Borrow Pits are further away from the required works areas, they have been positioned close to existing internal roads (Borrow Pits 3 and 4).
  - Most pits contain grassland vegetation and avoid wooded patches and the higher quality larger patches of remnant vegetation. Borrow Pit 4 (just under 50%) contains areas of woody native vegetation, consisting of Bulloak Forest, and small patches of Central Hunter Box – Ironbark Woodland and Central Hunter Swamp Oak Forest. Borrow Pits could not be avoided due to its close proximity to internal roads to allow for movement of source material.

- HP Pipe clearing and Ravensworth Ash Line:
  - These works areas are restricted to the area directly adjacent to the existing pipelines to allow for the maintenance and upgrade/duplication of the existing lines along the current alignment. As such, the location of these works cannot be changed, but will be occurring within the existing easements, which typically contain already disturbed vegetation and regenerating trees.

Section 5.1.2 (and Table 14) details avoid and minimise impacts on Prescribed Biodiversity Impacts (as per Section 8.2 of the BAM), on a variety of issues, such as impact of development on geological features, human made structure or non-native vegetation, impacts on connectivity, impacts on water quality, bodies and hydrological processes, and vehicle strike. The project will impact on many of these prescribed impacts. Table 15 in Section 5.3 summarises mitigation and management measures for the Project and details avoidance and mitigation measures for:

- Clearing of native vegetation:
  - Avoid and minimise clearing impacts to native vegetation where practicable.
  - Clearly delineate the boundaries of the development site to ensure no accidental incursions within retained vegetation.

- Ensure vehicle and equipment parking areas and stockpile areas are identified and sited to avoid areas containing ecological value wherever practicable.
- Appropriate signage such as 'No Go Zone' or 'Environmental Protection Area' should be installed.
- Identify and communicate the location of any 'No Go Zones' in site inductions.
- Clearing will be avoided, where practicable, during breeding and through egg hatching periods for the Striped Legless Lizard, November to February. If clearing is to occur during this period (November to February):
  - Pre-clearing surveys within areas of Striped Legless Lizard habitat will be conducted.
  - Any individuals captured during these preclearing surveys will be relocated into similar habitat outside the Study Area (development footprint).

- Removal of hollow-bearing trees / habitat trees, resulting in fauna injury and mortality:
  - Limit removal of trees to that required within the development footprint.
  - A pre-clearing protocol will be implemented during clearing works, as follows:
    - Pre-clearance surveys will be undertaken to determine if any inhabiting fauna are present.
    - A suitably qualified and trained fauna handler will be present during hollow-bearing tree clearing to rescue and relocate displaced fauna.

- Impacts to surface and groundwater quality and quantity due to sediment run-off and/or contaminant runoff into adjacent watercourses
  - Source controls such as sediment fences, mulching and jute matting will be utilised where appropriate.
  - Site-based vehicles will carry spill kits.
  - An Erosion and Sediment Control Plan will be required with each stage of development as part of the Construction Environmental Management Plan (CEMP in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) prior to commencement of construction.
  - A Groundwater Management Plan is to be included in the CEMP.
  - A Surface Water Management Plan is to be included in the CEMP.
  - Limit the use of pesticides in the Study Area (including development footprint) where necessary to avoid contamination of nearby watercourses/wetland areas.

- Vehicle collision with fauna:
  - Speed limits within the development footprint will be limited to 40 km/hr.
  - This limit should be stated in the CEMP and be communicated in site inductions.

- Rehabilitation of Borrow Pits:
  - Upon the completion of clay extraction works within each Borrow Pit, these areas will be rehabilitated. A rehabilitation plan for each Borrow Pit will be prepared. Where the areas are to be returned to native vegetation, locally endemic species will be used for rehabilitation of appropriate vegetation communities, using locally sourced seeds/plants where possible.

- Transfer of weeds and pathogens to and from site:
  - Fungal pathogens, including *Phytophora cinnamomi* and Myrtle Rust (*Puccinia psidii*), can have devastating impacts on native plant communities and inhabiting fauna if not managed.
  - Appropriate wash down facilities will be available to clean vehicles and equipment prior to arrival on-site and prior to departure.
  - Ensure soil and seed material is not transferred in accordance with measures outlined in the CEMP.

- Weed infestations within the construction footprint are to be identified and mapped prior to construction.
- A Plan of Management for the control of noxious weeds is to be included in the CEMP. This is to include weed control works to be conducted throughout the construction phase of the Project, and follow-up weed control within the development footprint post construction.

- Noise, vibration, waste and air pollution impacts to adjacent sensitive habitat areas:
  - Increased human activity (from workers and traffic levels) directly adjacent to sensitive habitat areas may cause disturbance to flora and fauna species in adjoining habitat.
  - Impacts from operational activities, such as disturbance to an animal's normal behaviour patterns due to noise, vibration, and dust may cause areas of previously suitable habitat to become sub-optimal and may cause fauna species to vacate areas of previously suitable habitat.
  - The CEMP will consider measures to mitigate impacts on flora and fauna from noise, vibration, waste, and air pollution such as:
    - Preparation of a waste and traffic management plan. Enforce 'carry-in, carry-out' policy regarding rubbish and waste materials generated on site to avoid waste materials entering adjacent vegetation.
    - Restriction of public access and associated impacts from domestic pets, waste dumping and damage to adjoining vegetation must be enforced pre, during and post construction.
    - Fence sensitive areas to delineate 'no go' zones.
    - Noise minimization practices should be included in the CEMP in accordance with DPIE / EPA recommendations.
    - Dust control measures will include covering loads where required; amending operations under excessive wind conditions including ceasing operations if required; use of water tankers as required to control dust; rehabilitation through vegetation of surfaces to be left unsealed; and, truck wheel washes or other dust removal measures.

The BDAR indicates that for each of the Project elements, opportunities to reduce the area of disturbance within the development footprint would be considered further during detailed design to further minimise possible impacts associated with the Project. It is anticipated that this may result in a reduction in the extent of vegetation clearance, and thereby ecological impacts.

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N/A.

Comment on the adequacy and feasibility of measures to avoid and minimise impacts. Identify inadequacies where further efforts could be made to avoid and minimise impacts on Commonwealth matters. Provide references to sections and page numbers in the EIS that discuss avoidance and mitigation measures relevant to EPBC Act-listed species and communities.

See discussion above for comments on avoid and minimise measures, and details of mitigation. BCD did not identify any inadequacies where further efforts could be made to avoid and minimise.

The project has been subject to many changes to the development footprint, and the proposed construction / corridor footprint (as outlined above), which include the avoidance and minimisation to areas of significant biodiversity (as outlined above). Specific measures will be implemented during the construction phase that aim to mitigate or minimise impacts (as outlined above). It is expected that the detailed design will further reduce the impacts to PCTs and habitat, particularly with regards to the siting of construction infrastructure and ancillary works.

2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

N/A.

4. Offsetting

(a) **Verify** [by ticking the following boxes] that the offsets proposed to address impacts to EPBC-listed threatened species and communities are in accordance with the requirements under the EPBC Act.

✓ An appropriate offset for any residual adverse significant impact has been determined.

✗ Proposed offsets for EECs provide a like for like outcome i.e. proponents have identified PCTs attributed to the specific threatened ecological community being impacted.

✓ Proposed offsets have been determined using the BAM

If offsets have not been determined in accordance with the BAM, Planning is required to discuss the proposed approach with the Commonwealth as soon as possible.

A BOS was submitted with the BDAR and is in accordance with the BAM. The Project results in a total of 5,117 ecosystem credits (Table 1 - above) and 3,681 species credits (Table 2 - above) that will need to be retired based on Tables 16 and 17 in the BDAR. Section 6.2.3 of the BDAR provides the mechanisms available for offsetting but does not specifically define which will be used. Potential offset mechanisms available range from payment into the Biodiversity Conservation Trust, purchase and retirement of open market available biodiversity credits, and establishment of a Biodiversity Stewardship Site. With respect to MNES matters, the proponent (as per the BDAR) has not indicated how the offset obligation for EPBC listed entities will be met. However DAWE have agreed as part of the bilateral process, that the offset obligation of the BAM assessment and the associated BOS is sufficient in meeting the MNES requirements. Under BAM there is no longer a requirement at the EIS to define a detailed offset package.

BAM specific offsetting requirements for MNES matters are as follows:

- *Central Hunter Valley Eucalypt Forest and Woodland* - the Project will result in the direct clearance of various woodland patches of this TEC totalling approximately 13.72 hectares, represented by PCT 1691 (vegetation zones 1) and PCT 1692 (vegetation zone 8). The direct clearance of 13.72 hectares of this TEC was considered a significant impact (i.e. reduced extent and some fragmentation) that requires the retirement of 376 ecosystem credits.

- *Striped Legless Lizard* – this species was recorded in the Study Area. Within the Study Area it is estimated that of the 184.43 hectares of available habitat occurs, approximately 116.74 hectares will be removed for the Action. The direct clearance of 116.74 hectares of this species habitat was considered a significant impact (i.e. reduced extent and some fragmentation) that requires the retirement of 2,102 species credits.

Although, advice documents from DAWE suggested that the proposal may have a significant impact on Regent Honeyeater and Swift Parrot, the BDAR and EIS adequately showed that the impact to these entities would not be significant.

2019-2020 Bushfire Impacts – Updated Assessments of Significance (as per Kleinfelder 2021)

N/A.

5. Comment on whether the information and data relied upon for the assessment have been appropriately referenced in the EIS. Comment on the validity of the sources of information and robustness of the evidence.

The information and data used in the assessment has been appropriately referenced, and the sources of information are valid.

Table 3 Summary of Offset Requirements

A	B	C	D	E	F
Threatened species or EEC (listed under the EPBC Act)	**Credits required as calculated by the BAM**	**Credits generated from offsets in remnant vegetation**	**Credits generated from offsets proposed by other means**	**Comment on the proposed offsets.**	**Relevant page numbers in the EIS and Appendices**
Central Hunter Valley eucalypt forest and woodland - Critically Endangered	376 ecosystem	0	0	A BOS was submitted with the BDAR and is in accordance with the BAM. The Project results in a total of 5,117 ecosystem credits (Table 1 - above) and 3,681 species credits (Table 2 - above) that will need to be retired based on Tables 16 and 17 in the BDAR. Section 6.2.3 of the BDAR provides the mechanisms available for offsetting but does not specifically define which will be used. Potential offset mechanisms available and the potential likelihood of use, ranging from payment into the Biodiversity Conservation Trust, purchase and retirement of open market available biodiversity credits, and establishment of a Biodiversity Stewardship Site**.** With respect to MNES matters, the proponent (as per the BDAR) has not indicated how the offset obligation for EPBC listed entities will be met. However DAWE have agreed as part of the bilateral process, that the offset obligation of the BAM assessment and the associated BOS is sufficient in meeting the MNES requirements. Under BAM there is no longer a requirement at the EIS to define a detailed offset package.	**EIS**: *Note: Since BCD review of EIS the credit obligations have changed and are not correct in the EIS; the revised BDAR (6 December 2020) contains the latest credit calculations. • Executive summary • Table 7-5: Summary of ecosystem credit requirements, pg. 109 • Table 7-6: Summary of species credit requirements, pg. 110 • Appendix C – BDAR (6 December 2020) **Appendix C – BDAR 6 December 2020):** • Executive summary • Table 16: Summary of ecosystem credit requirements • Table 17: Summary of species credit requirements • Table 18: Credit liability for each stage of the proposed development • Appendix 7 (credit reports)
Striped Legless Lizard	2102 species	0	0		
Regent Honeyeater	Nil	0	0		
Swift Parrot	Nil	0	0		

(A) **List** the relevant threatened species or ecological community included in the proposed offset package (these are the listed species and communities that will be significantly impacted in accordance with the *EPBC Act Significant Impact Guidelines 1.1*.). Identify any relevant species or ecological communities which have not been included in the proposed offset package.

(B) **List** the total credit requirement identified by the BAM for impacted listed threatened species and ecological community. For EECs and ecosystem credit species this is the sum of the credits generated by PCTs associated.

(C) **Identify** the total number of required credits which are proposed to be retired through conserving and managing remnant / mature vegetation.

(D) **Identify** the number of credits proposed to be met through other methods allowable under the BAM, such as rehabilitation of impacted areas or regrowth vegetation.

(E) **Comment** on the adequacy of the proposed offset in meeting requirements of the BAM and the EPBC Act. In particular is there a reasonable argument for a shortfall in credits required for MNES and/or non-compliance with like-for like? Are the offsets proposed by means other than protection of remnant vegetation adequate?

(F) **Reference** the relevant page numbers from the EIS and Appendices for each threatened species and community.