ATTACHMENT H MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

H1 Introduction

Under the EPBC Act, the Matters of National Environmental Significance Significant Impact Guidelines 1.1 (Significant Impact Guidelines) are designed to inform proponents who propose to undertake an action (development), to determine whether an EPBC referral is needed to be submitted to DCCEEW.

The purpose of this significant impact assessment is to assess the MNIES threatened entities against the impact guidelines to inform the Commonwealth Minister of Environment if the proposed action's has the potential to be considered a controlled action under the EPBC Act. Under the EPBC Act an action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on an MNES.

The proposed action has the potential to significantly impact on one EPBC Act listed TEC and 14 threatened fauna species. The Assessment of Significance includes:

Threatened Ecological Communities

- Central Hunter Valley eucalypt forest and woodland – Critically Endangered

Threatened Fauna Species

- Hunter Valley Delma (*Delma vescolineata*) - Endangered
- Green and Golden Bell Frog (*Litoria aurea*) – Vulnerable
- Large-eared Pied Bat (*Chalinolobus dwyeri*) - Endangered
- Spotted-tailed Quoll (*Dasyurus maculatus*) – Endangered
- Koala (*Phascolarctos cinereus*) – Endangered
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – Vulnerable
- Nectivorous birds
  - Regent Honeyeater (*Anthochaera phrygia*) – Critically Endangered
  - Swift Parrot (*Lathamus discolor*) -Critically Endangered
- Woodland Birds
  - Gang-gang Cockatoo (*Callocephalon fimbriatum*) – Endangered
  - South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*) -Vulnerable
  - South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) – Endangered
  - Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*) – Vulnerable
  - Diamond Firetail (*Stagonopleura guttata*) – Vulnerable
  - White-throated Needletail (*Hirundapus caudacutus*) – Vulnerable

H2 Threatened Ecological Communities

Based on field surveys completed by Cumberland Ecology (2020, 2021) and WSP (2024), the threatened ecological community that has the potential to occur is Central Hunter Valley eucalypt forest and woodland which is listed as Critically Endangered under the EPBC Act. The Assessment of Significance is outlined below.

H2.1 CENTRAL HUNTER VALLEY EUCALYPT FOREST AND WOODLAND

The Central Hunter Valley eucalypt forest and woodland ecological community is listed Critically Endangered under EPBC Act.

H2.1.1 DESCRIPTION

The ecological community occurs in the Hunter Valley region (primarily in the Central Hunter) which is mostly in the north east of the Sydney Basin IBRA Region (Department of the Environment, 2015). Within the Sydney Basin Bioregion the ecological community occurs mainly in the Hunter Valley IBRA subregion and also occurs in subregions adjacent to the Hunter Valley IBRA subregion; for example, in the Goulburn Valley in the Kerrabee IBRA subregion and in the Hunter Thrust Zone in the Upper Hunter IBRA subregion (Department of the Environment, 2015).

The *Central Hunter Valley eucalypt forest and woodland* ecological community generally occurs on soils derived from the Permian sedimentary bedrock found on the valley floors and on lower hillslopes and low ridges (Department of the Environment, 2015).

The canopy of the ecological community is dominated by one or more of the following four eucalypt species: *Eucalyptus crebra* (Narrow-leaved Ironbark), *Corymbia maculata* (syn. *E. maculata*) (Spotted Gum), *E. dawsonii* (Slaty Gum) and *E. moluccana* (Grey Box) (Department of the Environment, 2015). Under certain circumstances a fifth species, *Allocasuarina luehmannii* (Buloke), may be part of the mix of dominants, in sites previously dominated by one or more of the above four eucalypt species (Department of the Environment, 2015). Derived native grasslands and shrublands are not included in the nationally protected ecological community (Department of the Environment, 2015).

H2.1.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: Approved Conservation Advice on *Central Hunter Valley eucalypt forest and woodland* (Threatened Species Scientific Committee, 2015). In effect under the EPBC Act from 07-May-2015

H2.1.3 SPECIFIC IMPACTS

The following Plant Community Types (PCTs) recorded within the proposed action was considered to align with the *Central Hunter eucalypt forest and woodland* TEC:

- PCT 3314 Central Hunter Slopes Grey Box Forest
- PCT 3315 Central Hunter Ironbark-Spotted Gum Forest
- PCT 3431 Central Hunter Ironbark Grassy Woodland

Based on these assessments, the proposed action is estimated to potentially impact 231.33 ha of intact *Central Hunter valley eucalypt forest and woodland* ecological community. However, the vegetation condition of these areas includes 215.03 ha of PCTs 3314, 3315 and 3431 in moderate to good condition as well as an additional 16.30 ha of native vegetation

that includes native plantings and regrowth vegetation condition classes, may form part of this community but will require additional analysis to confirm these condition states meet minimum condition thresholds.

Areas of native grassland derived from the above listed PCTs have been excluded from consideration as they do not meet requirements outlined in the approved conservation advice. Additional patch analysis is required to determine areas of derived native grassland that may form part of this community (i.e. grasslands that connect two patches of EPBC listed vegetation with a maximum gap of 30m).

H2.1.4 SIGNIFICANT IMPACT CRITERIA

An action is likely to have a significant impact on a Critically Endangered ecological community if there is a possibility that it will:

- **REDUCE THE EXTENT OF AN ECOLOGICAL COMMUNITY.**

The proposed action is likely to result in a reduction of the extent to this ecological community of 215.03 ha of remnant vegetation and an additional 16.30 ha of potential habitat. Whilst additional detailed assessment is in progress to determine the final impact extent, a reduction of up to 215.03 ha has the potential to reduce the extent of the ecological community within proposed action study and the broader locality.

- **FRAGMENT OR INCREASE FRAGMENTATION OF AN ECOLOGICAL COMMUNITY, FOR EXAMPLE BY CLEARING VEGETATION FOR ROADS OR TRANSMISSION LINES.**

The proposed action would require the removal and / or disturbance to 215.03 ha of remnant vegetation and an additional 16.30 ha of vegetation potentially associated with the *Central Hunter Valley eucalypt forest and woodland* ecological community. This ecological community generally occurs within a fragmented landscape and has been historically subject to clearing for agriculture, mining and development activities. The proposed action is considered likely to incrementally increase fragmentation of this ecological community within its geographical range.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF AN ECOLOGICAL COMMUNITY**

The Approved Conservation Advice for the *Central Hunter Valley eucalypt forest and woodland* ecological community (Department of Environment 2015) outlines that: “Areas that meet the minimum (Moderate quality condition class) Condition thresholds, or are within the buffer zone, are considered critical to the survival of the Central Hunter Valley eucalypt forest and woodland ecological community. Additional areas such as adjoining native vegetation and areas that meet the description of the ecological community but not the Condition thresholds are also important to the survival of the ecological community and should be taken into consideration as part of the surrounding environment and landscape context.”

Based on the conservation advice for the ecological community, all areas determined to be PCT 3314, 3315, 3431 in good and moderate vegetation condition states aim to be assessed against the TEC EPBC condition thresholds. Any areas that meet the condition thresholds are considered critical habitat that identifies the current extent of this ecological community within the Central Hunter IBRA sub-region. Areas of modified vegetation that may potentially meet the minimum condition thresholds include native tree plantings and regrowth condition classes (covering 16.30 ha).

- **MODIFY OR DESTROY ABIOTIC (NON-LIVING) FACTORS (SUCH AS WATER, NUTRIENTS, OR SOIL) NECESSARY FOR AN ECOLOGICAL COMMUNITY’S SURVIVAL, INCLUDING REDUCTION OF GROUNDWATER LEVELS, OR SUBSTANTIAL ALTERATION OF SURFACE WATER DRAINAGE PATTERNS.**

Any large-scale excavation that occurs near to the ecological community or to marginal potential patches would involve mitigation measures to minimise sedimentation and hydrological impacts. Therefore, the proposed action is considered unlikely to substantially modify or destroy these abiotic factors.

- **CAUSE A SUBSTANTIAL CHANGE IN THE SPECIES COMPOSITION OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING CAUSING A DECLINE OR LOSS OF FUNCTIONALLY**

IMPORTANT SPECIES, FOR EXAMPLE THROUGH REGULAR BURNING OR FLORA OR FAUNA HARVESTING.

The proposed action would likely require the removal and/or disturbance to 215.03 ha of remnant vegetation and an additional 16.30 ha of potential Central Hunter Valley eucalypt forest and woodland. The proposed action does not include regular burning or flora and fauna harvesting or other activities that would substantially change the species composition of the community. Mitigation measures such as weed and pathogen control, controls for sedimentation and hydrological impacts will be put in place to limit indirect impacts of the proposed development surrounding vegetation. The proposed action is considered unlikely to cause a substantial change in the species composition of this ecological community.

- **WILL THE ACTION CAUSE A SUBSTANTIAL REDUCTION IN THE QUALITY OR INTEGRITY OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING, BUT NOT LIMITED TO:**
  - **assisting invasive species, that are harmful to the listed ecological community, to become established**
  - **causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.**

Central Hunter Valley eucalypt forest and woodland within the proposed action area is currently subject to weed and pest invasion. However, the proposed action will likely increase edge effect to remnant patches of the community through clearing which is likely to reduce the quality or integrity of the community's retained patches of vegetation and lead to an increase in invasive species.

The proposed action will be subject to detailed mitigation measures including, weed and pest management, vegetation clearing protocols, sediment and hydrological control measures would be put in place to minimise the likelihood of spread of weeds, pathogens or increase nutrients into patches of this ecological community. These mitigation measures would aid in reducing potential impacts associated with the proposed action that may otherwise result in the further reduction of the community's quality or integrity.

- **INTERFERE WITH THE RECOVERY OF AN ECOLOGICAL COMMUNITY**

To date, no recovery plan has been developed by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for *Central Hunter Valley eucalypt forest and woodland* (Department of Climate Change Energy the Environment and Water 2023). The Approved Conservation Advice for the *Central Hunter Valley eucalypt forest and woodland ecological community* (Department of Environment 2015) provides a number of research priorities, and priority recovery and threat abatement actions to maintain and improve condition and protection for remaining remnants of the community. The proposed action would involve native vegetation clearing and therefore may interfere with the recovery of this ecological community.

H2.1.5 CONCLUSION

Approximately 215.03 ha of remnant vegetation and an additional 16.30 ha of vegetation potentially corresponding with the *Central Hunter Valley eucalypt forest and woodland* would be removed. The proposed action is likely to result in a reduction of up to 215.03 + 16.30 ha to the extent of the *Central Hunter Valley eucalypt forest and woodland* within its geographical range. The proposed action would significantly reduce the extent of the community, interfere with the recovery of the community and has the potential to incrementally increase fragmentation of this ecological community. For these reasons, the proposed action **is considered likely to have a significant impact** on Central Hunter Valley eucalypt forest and woodland ecological community.

H3 THREATENED FAUNA

Based on preliminary field verification surveys and existing database searches, 13 candidate threatened fauna species listed under the EPBC Act are considered to have a moderate likelihood to be present in the proposed action. These are:

- Hunter Valley Delma
- Green and Golden Bell Frog
- Large-eared Pied Bat
- Spotted-tailed Quoll
- Koala
- Grey-headed Flying-fox
- White-throated Needletail
- Gang-gang Cockatoo
- South-eastern Hooded Robin
- Diamond Firetail
- Blossom Nomads: Regent Honeyeater and Swift Parrot
- South-eastern Glossy Black-Cockatoo

Preliminary assessments of significance, to determine if these MNES are likely to be significantly impacted by the proposed action are provided below.

H3.1 HUNTER VALLEY DELMA (DELMA VESCOLINEATA)

The Hunter Valley Delma is listed as Endangered under the EPBC Act and BC Act.

H3.1.1 DESCRIPTION

Until recently the Hunter Valley Delma was considered to be a subpopulation of *Delma impar*, however recent morphological and molecular studies have determined have that the Hunter subpopulation is a sperate species.

The Hunter Valley Delma is known almost entirely from a 25 km wide corridor in the Hunter Valley NSW, between Maitland and Muswellbrook (Mahony et al. 2022). A further specimen has been identified from just north of Parraweena on the Liverpool plains, approximately 80 km north-west of Muswellbrook.

The approved conservation advice (DCCEEW 2024) states that the species is known to occur in secondary native grassland in association with sparse box gum or ironbark woodland. The primary canopy species consists of *Eucalyptus melliodora* (yellow-box gum) and *E. crebra* (narrow-leaved ironbark), with a diverse ground cover layer containing multiple grasses including Austrostipa spp. (speargrass), *Bothriochloa spp*. (beardgrass), and *Chloris spp*. (finger grass). It has been found sheltering under rocks and discarded rubbish, including building rubble, metal and organic waste. The approved conservation advice (DCCEEW 2024) notes that sites where the species has been detected include rehabilitated mine sites and pastoral land used for cattle grazing. The Hunter Valley Delma has also been detected under dried cow pats in agricultural land that is heavily disturbed by livestock and contain no natural surface refugia.

H3.1.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

The key statutory document for this species is:

Department of Climate Change, Energy, the Environment and Water (2024). *Conservation Advice for* Delma vescolineata *(Hunter Valley Delma)*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/92599-conservation-advice-16072024.pdf. In effect under the EPBC Act from 16-Jul-2024.

H3.1.3 SPECIFIC IMPACTS

The species was not targeted through preliminary surveys undertaken by Cumberland Ecology in 2020 and 2021. However, tile grids were placed by WSP in 2024, and the species has been recorded. The nearest recent record from 2021 in the locality (10kms) occurs approximately 9.4 kilometres to the west. Grassland habitat consistent with Hunter Valley Delma is present within the wider locality connecting directly to the proposed action. Potential habitat present within the proposed action area includes exotic vegetation, PCT 3315 and 3431. The assessment is currently in progress and the final determination of direct impacts is yet to be determined. Based on desktop assessment there is 153.42 ha of potential habitat. The modelled species distribution from SPRAT outlined in demonstrates habitat within the proposed action area is shown in Figure H.1.

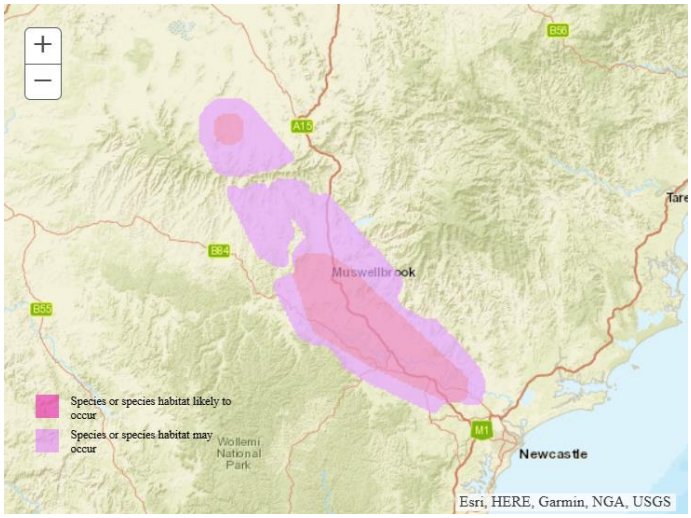

Figure H.1 Modelled distribution of Hunter Valley Delma (refer to SPRAT profile)

H3.1.4 SIGNIFICANT IMPACT CRITERIA

An action is likely to have a significant impact on an Endangered species if there is a real chance or possibility that it will:

LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION

The Hunter Valley Delma was recorded within the proposed action area. The proposed action has the potential to impact on the desktop assessment of 153.42 ha of potential habitat. The range of the Hunter Valley Delma occurs in four known locations (Muswellbrook, Jerrys Plains, Ravensworth and Parraweena). Any population for this species recorded within its range is considered an important population as the species range and populations are not thoroughly understood. Therefore, it is possible the proposed action may impact the size of the population near Singleton and any impacts on this species may lead to a long-term decrease in the size of an important population.

REDUCE THE AREA OF OCCUPANCY OF A SPECIES

The Hunter Valley Delma is known almost entirely from a 25 km wide corridor in the Hunter Valley NSW, between Maitland and Muswellbrook (Mahony et al. 2022). The proposed action area occurs at the limit of the species distribution. Therefore, given the small are of occupancy for this it is likely the loss of 153.42 ha of potential habitat would reduce the area of occupancy of this important population.

FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS

The species was recorded at different location across Camberwell study area. The proposed action includes the realignment of the New England Highway and extension of the Camberwell Pit. The proposed action has the potential to fragment this habitat as a results of these actions and therefore may result in the further fragmentation of the occurrence of the Hunter Valley Delma and split the population in two or more.

ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES

Habitat critical to the survival of a species refers to areas that are necessary:

- For activities such as foraging, breeding, roosting, or dispersal
- For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- To maintain genetic diversity and long-term evolutionary development, or
- For the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts, 2013).

The conservation advice for this species notes that habitat critical to the survival is not well understood but likely to include the secondary native grassland of the Hunter Valley between Maitland and Muswellbrook. The proposal would remove 153.42 ha of this habitat within the proposed action area. Therefore, it is considered the proposal would adversely impact habitat critical to the survival of the species.

DISRUPT THE BREEDING CYCLE OF A POPULATION

The proposal would result in the loss of 153.42 ha of habitat for the species. Given the habitat is likely to represent habitat critical for the species (i.e. necessary to maintain the species) it is likely the proposal will lead to a decrease in the size of an important population of Hunter Valley Delma.

MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE

Given the small area of occupancy and extent of habitat for this species, the loss of 153.42 ha woodland/grassland habitat is likely to decrease the availability or quality of habitat to the extent that the species is likely to decline.

RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE SPECIES' HABITAT

It is not likely that invasive species (such as introduced predators) that are harmful to the Hunter Valley Delma would become further established as a result of the proposed action. Adhering to mitigation measures such as weed and pest management plans, and vehicle weed hygiene, would prevent invasive weeds and pests such establishing in wetland habitat areas.

INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE

No. There are no known diseases that are likely to increase in the area as a result of the proposed action.

INTERFERE WITH THE RECOVERY OF THE SPECIES

There is no adopted or made Recovery Plan for this species. The approved Conservation Advice set out conservation and recovery actions for the species including:

- Protect and prevent impacts to habitat for the species in the planning, construction and post construction phases of mining and other developments.
- Develop and implement fire management strategies that minimise the risk of severe and frequent fires
- Management of invasive species

The proposal would result in the loss XX ha of habitat for the species. Given the small area of occupancy and extent of habitat for this species, the project has the potential to interfere with the recovery of the species.

CONCLUSION

The Hunter Valley Delma is known almost entirely from a 25 km wide corridor in the Hunter Valley NSW, between Maitland and Muswellbrook. The species was recorded within the proposed action area. The proposed action will:

- Based on the current assessment, potentially lead to loss of 153.42 ha of potential habitat
- Fragment and an populations in two or more

- Reduce the area of occupancy for the species.

Therefore, it is considered the proposal would have a significant impact on the Hunter Valley Delma.

H3.2 GREEN AND GOLDEN BELL FROG (LITORIA AUREA)

The Green and Golden Bell Frog is listed as Vulnerable under EPBC Act

H3.2.1 DESCRIPTION

Litoria aurea (Green and Golden Bell Frog), family Hylidae, is a large, dull olive to bright emerald-green frog that grows to 85 mm in length. The dorsum (back) of the frog has large irregular blotches ranging from brown to rich golden bronze. It has a cream or yellow dorso-lateral skin fold (stripe) running from behind the eye to the lower back that is bordered by a black stripe that can extend through the eye to the nostrils. The hind toes of the frog are almost fully webbed, but the fingers of the front feet lack webbing. The frog also has a distinct tympanum (ear membrane).

The Green and Golden Bell Frog occurs on coastal lowlands between Yuraygir National Park in New South Wales and Lake Tyers in Victoria. Records are clustered in Yuraygir National Park, Gosford, greater Sydney, Kempsey-Port Macquarie, Hexham-Newcastle-Ravensworth-Mungo Brush, Illawarra-Batemans Bay and Eden-East Gippsland. The species is only confirmed from one inland site near Captains Flat after previously being recorded from the Southern, Central and New England Tablelands.

This species occurs within the Sydney Basin, NSW North Coast, South East Corner and South Eastern Highlands IBRA Bioregions and the Northern Rivers, Hunter-Central Rivers, Hawkesbury-Nepean, Central West, Murrumbidgee, Southern Rivers, East Gippsland and West Gippsland Natural Resource Management Regions.

Threats to the species include:

- Habitat loss and fragmentation
- Disease
- Invasive species
- Climate change
- Recreational activity

H3.2.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Conservation Advice &Recovery Plan: Approved Conservation Advice for *Litoria aurea* (Green and Golden Bell Frog) (Department of Environment, 2014)
- Threat Abatement Plan/s: Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis (Department of the Environment and Energy, 2016b)

H3.2.3 SPECIFIC IMPACTS

The species were not recorded during surveys performed by Cumberland Ecology (2020 and 2021) and WSP (2024), but the species has been recorded within 20km of the proposed action at 44 separate locations, with one record less than 3km from the proposed action in 2020.

The proposed action contains numerous permanent water sources that include several dams with a combined total of approximately 3.2 ha and a waterbody of approximately 24 ha, which provides suitable habitat. Actions within the proposed action will not impact the waterbodies.

H3.2.4 SIGNIFICANT IMPACT CRITERIA

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION

Recent records outlined within the conservation advice suggest the species distribution in New South Wales, it is now considered absent from at least 90% of its former distribution having declined in extent of distribution, the number of sites where it occurs and, for some populations, the number of individuals and the species is restricted to in Yuraygir National Park, Gosford, greater Sydney, Kempsey-Port Macquarie, Hexham-Newcastle-Ravensworth-Mungo Brush, Illawarra-Batemans Bay and Eden-East Gippsland.

While the proposed action has potential habitat for the species, the lack of existing or historical records and isolation of these habitats from other known populations is unlikely an important population of species is within the locality.

REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION

The proposed action area contains numerous permanent water sources, including several dams with a combined total of approximately 3.2 ha and a waterbody of approximately 24 ha, which provide suitable habitat throughout the proposed action.

FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS

This assessment is based on the presence of potential habitat. The proposal will impact a relatively small extent of habitat in comparison to the surround vegetated areas and potential breeding and foraging habitat. This impact would be extremely minor and inconsequential when the extent of occurrence of each species is taken into consideration. The potential reduction of occupied areas is unlikely to be significant.

ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES

Habitat critical to the survival of a species refers to areas that are necessary:

- For activities such as foraging, breeding, roosting, or dispersal
- For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators) to maintain genetic diversity and long-term evolutionary development, or
- For the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts, 2013).

Conservation advice for the Green and Golden Bell Frog does not outline any critical habitat for the species. However, it does mention that records are clustered around the Yuraygir National Park, Gosford, greater Sydney, Kempsey-Port Macquarie, Hexham-Newcastle-Ravensworth-Mungo Brush, Illawarra-Batemans Bay and Eden-East Gippsland areas.

As the proposed action does not impact on any of these areas, it is unlikely that the proposed action hosts habitat critical to the survival of the Green and Golden Bell Frog

DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION

The habitat present represents a small proportion of available habitat for local populations and is unlikely to disrupt the breeding cycle of an important population or fragment a population and is unlikely to lead to a decrease in the size of an important population of Green and Golden Bell Frog.

MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE

The proposed action will remove suitable habitat for the Green and Golden Bell Frog and may modify, destroy, remove isolate or decrease the availability or quality of habitat.

RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT

It is considered unlikely that the proposed action would substantially change the composition of the species' habitat within the landscape or increase the spread and establishment of invasive species (i.e., predators) that could threaten the species' survival. While there is limited potential for the proposed action to introduce additional weeds and pathogens within the proposed action area and surrounding locality, mitigation measures would be implemented and as such, the proposed action is considered unlikely to result in invasive species becoming established in the habitat.

INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE

There is the risk of introducing or spreading chytrid fungus during proposed action implementation. However, there is unlikely to be a significant risk. from the proposed action, however, this is unlikely to be a significant risk. Mitigation actions including implementing best practice hygiene protocols, as part of the construction environmental management plan, will reduce the introduction or spread of pathogens. Consequently, it is considered highly unlikely that the proposed action will introduce disease that may cause the species to decline.

INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES

The species' Conservation Advice outlines primary conservation outcomes for Green and Golden Bell Frog, including:

- Minimise habitat disturbance
- Bushfire response
- Reduce the spread of chytrid fungus

The proposed action will potentially disturb a portion of the Green and Golden Bell Frog presumed habitat, taking away from primary conservation outcomes which may interfere with the recovery of the Green and Golden Bell Frog.

CONCLUSION

While the proposed action has potential habitat for the species, the lack of existing or historical records and isolation of these habitats from other known populations is unlikely an important population of species is within the locality.

Further detailed surveys will be required to better understand the extent of potential habitat loss for this species. However, given the suitable habitat within the locality in the form of riparian zones on the Hunter River, Glennies Creek, and suitable creek lines up to and throughout Ravensworth State Forest, there will not be a significant impact to the Green and Golden Bell Frog.

H3.3 LARGE-EARED PIED BAT (CHALINOLOBUS DWYERI)

The Large-eared Pied Bat (*Chalinolobus dwyeri*) is listed as Endangered under the EPBC Act.

H3.3.1 DESCRIPTION

The Large-eared Pied Bat is a medium-sized insectivorous bat identifiable by shiny black fur on the body, and a white stripe on the ventral side of the torso where it adjoins the wings and tail. The species has large ears, and lobes of skin along the lower lip and connecting (Department of the Environment, 2024).

This species is reliant on cave habitats for breeding and roosting purposes, which have not been identified within the proposed action area, so local occurrences are dependent only upon aerial foraging resources associated with onsite vegetation. The species has not been recorded during survey, however a single BioNet record places the species within the proposed action area, and additional records in the locality suggest the species is present in the surrounding area.

H3.3.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: Conservation Advice for *Chalinolobus dwyeri* (Large-eared Pied Bat) (Department of Climate Change, Energy, the Environment and Water, 2023). In effect under the EPBC Act from 15-Nov-2023.
- Listing Advice: Listing assessment information may be available in the approved Conservation Advice
- Adopted/Made Recovery Plans: National recovery plan for the large-eared pied bat *Chalinolobus dwyeri* (Department of Environment and Resource Management, 2011).
- No Threat Abatement Plan has been identified as being relevant for this species
- *Survey Guidelines for Australia's Threatened Bats*. EPBC Act survey guidelines 6.1 (Department of the Environment, Water, Heritage and the Arts (DEWHA), 2010).

H3.3.3 SPECIFIC IMPACTS

Native vegetation within the proposed action has been identified as potential habitats for the large-eared pied bat. The proposal would impact 248.69 ha of associated vegetation for the species.

H3.3.4 SIGNIFICANT IMPACT CRITERIA

An action is likely to have a significant impact on a Critically Endangered or Endangered species if there is a real chance or possibility that it will:

LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION

Up to 248.69 ha of potential aerial foraging habitat for the Large-eared Pied Bat would be affected by the proposed action. While habitat in the proposed action area has the potential to be used by these species, records of the species in the broader locality suggest that there is also consistent suitable habitat in the surrounding area. Further, no key habitat in the form of arched, dome-roofed maternity caves to support breeding for species, or diurnal roosting habitats utilised by the species have been identified within the proposed action area. Therefore, it is likely that any identified population of Large-eared Pied Bat in the proposal locality is utilising the proposed action area primarily for foraging purposes. Given the mobile nature of the species and the potential for additional suitable foraging habitat in the broader locality, the proposed action is not considered likely to significantly contribute to a long-term decline in the size of a population of Large-eared Pied Bat.

REDUCE THE AREA OF OCCUPANCY OF A SPECIES

The proposed action is likely to affect up to 248.69 ha of potential aerial foraging habitat for these species. Although the proposed action would result in the loss of potential foraging habitat, records of the species in the area suggest that there is additional suitable habitat in the broader locality accessible to this species. As no suitable maternity caves or diurnal roosting sites for the species have been identified within the proposed action area, it is unlikely that Large-eared Pied Bat occurs within the site other than for foraging purposes. Nevertheless, the removal of up to 248.69 ha of potential aerial foraging habitat is considered to be an incremental loss of suitable habitat locally and as such has the potential to incrementally reduce the area of occupancy for the species during seasons when individuals of this species may be reliant on local resources.

FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS

Habitat connectivity is not likely to be significantly affected by the proposed work. Given that this species is highly mobile, the proposed action would not present a significant barrier to these species. It is not considered likely that habitat would become further isolated or fragmented significantly beyond that currently existing in the proposed action area.

ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES

No critical habitat has been listed for the Large-eared Pied Bat to date.

As outlined in the National Recovery Plan (Department of Environment and Resource Management, 2011) habitat critical to the survival of the Large-eared Pied Bat includes suitable habitat that contains:

- Diurnal roosting sites, in the form of disused mine shafts, caves, overhangs, and abandoned Fairy Martin (*Hirundo ariel*) mud nests,
- Maternity roosts, in the form of arch caves with dome roofs, and
- Sandstone cliffs and fertile wooded valley habitat within close proximity of one another.

These habitat requirements have not been identified within the proposed action area during survey, and as such the proposed action area cannot be considered critical habitat for Large-eared Pied Bat. Subsequently, the proposed action would not adversely affect habitat critical to the survival of the species.

DISRUPT THE BREEDING CYCLE OF A POPULATION

The breeding cycle of Large-eared Pied Bat is reliant on maternity caves, specifically arch caves with dome roofs (Department of Environment and Resource Management, 2011). As no such caves have been recorded within the proposed action area, the species is unlikely to be breeding in the areas affected by the proposed action, and the breeding cycle of the population is not likely to be disrupted.

MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE

The proposed action would disturb up to 248.69 ha of native vegetation with the potential to be aerial foraging habitat for this species. The removal of potential habitat is considered to be an incremental loss, decreasing the amount of suitable foraging habitat available locally for the species. However, the species is highly mobile by nature, and existing records of Large-eared Pied Bat in the wider locality suggest that the species has access to consistent suitable foraging habitat within the broader area. As such, the removal of up to 248.69 ha of potential foraging habitat is not likely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE SPECIES' HABITAT

It is not likely that invasive species (such as introduced predators) that are harmful to these species would become further established as a result of the proposed action.

INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE

No. There are no known diseases that are likely to increase in the area as a result of the proposed action.

INTERFERE WITH THE RECOVERY OF THE SPECIES

The National Recovery Plan (Department of Environment and Resource Management, 2011) for Large-eared Pied Bat addresses the need for on-going research into the species, and improved management around populations identified at priority sites. With regards to the recovery of the species, the National Recovery Plan outlines the following objectives:

- Identify priority roost and maternity sites for protection
- Implement conservation and management strategies for priority sites
- Educate the community and industry to understand and participate in the conservation of Large-eared Pied Bat
- Research the Large-eared Pied Bat to augment biological and ecological data to enable conservation management
- Determine the meta-population dynamics throughout the distribution of the Large-eared Pied Bat

The proposed action would not be in conflict with any of the above objectives, and as such would not interfere with the recovery plan for this species.

CONCLUSION

Although the loss of aerial foraging habitat for Large-eared Pied Bat is considered to be an incremental loss of suitable habitat locally, the proposed action is not likely to have a significant impact upon available resources for cave-dwelling bats in general in the vicinity of the proposed action area or its wider locality and the habitat to be impacted is not considered important to the long-term survival of the Large-eared Pied Bat.

H3.4 SPOTTED-TAILED QUOLL (SE MAINLAND POPULATION) (DASYURUS MACULATUS MACULATUS)

The Spotted-tailed Quoll (southeastern mainland population) (*Dasyurus maculatus maculatus*) is listed as Endangered under the EPBC Act.

H3.4.1 DESCRIPTION

The Spotted-tailed Quoll (southeastern mainland population) is a nocturnal carnivorous marsupial that occurs from southern Queensland to south-western Victoria. This species typically feeds on a wide variety of prey including small mammals (<5 kg), birds, reptiles, fish, amphibian and invertebrates (Threatened Species Conservation Advice, 2020). They occur as solitary animals in low density with home ranges of up to a few thousand hectares for males and several hundred hectares for females (Threatened Species Conservation Advice, 2020). Spotted-tailed Quoll's inhabitant a wide range of vegetation types including closed forests, tall eucalypt forest, open woodlands, open forests, drier rain shadow woodlands and coastal heathlands (Threatened Species Conservation Advice, 2020).

Since European settlement, habitat reduction and fragmentation for the Spotted-tailed Quoll has led to an estimated 50-90% reduction in population for mainland Australia and 25-50% reduction for populations in NSW (Threatened Species Conservation Advice, 2020).

H3.4.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The Conservation Advice *Dasyurus maculatus maculatus (*southeastern mainland population) (Threatened Species Conservation Advice, 2020) was reviewed as part of this assessment. The Conservation Advice does not contain listing advice for this species.
- National Recovery Plan for the Spotted-tailed Quoll *Dasyurus maculatus* (Department of Environment, 2016)

Relevant adopted/made threat abatement plans include:

- Threat abatement plan for predation by feral cats (Department of the Environment, 2015).
- Threat abatement plan for predation by the European red fox (Department of the Environment Water Heritage and the Arts, 2008).

Relevant survey guidelines for this species include:

- Survey guidelines for Australia's threatened mammals: Guidelines for detecting mammals listed under the Environment Protection and Biodiversity Conservation Act 1999 (Department of Sustainability Environment Water Population and Communities, 2011).

H3.4.3 SPECIFIC IMPACTS

The Spotted-tail Quoll has potential habitat in the form of PCTs 3314, 3315, 3431, 4015, 3967 within the proposed action area. The potential area of impact is 153.42 ha. The majority of the habitats associated with the proposed action occur as disturbed, fragmented patches within an otherwise extensive agricultural (cropping) and mining landscape. There are 61 records of Spotted-tail quolls within ten kilometres of the proposed action area. As an ecosystem credit species, the Spotted-tail Quoll is assumed present in all vegetation zones in all PCTs. As a wide-ranging species, it may move through all habitats on occasion.

The Spotted-tail Quoll is yet to be recorded during targeted surveys and has been captured as a predicted ecosystem credit based on habitat surrogates.

H3.4.4 SIGNIFICANT IMPACT CRITERIA

An action is likely to have a significant impact on an Endangered or Critically Endangered species if there is a real chance or possibility that it will:

LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION

The proposed action is unlikely to have the potential to cause injury or mortality to individuals during clearing works, and it is considered unlikely that the proposed action would lead to a long-term decrease in the size of a population. The proposed action would not impact the carrying capacity of the habitats to the point that prey density would be detrimentally impacted, and the habitat was no longer viable for Spotted-tailed Quoll. The proposed action area contains poor quality breeding habitat, and the population is more likely to reside in the adjacent habitats in the National Parks, SCAs, Nature Reserves, and State Forests than the proposed action area in most cases. There is no real chance or possibility that the proposed action would lead to a long-term decrease in the size of a population.

REDUCE THE AREA OF OCCUPANCY OF THE SPECIES

For Spotted-tailed Quoll, the area of occupancy is estimated at 2,512 km^2 (Threatened Species Scientific Committee, 2020). The proposed action is unlikely to significantly reduce the area of occupancy for this species considering the available habitat in the surrounding landscape. There is no real chance or possibility that the impacts from the proposed action would reduce the area of occupancy for Spotted-tailed Quoll.

FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS

The potential habitat occurs largely as disturbed forest/woodland within an already fragmented landscape. The habitat is disturbed due to past and current land uses including mining, agriculture, road, rail and power infrastructure and urban development thereby it is subject to existing edge effects and fragmentation. The removal of this habitat may incrementally increase existing fragmentation however is considered unlikely to significantly exacerbate existing levels of fragmentation.

Impacts from the proposed action are likely to be staged development and native vegetation connectivity would be retained where possible to continue linkages to surrounding habitat. Fauna crossings would also need to be considered prior to construction to assist in wildlife movements within habitats in the locality. Although the proposed action would create a new barrier, it is considered unlikely to significantly exacerbate existing levels of fragmentation.

ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES

Habitat that is critical to the survival of the Spotted-tailed Quoll includes large patches of forest with adequate denning resources and relatively high densities of medium-sized mammalian. However, the threshold densities of these critical components required to support quoll populations are unknown. Consequently, it is currently not possible to define (or map) habitat critical to the survival of the Spotted-tailed Quoll. Given the threatened status of the Spotted-tailed Quoll, all habitats within its current distribution that are known to be occupied are considered important.

It is unknown whether the habitat in the proposed action area is occupied by the Spotted-tailed Quoll. The Spotted-tailed Quoll was not recorded during targeted surveys and has been captured as a predicted ecosystem credit based on habitat

surrogates. Applying this principle to PCTs outside of the proposed action area the availability of habitat for Spotted-tailed Quoll is extensive.

The quality of habitats present outside of the proposed action area are also better in most cases (i.e., habitat in the National Parks, State Conservation Areas (SCAs), Nature Reserves, and State Forests) than the degraded habitats in the agricultural lands within the proposed action area. The habitat within the proposed action area is not likely to be critical to the survival of this species when compared to the better-quality surrounding habitats. Most of the habitats within the proposed action area are less than optimal for this species.

Consequently, there is no real chance or possibility that the proposed action will adversely affect habitat critical to the survival of this species.

DISRUPT THE BREEDING CYCLE OF A POPULATION

Although all PCTs within the proposed action area are considered potential habitat for the species, the majority of habitats are disturbed and fragmented to varying degrees. Suitable breeding opportunities within the proposed action area are limited. The quality of habitats present outside the proposed action area are higher in most cases, including higher quality remnants avoided by the proposed action. The habitat within the proposed action area is most likely to form part of a foraging range for this species rather than breeding habitats. As such, the potential impact is considered unlikely to disrupt the breeding cycle of the species.

MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE

The species is yet to be recorded during targeted surveys. Whilst the proposed action area provides potential habitat, there is large areas of suitable resources that are accessible in the adjacent remnant vegetation and are higher in quality (i.e. not adjacent to busy roads). Therefore, the proposed action is unlikely to modify, destroy, remove or isolate the availability or quality of habitat to the extent that the species is likely to decline.

RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT

It is not likely that invasive species (such as introduced predators) that are harmful to the Spotted-Tailed Quoll would become further established as a result of the proposed action.

INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE

There are no known diseases causing potential species decline to the Spotted-tailed Quoll.

INTERFERE WITH THE RECOVERY OF THE SPECIES

The overall objective of the *National Recovery Plan for the Spotted-tailed Quoll* (Department of Environment, 2016) is to reduce the rate of decline of the Spotted-tailed Quoll and ensure that viable populations remain throughout its current range in eastern Australia. Within the life span of this Recovery Plan, the Specific Objectives listed below have been identified as necessary to guide the recovery of the Spotted-tailed Quoll.

The recovery actions and performance criteria for each of these objectives are outlined in the following section:

- Determine the distribution and status of Spotted-tailed Quoll populations throughout the range and identify key threats and implement threat abatement management practices.
- Investigate key aspects of the biology and ecology of the Spotted-tailed Quoll to acquire targeted information to aid recovery.
- Reduce the rate of habitat loss and fragmentation on private land.
- Evaluate and manage the risk posed by silvicultural practices.

- Determine and manage the threat posed by introduced predators (foxes, cats, wild dogs) and of predator control practices on Spotted-tailed Quoll populations.
- Determine and manage the impact of fire regimes on Spotted-tailed Quoll populations.
- Reduce deliberate killings of Spotted-tailed Quolls.
- Reduce the frequency of Spotted-tailed Quoll road mortality.
- Assess the threat Cane Toads pose to Spotted-tailed Quolls and develop threat abatement actions if necessary.
- Determine the likely impact of climate change on Spotted-tailed Quoll populations.
- Increase community awareness of the Spotted-tailed Quoll and involvement in the Recovery Program.

The proposed action would interfere slightly with the third objective 'Reduce the rate of habitat loss and fragmentation on private land'. However, as discussed above the Spotted-tailed Quoll has been captured as a predicted ecosystem credit based on habitat surrogates. Applying this principle to PCTs outside of the proposed action area the availability of habitat for Spotted-tailed Quoll is extensive. The quality of habitats present outside of the proposed action area are also better in most cases (i.e. habitat in the National Parks, SCAs, Nature Reserves, and State Forests) than the degraded habitats in the agricultural lands within the proposed action area. Consequently, there is no real chance or possibility that the proposed action will adversely affect habitat critical to the survival of this species and therefore the proposed action will not interfere with the recovery of the species.

CONCLUSION

Spotted-tailed Quoll (southeastern mainland population) is a predicted ecosystem credit species and as such any loss of potential foraging habitat will be offset through ecosystem credit obligation. The Spotted-tailed Quoll was not recorded during targeted surveys and has been captured as a predicted ecosystem credit based on habitat surrogates.

Based on the assessment completed above, there is no real chance or possibility that the proposed action is likely to have a significant impact on Spotted-tailed Quoll (southeastern mainland population) or its habitat.

H3.5 KOALA (PHASCOLARCTOS CINEREUS)

The Koala is listed as Endangered under the EPBC Act and Vulnerable under the BC Act.

H3.5.1 DESCRIPTION

The range of the Koala differs slightly between the biological species range and listed species range. The biological species range extends from north-eastern Queensland to the south-east corner of SA. Several sub-populations of the biological species occur outside this range in south-eastern SA (i.e., Kangaroo Island) and some parts of Victoria, due to translocations. The listed species range extends from north-eastern Queensland to the Victorian border. Distribution of the Koala is influenced by altitude (generally limited to <800 m above sea level) tied to temperature. Distribution is also influenced by leaf moisture at the western and northern ends of the range. Koala population density is typically greater towards the coast than inland in these areas (Department of Agriculture Water and the Environment, 2021e).

In NSW, Koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests and some smaller populations on the plains west of the Great Dividing Range (Department of Planning Industry and Environment, 2021c). Koalas naturally inhabit a range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by eucalyptus species. They are a leaf-eating specialist that feed primarily during dawn, dusk or night.

Koalas feed primarily on the foliage of eucalyptus species; though may sometimes consume *Corymbia spp*., *Angophora spp*. and *Lophostemon spp*. and occasionally *Leptospermum spp*. and *Melaleuca spp*. Individual Koalas typically get their nutrition from just one or a few species present at a site (Department of Agriculture Water and the Environment, 2021e). Koalas typically give birth between October and May and can potentially produce one offspring each year. Young remain

in the pouch for 6-8 months and remain with their mothers until they become independent at approximately 12 months of age (Department of Agriculture Water and the Environment, 2021e).

H3.5.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Conservation Advice: Conservation Advice for Phascolarctos cinereus (combined populations in Queensland, New South Wales and the Australian Capital Territory) (Department of Agriculture Water and the Environment, 2022)
- Listing Advice: There is no relevant Listing Advice for this species. Listing assessment information may be available in the approved Conservation Advice.
- National Recovery Plan: National Recovery Plan for the Koala Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory) (Department of Agriculture, 2022)
- Threat Abatement Plan/s: No threat abatement plan has been identified as being relevant for this species.
- Policy Statements and Guidelines: Identifying habitat for the endangered Koala (Department of Climate Change, Energy, the Environment and Water, 2022); Referral guidance for the endangered Koala (Department of Climate Change, Energy, the Environment and Water, 2023).

H3.5.3 SPECIFIC IMPACTS

The Koala was not recorded in any surveys completed from 2020-2024. In addition, there no BioNet records within 10km of the proposed action area. Based on the Areas of Regional Koala Significance (ARKS) (See Figure H.2), no Koala ARKS occur near Singleton or the proposed action area.

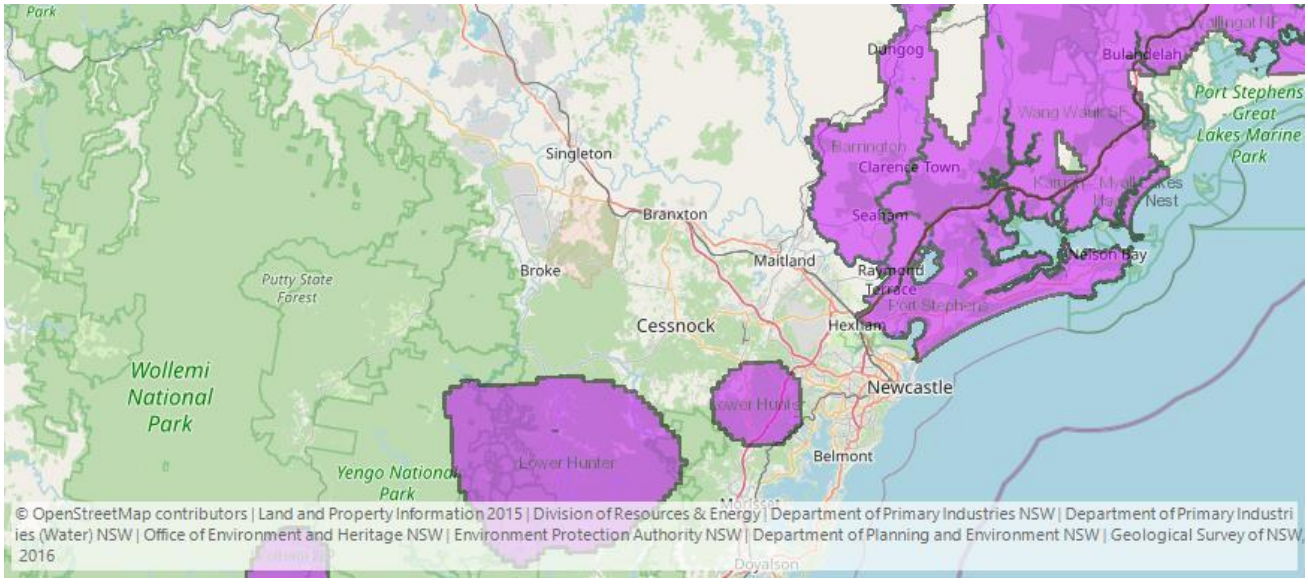

Figure H.2 . Areas of Regional Koala Significance (ARKS) mapping (NSW Government, SEED, 2023).

H3.5.4 SIGNIFICANT IMPACT CRITERIA

An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:

LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION

The proposed action is unlikely to lead to a long-term decrease in the size of a population. The proposed action area will not impact areas of regional significance for the Koala. In NSW, the koala is found across a broad range of habitats and the overall population has been declining.

REDUCE THE AREA OF OCCUPANCY OF THE SPECIES

The area of occupancy for the Koala is 19,400 km^2 across Queensland, NSW, ACT and Victoria. In NSW, the Koala is found in 16 bioregions with the area of occupancy in each bioregion vary in population estimates. The northern NSW bioregions support higher populations of koalas than southern and western NSW. In the Sydney Basin, an estimated population in the Sydney Basin IBRA region >5500 with 30% of this habitat burnt during the bushfires 2019/2020 however these populations are not located within the locality of the proposed action area.

FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS

The proposed action will not fragment an existing population into two or more populations.

ADVERSELY EFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES

The "Conservation Advice for *Phascolarctos cinereus* (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory" (Department of Agriculture Water and the Environment, 2022) outlines a number of important criteria to consider in terms of 'habitat critical for survival' of Koala including:

- Whether the habitat is used during periods of stress (examples: flood, drought or fire)
- Whether the habitat is used to meet essential life cycle requirements (examples: foraging, breeding, nesting, roosting, social behaviour patterns or seed dispersal processes)
- The extent to which the habitat is used by important populations
- Whether the habitat is necessary to maintain genetic diversity and long-term evolutionary development
- Whether the habitat is necessary for use as corridors to allow the species to move freely between sites used to meet essential life cycle requirements
- Whether the habitat is necessary to ensure the long-term future of the species or ecological community through reintroduction or re-colonisation
- Any other way in which habitat may be critical to the survival of a listed threatened species or a listed threatened ecological community.

The advice also outlines crucial habitat elements including patches and corridors for gene flow. Over longer-time frames critical habitat includes climate refugia such as drainage lines, riparian zones and patches that are resilient to drying conditions due to favourable hydrological systems. Additionally, it includes areas that may be temporarily unoccupied, because of seral (maturity or time) changes to habitat quality that arise through processes such as fire, drought, timber harvesting or disease (shifting habitat mosaic) or degradation and are available for future recolonisation.

The proposed action area is not located in an area used by an important population of Koalas. The habitat may be suitable for koalas, however with no known populations and survey effort did not record any Koalas, it is likely there is no adverse effect on critical habitat within the proposed action area.

DISRUPT THE BREEDING CYCLE OF A POPULATION

No known important population occurs within the proposed action area which is likely to disrupt any breeding cycle.

MODIFY DESTROY, REMOVE, ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE

The proposed action is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT

The proposed action is unlikely to result in an invasive species harmful to the Koala becoming established in the habitat. The potential for weed invasion was considered possible with a proposed action of this nature and appropriate controls are required during construction and operation to reduce this threat. Invasive species would be managed under the construction environmental management plan using best practice methods. Consequently, there is no real chance or possibility that the proposed action will result in invasive species that are harmful to Koala becoming established in the habitat.

INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE, OR

Chlamydia bacteria in Koalas and Koala Retrovirus are primarily transmitted between Koala individuals (Department of Environment & Climate Change, 2008). There are no known disease issues affecting this species in relation to the proposed action. The proposed action would be unlikely to increase the potential for significant disease vectors to affect the species. It is the intention to use current best practice hygiene protocols as part of the construction environmental management plan to prevent the introduction or spread of pathogens. Consequently, there is no real chance or possibility that the proposed action will introduce disease that may cause the species to decline.

INTERFERE WITH THE RECOVERY OF THE SPECIES

The "National Recovery Plan for the Koala *Phascolarctos cinereus* (combined populations of Queensland, New South Wales and the Australian Capital Territory)" (Department of Agriculture, 2022) outlines a number of key objectives for the recovery effort of the species including:

- The area of occupancy and estimated size of populations that are declining, suspected to be declining, or predicted to decline are instead stabilised then increased.
- The area of occupancy and estimated size of populations that are suspected and predicted to be stable are maintained or increased.
- Metapopulation processes are maintained or improved.
- Partners, communities and individuals have a greater role and capability in listed Koala monitoring, conservation and management.

The objectives of this recovery plan are underpinned by four supporting strategies and two on-ground (direct) strategies, or action areas, as a way of organising and implementing coordinated action:

- Build and share knowledge (Strategy 1)
- Engage and partner with the community in listed Koala conservation (Strategy 2)
- Increase the area of protected habitat for the listed Koala (Strategy 3)
- Integrate listed Koala conservation into policy, statutory and land use plans (Strategy 4)
- Strategically restore listed Koala habitat (Strategy 5)
- Actively manage listed Koala metapopulations (Strategy 6).

The proposed action will not interfere with one or more of these objectives or supporting strategies.

CONCLUSION

It is unlikely the proposed action will impact Areas of Regional Koala Significance or habitat critical to the Koala. It is therefore unlikely the proposed action will have a significant impact on the Koala populations.

H3.6 GREY-HEADED FLYING FOX (PTEROPUS POLIOCEPHALUS)

Grey-headed Flying-fox is listed as Vulnerable under the EPBC Act.

H3.6.1 DESCRIPTION

The Grey-headed Flying-fox is endemic to Australia. The distribution of the species extends from the coastal belt from Rockhampton in central Queensland to Melbourne in Victoria. The species has occasional occurrences into South Australia, Bass Strait islands and mainland Tasmania. It is infrequently found west of the Great Dividing Range. Only a small proportion of this range is used at any one time, as the species selectively forages where food is available. Patterns of occurrence and migration are broadly associated with the flowering and fruiting of certain plants and relative abundance within its distribution vary widely between seasons and between years. At a local scale, the species is generally present intermittently and irregularly.

Grey-headed Flying-foxes are canopy-feeding frugivores and nectarivores, which utilise a range of vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. They also feed on commercial fruit crops and on introduced tree species in urban areas. The primary food source is blossom from Eucalyptus. Roost sites are typically located near water. Roost vegetation includes rainforest patches, stands of Melaleuca, mangroves and riparian vegetation, though highly modified vegetation may be used in urban and suburban areas.

Grey-headed Flying-foxes mate in early autumn. Following six months of gestation females typically give birth to single young each year in October (Department of Agriculture Water and the Environment, 2021d).

Importantly, no breeding camps are present within or adjacent to the proposed action area.

H3.6.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- No approved Conservation Advice has been published for this species.
- Commonwealth Listing Advice on Pteropus poliocephalus (Grey-headed Flying-fox) was reviewed as part of this assessment (Threatened Species Scientific Committee, 2001).
- The National Recovery Plan for the Grey-headed Flying-fox Pteropus poliocephalus (2021) was reviewed as part of this assessment (Department for Agriculture, 2021).
- No threat abatement plan has been identified as being relevant for this species.

H3.6.3 SPECIFIC IMPACTS

The species is ruled out as a species credit species as breeding habitat was not located through adequate survey.

However, the proposed action area could be used as foraging habitat, and the species is thus retained as an ecosystem credit species and assumed present within all of the PCTs within the proposed action area excluding Derived Native Grassland (DNG) habitats. The areas of DNG lack mid-storey and canopy vegetation, ruling out suitable foraging habitat. Foraging habitat impacts will be captured as part of ecosystem credits.

The proposed action will impact on 250.72 ha of associated ecosystem habitats for PCTs 3315, 3431 and 3314.

H3.6.4 IS THIS PART OF AN IMPORTANT POPULATION?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts, 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. Under the Act, important populations are:

- Likely to be key source populations either for breeding or dispersal
- Likely to be necessary for maintaining genetic diversity
- At or near the limit of the species range.

Grey-headed Flying-foxes occur across a range of habitats where their favoured food, eucalypt blossom occurs. They set up roosting camps in association with blossom availability, which are usually situated in dense vegetation and associated with water. Grey-headed Flying-foxes are extremely mobile, and can travel as much as 2564 km in a. Further, they show low fidelity to roosts, resulting in a high daily colony turnover year (Welbergen *et al.,* 2020).

This shows that Grey-headed Flying-foxes are highly nomadic, and that they exist as one interconnected population along the east coast of Australia. Therefore, it is considered as an important population. However, there are no Grey-headed Flying-fox camps in the locality of the proposed action area, with the closest known camp at Mudgee near the Cudgegong River.

H3.6.5 SIGNIFICANT IMPACT CRITERIA

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION

The proposed action will result in the direct removal of potential foraging habitat for the Grey-headed Flying Fox. This impact is captured as part of the ecosystem credit requirement for the proposed action. Breeding habitat will not be impacted so there is no real chance or possibility that the proposed action would lead to a long-term decrease in the size of an important population.

REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION

The area of occupancy of the Grey-headed Flying-fox is not known but the species exists as one interconnected population along the eastern Australian coastal belt from Rockhampton in central Queensland to Melbourne in Victoria. The area occupied by this species would remain the same after the proposed action is undertaken. There is no real chance or possibility that the impacts from the proposed action would reduce the area of occupancy for Grey-headed Flying-fox.

FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS

Grey-headed Flying-fox exists as one interconnected population along the eastern Australian coastal belt from Rockhampton in central Queensland to Melbourne in Victoria despite the existing level of habitat fragmentation that exists in the landscape. The level of fragmentation caused by the proposed action has no real chance or possibility of fragmenting the Grey-headed Flying-fox population into two of more populations.

ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES

Habitat critical to the survival of a species refers to areas that are necessary:

- For activities such as foraging, breeding, roosting, or dispersal
- For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- To maintain genetic diversity and long-term evolutionary development, or
- For the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts, 2013).

According to the national recovery plan for the species, habitat critical to the survival of the Grey-headed Flying- fox includes important winter and spring vegetation communities including those that contain *Eucalyptus tereticornis, E. albens, E. crebra, E. fibrosa, E. melliodora, E. paniculata, E. pilularis, E. robusta, E. seeana, E. sideroxylon, E. siderophloia, Banksia integrifolia, Castanospermum australe, Corymbia citriodora citriodora, C. eximia, C. maculata, Grevillea robusta, Melaleuca quinquenervia* or *Syncarpia glomulifera.* Habitat critical to survival also include communities that:

- Contain native species that are known to be productive as foraging habitat during the final weeks of gestation, and during the weeks of birth, lactation and conception (August to May)
- Contain native species used for foraging and occur within 20 km of a nationally important camp as identified on the Department's interactive flying-fox web viewer, or
- Contain native and or exotic species used for roosting at the site of a nationally important Grey-Headed Flying-Fox camp as identified on the Department's interactive flying-fox web viewer.

Under these definitions the habitat to be removed could be considered habitat critical to the survival of the species. However, the proposed action will remove only a small proportion of potential foraging habitat for this species. As this species is highly mobile, with individuals foraging up to 50 km from roost sites, it is likely that suitable foraging resources could be accessed widely throughout the locality and beyond. Consequently, there is no real chance or possibility that the proposed action will adversely affect habitat critical to the survival of this species.

DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION

The closest known Grey headed Flying-fox camp (Singleton, Hunter River (1208)) occurs approximately 8.5 km from the closest point of the proposed action area. The proposed action would not directly impact on a known roost camp / breeding or maternity site. Extensive foraging resources are available in the locality that would provide suitable resources during the maternity season. The habitats in the proposed action area are not limiting for this species. Consequently, there is no real chance or possibility that the proposed action will disrupt the breeding cycle of this species.

MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE

The proposed action would reduce the availability of suitable foraging habitat. However, given the surrounding landscape and remaining habitat availability, it is unlikely that the proposed action would cause change to the extent that the species is likely to decline. The habitat to be removed from the proposed action area is not limiting for this species and extensive foraging grounds for this species will remain in the locality. Breeding habitat will not be impacted. Consequently, there is no real chance or possibility that the proposed action will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT

The proposed action is unlikely to result in an invasive species harmful to the Grey-headed Flying-fox becoming established in the habitat. The potential for weed invasion was considered possible with a proposed action of this nature and appropriate controls are required during construction and operation to reduce this threat. Invasive species would be managed under the construction environmental management plan using best practice methods. Consequently, there is no real chance or possibility that the proposed action will result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.

INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE

There are no known disease issues affecting this species in relation to the proposed action. The proposed action would be unlikely to increase the potential for significant disease vectors to affect the species. It is the intention to use current best practice hygiene protocols as part of the construction environmental management plan to prevent the introduction or spread of pathogens. Consequently, there is no real chance or possibility that the proposed action will introduce disease that may cause the species to decline.

INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES

The National Recovery Plan for the Grey-headed Flying-fox '*Pteropus poliocephalus*' (Department of Agriculture Water and the Environment, 2021) outlines the following objectives to improve the national population trend of this species:

- Identify, protect and increase native foraging habitat that is critical to the survival of the Grey-headed Flying-fox
- Identify, protect and increase roosting habitat of Grey-headed Flying-fox camps.
- Determine trends in the Grey-headed Flying-fox population so as to monitor the species' national distribution, habitat use and conservation status.
- Build community capacity to coexist with flying-foxes and minimise the impacts on urban settlements from new and existing camps while avoiding interventions to move on or relocate entire camps.
- Increase public awareness and understanding of Grey-headed Flying-foxes and the recovery program and involve the community in the recovery program where appropriate.
- Improve the management of Grey-headed Flying-fox camps in areas where interaction with humans is likely.
- Significantly reduce levels of licenced harm to Grey-headed Flying-foxes associated with commercial horticulture.
- Support research activities that will improve the conservation status and management of Grey-headed Flying-foxes.
- Reduce the impact on Grey-headed Flying-foxes of electrocution on power lines, and entanglement in netting and on barbed-wire.

The proposed action would interfere slightly with the first action 'Identify, protect and increase native foraging habitat that is critical to the survival of the Grey-headed Flying-fox'. However, as discussed above the proposed action will remove only a small proportion of potential foraging habitat for this species. As this species is highly mobile, with individuals foraging up to 50 km from roost sites, it is likely that suitable foraging resources could be accessed widely throughout the locality and beyond. Consequently, there is no real chance or possibility that the proposed action will adversely affect habitat critical to the survival of this species and therefore the proposed action will not interfere substantially with the recovery of the species.

CONCLUSION

The closest known Grey headed Flying-fox camp (Singleton, Hunter River (1208)) occurs approximately 8.5 km from the closest point of the proposed action area. No impact to breeding habitat would occur as part of the proposed action. The proposed action area could be used as foraging habitat, and the species is thus retained as an ecosystem credit species and assumed present within most of the PCTs within the proposed action area excluding DNG habitats. Foraging habitat impacts will be captured as part of ecosystem credits.

Based on the assessment completed above, there is no real chance or possibility that the proposed action is likely to have a significant impact on Grey headed Flying-fox.

H3.7 WHITE-THROATED NEEDLETAIL (HIRUNDAPUS CAUDACUTUS)

The White-throated Needletail is listed as Vulnerable under the EPBC Act.

H3.7.1 DESCRIPTION

White-throated Needletails only occur in Australia between late spring and early autumn, and are most likely to occur in summer, when they sometimes form large flocks, appearing as a swirling cloud of birds. White-throated Needletails often occur in large numbers over eastern and northern Australia. In eastern Australia, it is recorded in all coastal regions of

Queensland and NSW, extending inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. The White-throated Needletail feeds on flying insects, such as termites, ants, beetles and flies. They catch the insects in flight in their wide gaping beaks. Birds usually feed in rising thermal currents associated with storm fronts and bushfires.

H3.7.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Conservation Advice Hirundapus caudacutus White-throated Needletail* (Threatened Species Scientific Committee, 2019) was reviewed as part of this assessment.
- Listing assessment information for this species may be available in the approved Conservation Advice.
- There is no adopted or made Recovery Plan for this species.
- The Draft referral guideline for 14 birds listed as migratory species under the EPBC Act (Department of the Environment, 2015) was reviewed as part of this assessment.
- No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment, Water, Heritage and the Arts (DEWHA), 2010).

H3.7.3 SPECIFIC IMPACTS

Fourteen BioNet records of the species occur within 10km of the proposed action area. Vegetation clearing of habitat occurs in areas which the species may be foraging above in aerial spaces on a seasonal basis. Impacts comprise 251.28 ha of mapped ecosystem impact for this species.

H3.7.4 IS THIS AN IMPORTANT POPULATION?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment, 2013). Under the EPBC Act, important populations are:

- Likely to be key source populations either for breeding or dispersal
- Likely to be necessary for maintaining genetic diversity
- At or near the limit of the species range.

In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps.

The proposed action area does not contain suitable habitat for breeding, as breeding takes place in Northern Asia. As the proposed action does not contain key resources for breeding or dispersal, does not occur at the limit of the species distribution range and is unlikely to be necessary for maintaining genetic diversity, populations which may occur are not considered to form part of an 'important population'.

H3.7.5 SIGNIFICANT IMPACT CRITERIA

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION

Not applicable.

REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION

Not applicable.

FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS

Not applicable.

ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES

No critical habitat is listed for this species under the EPBC Act.

DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION

Not applicable.

MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE

Although vegetation clearing may contribute to the decline of available habitat within proposed action study area, it is considered unlikely that the action would modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT

It is unlikely that invasive species (such as introduced predators) that are harmful to the White-throated Needletail would become further established because of the proposed action.

INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE

There are no known diseases that are likely to increase in the area because of the proposed action.

INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES

Due to the limited foraging habitat likely to be affect by the proposed action and that the species predicted habitat will be offset, the proposed action is considered unlikely to interfere with the recovery of this species.

CONCLUSION

The White-throated Needletail is almost exclusively aerial, breeding in Northern Asia, and occur from Queensland to Victoria. Any individuals or population observed within the proposed action is unlikely to be an important population and habitats associated with the proposed action are not considered to be important to the species' long-term survival. Impacts comprise 251.28 ha of mapped ecosystem impact for this species. The extent of native vegetation clearing, and habitat removal associated with the proposed action is small in terms of the available habitat for this species within the surrounding landscape. Although the loss of foraging habitat for the White-throated Needletail is an incremental loss of suitable habitat regionally, the proposed action is unlikely to have a significant impact on White-throated Needletail.

H3.8 GANG-GANG COCKATOO (CALLOCEPHALON FIMBRIATUM)

The Gang-gang Cockatoo is listed as Endangered under the BC Act and Endangered under the EPBC Act.

H3.8.1 DESCRIPTION

The Gang-Gang Cockatoo is distributed from central-eastern NSW occurring in the Central Tablelands, South-West slopes and Hunter region, down to southern Victoria. In the summer months, Gang-Gang Cockatoos generally occur in tall mountain forests and woodlands - often in secluded valleys. During winter months, Gang-gang Cockatoos rely on drier more open eucalypt forests and woodland assemblages at lower altitudes (Higgins 1999). Open eucalypt assemblages such as box-ironbark make up their habitat during this period. Habitat critical to the survival of the Gang-gang Cockatoo includes all foraging habitat during both the breeding and non-breeding season however no Critical Habitat has been specifically identified (DAWE, 2022d). Although considered rare at the extremities of its known range, this species has been observed as west as Mudgee.

H3.8.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The Conservation Advice *Callocephalon fimbriatum* Gang-gang Cockatoo (Threatened Species Scientific Committee, 2022) was reviewed as part of this assessment.
- Listing assessment information for this species may be available in the approved Conservation Advice.
- There is no adopted or made Recovery Plan for this species.
- The Draft referral guideline for 14 birds listed as migratory species under the EPBC Act (Department of the Environment, 2015d) was reviewed as part of this assessment.
- No threat abatement plan has been identified as being relevant for this species.

H3.8.3 SPECIFIC IMPACTS

The Gang-gang Cockatoo was not recorded within the proposed action area however is considered to have a moderate likelihood of occurrence based on the habitats available. No breeding habitat was identified during targeted surveys for the Gang-gang Cockatoo which is dual species credit species under BAM. Habitat for this species (14.55 ha) is likely only to constitute potential foraging habitat for the species.

The following is to be considered for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

H3.8.4 SIGNIFICANT IMPACT CRITERIA

An action is likely to have a significant impact on an Endangered species if there is a real chance or possibility that it will:

LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION

The Species was not recorded during preliminary surveys performed by Cumberland Ecology and the species has been recorded within 10km of the proposed action. The proposed action contains woodland habitat that amounts to approximately 248.69 ha. The majority of the habitats associated with the proposed action occur as disturbed, fragmented patches within an otherwise extensive agricultural (cropping) and mining landscape. Overall, the potential impact to habitat would not be to the extent that the proposed action would lead to a long-term decrease in the size of a population given remaining available habitat for this species to forage and reproduce in the locality.

REDUCE THE AREA OF OCCUPANCY OF A SPECIES

A significant proportion of the associated PCTs within the proposed action are highly modified by previous land uses in this area. The proposed action would contribute to the loss of potential foraging habitat by approximately 14.55 ha which would reduce the area of habitat available, while the area of occupancy is estimated at 3,000,000 ha (DAWE, 2022).

Though this is an incremental loss of suitable foraging resources available to the species, this area of potential foraging and breeding habitat only represents a small component of similar locally occurring resources accessible to these species. It is unlikely that the proposed action would reduce the area of occupancy of this species given the better-quality habitat in the locality and greater region.

FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS

The potential habitat occurs largely as disturbed woodland within an already fragmented landscape. The habitat is disturbed due to past and current land uses including mining, agriculture, road, rail and power infrastructure and urban development thereby it is subject to existing edge effects and fragmentation. The removal of this habitat may incrementally increase existing fragmentation however is considered unlikely to significantly exacerbate existing levels of fragmentation.

Despite the impact of 248.69 ha, associated remnant vegetation would be retained in the proposed action that would continue to provide linkages to surrounding habitat. Although the proposed action would create a new barrier the species is highly mobile, and it is considered unlikely to significantly exacerbate existing levels of fragmentation that would impact the species.

ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES

According to the Conservation Advice *Callocephalon fimbriatum* (Gang-gang Cockatoo), habitat critical to the survival of the Gang-Gang Cockatoo includes all foraging habitat during both the breeding and non-breeding season. They rely on suitable hollow-bearing trees which are key breeding habitat. Proposal is considered unlikely to adversely affect habitat critical to the survival of a species.

DISRUPT THE BREEDING CYCLE OF A POPULATION

The proposed action consists of highly disturbed fragmented patches within an otherwise extensive agricultural (cropping) and mining landscape does not support breeding habitat for the Gang-gang Cockatoo. Based on preliminary surveys undertaken by Cumberland Ecology, large hollow bearing trees are limited within remaining habitat patches onsite. It is not likely the habitat onsite is utilised for breeding by the species. Therefore, the proposed action is considered unlikely to disrupt the breeding cycle of an important population.

MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE

The loss of 248.69 ha of wooded habitat in the proposed action is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO AN ENDANGERED SPECIES BECOMING ESTABLISHED IN THE SPECIES' HABITAT

Vertebrate pests and weeds are already established in the habitat. Adhering to mitigation measures such as weed management plans, and vehicle weed hygiene, would prevent further invasive weeds establishing in the proposed action. It is not likely that invasive species (such as introduced predators) that are harmful to the Gang-gang Cockatoo would become further established as a result of the proposed action.

INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE

No. There are no known diseases that are likely to increase in the area as a result of the proposed action.

INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES

There is no adopted or made Recovery Plan for this species. No key management sites are known to occur within the proposed action area. Due to the limited foraging habitat likely to be affect by the proposed works (248.69 ha) and as no breeding habitats are located in the vicinity of the proposed action. Works may have a minor incremental impact however it is not considered likely to substantially interfere with the recovery of this species.

CONCLUSION

The extent of native vegetation clearing, and habitat removal associated with the proposed action is relatively small in terms of the available habitat for these species within the surrounding landscape. Although the loss of foraging habitat for Gang-gang Cockatoo is considered to be an incremental loss of suitable habitat locally, the proposed action is not likely to have a significant impact upon available resources for Gang-gang Cockatoos in the vicinity of the site or its wider locality and the habitat to be impacted is not considered important to the long-term survival of the Gang-gang Cockatoo.

H3.9 SOUTH-EASTERN HOODED ROBIN (MELANODRYAS CUCULLATA CUCULLATA)

The Hooded Robin (*Melanodryas cucullata cucullata*) is listed as Endangered under the EPBC and BC Act.

H3.9.1 DESCRIPTION

The Hooded Robin is a relatively large Australian robin, reaching up to 17 cm in length. The male's colouration lends the species its name, with a bold black hood extending down a white breast. Its back is black with a distinct white wing-bar and shoulder. Its tail is black and has prominent white side panels. The females and juveniles have a duller colouration. The upper parts are brownish grey but have the same black and white wings. The species' call consists of descending, mellow, fading notes.

The subspecies' population has declined by half over the last decade, and there are currently estimated to be approximately 68,000 mature individuals in the wild. This number, however, is low in reliability. This subspecies' extent of occurrence is approximately 1,200,00 km2, which occupies an estimated 30,000 km^2. They occur in south-eastern Australia, from south-east Queensland to Yorke Peninsula, South Australia. They prefer dry eucalypt and acacia woodlands and shrublands with open understorey, grassy areas and a complex ground layer. They can occur in patches as small as 2.9 ha, but generally prefer at least 10 ha in the breeding season.

Threats to the subspecies include:

- Increased predation from introduced mammals (cats and foxes)
- Invasive weeds
- Competition with noisy miners (*Manorina melanocephala*)
- Over-grazing by domestic stock, rabbits, and overabundant kangaroos
- Habitat loss and fragmentation.

H3.9.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The Conservation Advice for *Melanodryas cucullata cucullata* (hooded robin(south-eastern)) (Department of Climate Change Energy the Environment and Water, 2023) was reviewed as part of this assessment.
- No listing advice was available.
- There is no adopted or made Recovery Plan for this species.
- No threat abatement plan has been identified as relevant for this species.

H3.9.3 SPECIFIC IMPACTS

Habitat clearing would occur in areas where the species may be foraging above in aerial spaces on a seasonal basis. The proposed action consists of 250.72 ha of potentially suitable habitat for the Hooded Robin. 23 recordings of the species are found within 10km of the proposed action, eight of which are within Ravensworth State Forest.

H3.9.4 SIGNIFICANT IMPACT CRITERIA

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION

The proposed action will result in the direct removal of potential habitat for the Hooded Robin. However, the presence of this species is assumed. The proposed action would not impact the carrying capacity of the habitats to the point that prey density within the locality would be detrimentally affected, and the habitat would no longer be viable for Hooded Robins. There is no real chance or possibility that the proposed action would lead to a long-term decrease in population size.

REDUCE THE AREA OF OCCUPANCY OF THE SPECIES

The hooded robin's area of occupancy is estimated at 30,000 km2. This species' area will remain the same after the proposed action is built. There is no real chance that the proposed action's impacts will reduce the hooded robin's area of occupancy.

FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS

A large part of the proposed action would occur in an area already affected by disturbance and would likely not affect habitat connectivity. It would be unlikely that the nature of the potential impacts on connectivity primarily relates to aerial species such as birds and bats.

The level of fragmentation caused by the proposed action has no real chance or possibility of fragmenting the Hooded Robin population into two or more populations.

ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES

The Conservation Advice for *Melanodryas cucullata cucullata* (hooded robin (south-eastern)) (Department of Climate Change Energy the Environment and Water, 2023) states that habitat critical to the survival of the Hooded Robin (south-eastern) includes areas of:

- Dry eucalypt and acacia woodlands and shrublands remnants with an open understorey, some grassy areas and a complex ground layer, often in or near clearings or open areas.
- Structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.
- Standing dead or live trees and tree stumps are also essential for nesting, roosting and foraging.
- Moderately deep to deep soils, rocks, and fallen timber provide essential habitat for foraging.

No Critical Habitat, as defined under section 207A of the EPBC Act, has been identified or included in the Register of Critical Habitat.

Based on this broad definition, the habitat in the proposed action would not be critical to the survival of Hooded Robin.

DISRUPT THE BREEDING CYCLE OF A POPULATION

Hooded Robins (south-eastern) generally form monogamous pairs and occupy territories during the breeding season (between July and November) and non-breeding season. Birds usually return to the same breeding site where they typically rear several broods each season (Department of Climate Change Energy the Environment and Water, 2023).

Hooded Robins has not been recorded within the proposed action in BioNet records and were not recorded in the proposed action during the preliminary surveys performed by Cumberland Ecology, so it is considered unlikely that breeding habitat is present.

MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE

The Hooded Robin was not recorded during preliminary surveys and the removal of 250.72 ha of suitable habitat when compared to the localities equal to or greater habitat suitability. The removal of the vegetation within the proposed action is unlikely to impact the species that it is likely to decline.

RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT

Exotic ground species dominate many potential habitat patches in the proposed action. Weed and pest faunal species are both currently present throughout the landscape. It is considered unlikely that the proposed action would substantially change the composition of the species' habitat within the landscape or increase the spread and establishment of invasive species (i.e., predators) that could threaten the species' survival. There is potential for the proposed action to introduce additional weeds and pathogens within the proposed action area and surrounding locality. Mitigation measures would be outlined in Section 8 of the BDAR would be implemented for the proposed action to address potential invasive species introduction. As such, the proposed action is considered unlikely to result in invasive species becoming established in the habitat.

INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE

No known disease issues affect this species in relation to the proposed action. The proposed action would be unlikely to increase the potential for significant disease vectors to affect the species. To prevent the introduction or spread of pathogens, current best-practice hygiene protocols will be used as part of the construction environmental management plan. Consequently, there is no real chance or possibility that the proposed action will introduce disease that may cause the species to decline.

INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES

There is currently no recovery plan for the Hooded Robin.

CONCLUSION

This species was not recorded in the proposed action during the preliminary survey effort and has not historically been recorded within the proposed action area. While the incremental removal of habitat suitable for the species would have an effect over time, it is unlikely that the impact on the proposed action will have a significant impact on the Hooded Robin.

H3.10 DIAMOND FIRETAIL (STAGONOPLEURA GUTTATA)

The Diamond Firetail (*Stagonopleura guttata)* is listed as Vulnerable under the EPBC Act.

H3.10.1 DESCRIPTION

The diamond firetail (*Stagonopleura guttata)* is a finch with a bright red bill, and red eyes and rump about 10-12 cm tall. It has a white throat and lower white breast with a broad black breast-band across its chest which changes to a black band with white-spotted, black flanks. It has a grey back and head, and ashy-brown wings.

H3.10.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The Conservation Advice for *Melanodryas cucullata cucullata* (hooded robin(south-eastern)) (Department of Climate Change Energy the Environment and Water, 2023) was reviewed as part of this assessment.
- No listing advice was available.
- There is no adopted or made Recovery Plan for this species.

- No threat abatement plan has been identified as relevant for this species.

H3.10.3 SPECIFIC IMPACTS

The Species were not recorded during preliminary surveys performed by Cumberland Ecology, but the species has been recorded within 10km of the proposed action at 16 separate locations. While much of the proposed action is characterised by dense understories of shrubs, there are a number of areas where grassy dominated ground covers prevail, which offer opportunities for this woodland species.

It is likely that 10.45 ha of potential habitat in the form of PCT 3314, 3315, 3431 will be removed, which is listed in BioNet as suitable for the species.

H3.10.4 EPBC ACT SIGNIFICANT IMPACT ASSESSMENT

The following assessment has been undertaken following the Matters of National Environmental Significance, Significant Impact Guidelines 1.1 (Department of the Environment, 2013). Under the Act, important populations are:

- Likely to be key source populations either for breeding or dispersal
- Likely to be necessary for maintaining genetic diversity, and/or
- At or near the limit of the species range.

Is an important population likely to be present?

This species has not been recorded within the proposed action, but the species has been observed in similar adjacent habitats within wider locality. This species, if occurring in the proposed action, would not be at the limit of their known range; nor would any population there be likely to be a key source population or necessary for maintaining genetic diversity. Therefore, it is considered that any population of the species that may be present is unlikely to be an 'important population'.

H3.10.5 SIGNIFICANT IMPACT CRITERIA

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION

Not applicable as an 'important population' is unlikely to exist in the proposed action.

REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION

Not applicable as an 'important population' is unlikely to exist in the proposed action.

FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS

Not applicable as an 'important population' is unlikely to exist in the proposed action.

ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES

Potential impacts associated with the proposed action include removal of up to 10.45 ha of vegetation, which contained potential foraging resources for this species.

Given the nature of the works and the proposed action is typical of habitat in adjacent woodland, it is unlikely that these are important to the long-term survival of the species in the locality. The proposed action is therefore unlikely affect habitat of critical importance to this species.

DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION

Not applicable as an 'important population' is unlikely to exist in the proposed action.

MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE

The proposed action may remove up to 10.45 ha of potential habitat. No exclusive habitat features will be affected by the removal of this habitat.

Although the removal of assumed habitat will represent an incremental loss of habitats depleted by cumulative impacts locally, similar habitats to those in the proposed action occur widely in adjacent woodland, and the habitat losses are unlikely to threaten the long-term survival of the species in the locality. It is therefore unlikely to cause the species to significantly decline.

RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT

Invasion of predator species are unlikely to increase as a result of the removal of this assumed habitat given the existing nature of the proposed action. Given the small amounts of potentially suitable habitat for this species represented in the proposed action, it is unlikely to change significantly.

INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE

There are no known diseases causing potential species decline to Diamond Firetail.

INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES

A national recovery plan has not been developed for the Diamond Firetail.

CONCLUSION

The proposed action is considered unlikely to have a significant impact on the species. The removal of 10.45 ha of vegetation, which contains foraging and breeding resources, are widespread within the adjacent forest. The habitat affected is a very small proportion of potential habitat for the species in the locality. Considering the retention of corridor links, the proposed development will not fragment or isolate any locally occurring population. In addition, although small amounts of foraging habitat with adjacent breeding opportunities occur in the proposed development footprint there is an abundance of such habitats in forests surrounding the proposed action. Therefore, it is unlikely that this species would be significantly affected by the proposal.

H3.11 BLOSSOM NOMADS: REGENT HONEYEATER (ANTHOCHAERA PHRYGIA) AND SWIFT PARROT (LATHAMUS DISCOLOR)

Regent Honeyeater and Swift Parrot are listed as Critically Endangered under the EPBC Act.

H3.11.1 DESCRIPTION

Regent Honeyeater

The Regent Honeyeater is a striking black and yellow bird that has a patchy distribution between south-east Queensland and central Victoria. It primarily occurs in box-ironbark woodland, but also occurs in other forest types. The species primarily feeds on nectar and, to a lesser extent, insects and their exudates (lerps and honeydew). It mainly feeds on nectar from eucalypts and mistletoes and it prefers taller and larger diameter trees for foraging. The regent honeyeater is nomadic and partly migratory, with some predictable seasonal movements observed. Breeding varies between regions and corresponds with flowering of key eucalypt and mistletoe species. The main threats to Regent Honeyeater are clearing, fragmentation and degradation of its habitat.

Swift Parrot

The Swift Parrot is a slim, medium-sized parrot with a streamlined shape when flying. They are noisy, active and showy, with a very fast, direct flight. Swift Parrots occur in eucalypt forests and woodlands, nesting in tree hollows (in Tasmania) and feeding in the outer canopy of flowering eucalypts, eating mainly nectar, as well as some insects (psyllids and lerps), seeds and flowers. They have declined due to loss of habitat in both breeding and non-breeding areas. Key

threats to the Swift Parrot include habitat loss from forestry, firewood harvesting, and urban and agricultural development.

H3.11.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

Summaries of the relevant Commonwealth guidelines and policy statements available for these species are as follows:

Regent Honeyeater

- The 'Conservation Advice *Anthochaera phrygia* regent honeyeater' (Department of the Environment, 2015) was reviewed as part of this assessment
- Listing assessment information may be available in the approved Conservation Advice
- The 'National Recovery Plan for the Regent Honeyeater (*Anthochaera phrygia)*' (Department of the Environment, 2016) was reviewed as part of this assessment
- There is a 'Threat abatement plan for competition and land degradation by rabbits' (Department of the Environment and Energy, 2016) in place for this species

Swift Parrot

- The 'Conservation Advice *Lathamus discolor* swift parrot' (Threatened Species Scientific Committee, 2016) was reviewed as part of this assessment
- Listing assessment information may be available in the approved Conservation Advice
- The 'National Recovery Plan for the Swift Parrot (*Lathamus discolor*)' (Department of Climate Change, Energy, the Environment and Water, 2024) was reviewed as part of this assessment
- There is a 'Threat abatement plan for predation by feral cats.' (Department of the Environment, 2015) in place for this species

H3.11.3 SPECIFIC IMPACTS

Neither Regent Honeyeater nor Swift Parrot have been recorded during surveys within the proposed action area from 2020 to 2024. Based on NSW habitat modelling for the Regent Honeyeater the proposed action area is not located near any of the known breeding or important foraging areas. The Swift Parrots breed in Tasmania and migrate to specific locations each season for foraging. However, the species moves throughout NSW in the autumn-winter migration and may be located outside of these modelled habitat areas in response to feeding or foraging Th potential habitat in the proposed action area is considered foraging habitat and as such the specific impacts are minimal for the two species.

H3.11.4 SIGNIFICANT IMPACT CRITERIA

These species have been assessed together, due to their shared dependence on the blossom resources of myrtaceous canopy trees and their nomadic habits to access those foraging resources, which occur widely along the boundaries of the proposed action area. The Swift Parrot, which only breeds in Tasmania, is only present on the mainland between April and September to seek nectar resources from winter flowering events. Preferred breeding habitat for the Regent Honeyeater does not occur within the proposed action area.

Neither of these species were recorded within the proposed action during the survey program.

The proposed action would affect up to 250.72 ha of potential foraging habitat for these opportunistic blossom nomads. The Swift Parrot breeds in Tasmania and there is no preferred breeding habitat present in the proposed action for the Regent Honeyeater and as such the proposed action would not impact breeding habitat for these two species. Further,

important habitat mapped by DPE for the Swift Parrot and the Regent Honeyeater has not been mapped within the proposed action nor would it be affected by the proposal.

The following is to be considered for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

An action is likely to have a significant impact on a Critically Endangered species if there is a real chance or possibility that it will:

LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION

Up to 250.72 ha of potential foraging habitat for the Regent Honeyeater and Swift Parrot would be affected by the proposed action. While habitat in the proposed action area has the potential to be used by these species, it is not likely to be of high importance due to its relatively small area and the availability of greater quality habitat within the locality and wider region. Further, the proposed action does not occur within any key or other known breeding areas for either species.

Any identified population of in the proposal locality would not be restricted to habitat within the proposed action area and due to the species' large home ranges and nomadic nature, similar foraging habitat can be accessed in the locality. Therefore, the proposed action is not considered likely to significantly contribute to a long-term decline in the size of a population of these species.

REDUCE THE AREA OF OCCUPANCY OF A SPECIES

The proposed action is likely to affect up to 250.72 ha of potential foraging habitat for these species. Although the proposed action would result in the loss of potential foraging habitat, the incremental loss of potential habitat, only represents a small component of similar locally occurring resources accessible to this species. While the proposed action would remove up to 250.72 ha it is considered that the proposed action would not reduce the area of occupancy of these species given the better-quality habitat in the locality and greater region.

Nevertheless, the removal of up to 250.72 ha of potential habitat is considered to be an incremental loss of suitable habitat locally and as such has the potential to incrementally reduce the area of occupancy for the species during seasons when individuals of this species may be reliant on local resources.

FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS

Habitat connectivity is not likely to be significantly affected by the proposed work, given that this species is highly mobile and nomadic, the proposed action would not present a significant barrier to these species. It is not considered likely that habitat would become further isolated or fragmented significantly beyond that currently existing in the proposed action area.

ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES

No critical habitat has been listed for the Regent Honeyeater or Swift Parrot to date.

As outlined in the National Recovery Plan Habitat critical to the survival of the Regent Honeyeater includes:

- Any breeding or foraging areas where the species is likely to occur
- Any newly discovered breeding or foraging locations.

The Regent Honeyeater, or important habitat for the species mapped by DPE, has not been recorded in association with the proposal. Although it appears that Regent Honeyeaters are usually associated with habitats to the west and south west of the proposal, it is likely that the species may use habitat resources in proximity to the proposed action area on at least a transient basis. As the species is not restricted to or reliant on habitat therein for foraging, it is unlikely that this proposed action would adversely affect habitat critical to the survival of this species.

The national recovery plan for the Swift Parrot identifies habitat critical to the survival of the Swift Parrot as 'areas of priority habitat for which the Swift Parrot has a level of site fidelity or possess phenological characteristics likely to be of importance to the Swift Parrot, or otherwise identified by the recovery team'. No critical habitat has been listed for the

Swift Parrot to date. Furthermore, the proposed action does not contain any areas of important habitat mapped for the Swift Parrot by DPE.

DISRUPT THE BREEDING CYCLE OF A POPULATION

Within the Regent Honeyeaters current distribution there are four known key breeding areas where the species is regularly recorded. These are the Bundarra-Barraba, Capertee Valley and Hunter Valley districts in New South Wales, and the Chiltern area in north-east Victoria. Meanwhile the Swift Parrot is only breeds in Tasmania, is only present on the mainland between April and September to seek nectar resources from winter flowering events.

The proposed action area does not occur within any known breeding areas for either of these species. Furthermore, this species are highly mobile and is known to disperse widely. The 250.72 ha of potential marginal quality habitat likely to be affected is representative of larger patches of locally occurring resources that would be accessible to this species. Therefore, the removal of this potential habitat is unlikely to disrupt the breeding cycle of a population of either species.

MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE

The proposed action would disturb up to 250.72 ha of native vegetation considered to be foraging habitat for these species. A considerable about of this habitat, although associated vegetation for these species, are dominated by *Casuarina glauca* and therefore likely to provide limited foraging opportunities for these species. The removal of potential habitat is considered to be an incremental loss, decreasing the amount of suitable foraging habitat available locally. However, these species are likely to forage in the higher quality habitat within greater locality. Considering the mobile nature of these species, this action is unlikely to isolate the species habitat significantly. Given the marginal condition of habitat observed it is unlikely that the proposed action would modify, destroy, remove or isolate habitat for these species to the extent that is likely to cause the species to decline.

RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE SPECIES' HABITAT

It is not likely that invasive species (such as introduced predators) that are harmful to these species would become further established as a result of the proposed action. While there is limited potential for the proposed action to introduce additional weeds and pathogens within the proposed action area and surrounding locality, mitigation measures would be implemented and as such, the proposed action is considered unlikely to result in invasive species becoming established in the habitat.

INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE

No. There are no known diseases that are likely to increase in the area as a result of the proposed action.

INTERFERE WITH THE RECOVERY OF THE SPECIES

For the Regent Honeyeater, the Action Plan for Australian Birds (Garnett and Crowley, 2000) addresses the need for further ecological research on the species and the conservation and protection of roosting habitat and identification of specific breeding requirements. Recovery strategies outlined in Regent Honeyeater Recovery Plan (Department of the Environment, 2016) include:

- Improve the extent and quality of regent honeyeater habitat
- Bolster the wild population with captive-bred birds until the wild population becomes self-sustaining
- Increase understanding of the size, structure, trajectory and viability of the wild population
- Maintain and increase community awareness, understanding and involvement in the recovery program.

The proposed action would be in conflict with the first objective above to a small extent, by not improving the extent of habitat for the Regent Honeyeater. It is unlikely that the impact of relatively small areas of marginal habitat would significantly exacerbate the recovery of the species and significantly impact this species.

The Action Plan for Australian Birds (Garnett and Crowley, 2000) notes pressure on Swift Parrot breeding areas from forestry and firewood collection in Tasmania. On the mainland though pressures relate to the loss of foraging habitats due to clearing for agriculture and residential development (Garnett and Crowley, 2000). A National Recovery Plan for the Swift Parrot *Lathamus discolor* was prepared in 2011 (Saunders, 2011). Recovery actions outlined in this plan include:

- Identify the extent and quality of habitat
- Manage and protect swift parrot habitat at the landscape scale
- Monitor and manage the impact of collisions, competition and disease
- Monitor population and habitat.

The proposed action would be in conflict with the second recovery action above, to manage and protect Swift Parrot habitat at the landscape scale. It is unlikely that the impact of relatively small areas of marginal habitat would significantly inhibit the recovery of the species and significantly impact this species.

CONCLUSION

The extent of native vegetation clearing and foraging habitat removal associated with the proposed action is considered to be small in terms of available habitat for the species within region and there is a general paucity of records for the species in the locality of the proposal. The irregular distribution of blossom resources, which is a key driver of nomadism of these species, may cause these species to occasionally forage within the proposed action area. Although it is considered unlikely that the loss of potential foraging habitat would cause the local extinction of either species, the removal of up to 250.72 ha of vegetation could be utilised by this species intermittently during periods of seasonal blossom variation. The proposed action is not considered to fragment any locally occurring populations, affect habitat critical to their survival, disrupt their breeding cycles, or interfere with the recovery of these species.

H3.12 SOUTH-EASTERN GLOSSY BLACK-COCKATOO

The South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*) is listed as Vulnerable under the EPBC Act and the BC Act.

H3.12.1 DESCRIPTION

Glossy black cockatoos are the smallest of the black cockatoos (*Calyptorhynchus* and *Zanda* spp.), with a body length of around 48 cm and weight of 420 g. Plumage is mostly dull black, with a blackish-brown head, an inconspicuous crest and a broad bulbous bill. Adult males have bright red panels in the tail. Adult females have yellowish-red panels in the tail, and variable yellow patches on their heads. Juveniles are similar to adult females but with spotted pale-yellow patches on their heads, lower breast, belly and flanks, and barred undertail.

are uncommon but widespread. They can be found from Mitchell, Queensland, through eastern New South Wales to East Gippsland, Victoria. Their distribution is continuous through the forested parts of the Great Dividing Range but becomes more scattered inland, to as far west as the Riverina in New South Wales. Cameron et al. (2021) estimated that their extent of occurrence (EOO) is 470,000 km2 and their area of occupancy (AOO) is 40,000 km2. Birds in the Riverina region were previously thought to be isolated from the main population (Garnett et al. 2011), however, they are now considered to be connected to the main population (Cameron et al. 2021).

G3.12.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The ‘Conservation Advice for *Calyptorhynchus lathami lathami* (South-eastern Glossy Black Cockatoo)’ (Department of Climate Change, Energy, the Environment and Water, 2022) was reviewed as part of this assessment
- Listing assessment information may be available in the approved Conservation Advice
- There is no adopted or made Recovery Plan for this species
- No Threat Abatement Plan has been identified as being relevant for this species
- Department of the Environment (2015) Psittacine Beak and Feather Disease and other identified Threats to Australian threatened Parrots. Prepared for the Threatened Species Scientific Committee, Canberra.

H3.12.3 SPECIFIC IMPACTS

The species was not recorded during preliminary surveys performed by Cumberland Ecology or WSP in 2020, 2021 and 2024.

Based on the preliminary desktop assessment, the following PCTs are identified as being associated with the species PCT 4039, PCT 4015, PCT 3431, PCT 3315, PCT 3314. Within the proposed action area these PCTs vary in vegetation condition and cover (295.64 ha). The South-eastern Glossy Black Cockatoo relies on Eucalyptus crebra for breeding which is present on site (PCT 3431, 3314, 3315) however the site offers a low number of trees with hollows. The South-eastern Glossy Black Cockatoo feeds on drooping sheoak (*Allocasuarina verticillata*), broom bush sheoak (*Allocasuarina diminuta*), mallee sheoak (*Allocasuarina gymnanathera*), Belah (*Casuarina cristata*) mainly in NSW and at times feeds on buloke (*Allocasuarina luehmannii*). The plant species present on site include *Allocasuarina littoralis, Allocasuarina luehmannii and Casuarina glauca*.

H3.12.4 EPBC ACT SIGNIFICANT IMPACT ASSESSMENT

The following assessment has been undertaken following the Matters of National Environmental Significance, Significant Impact Guidelines 1.1 (Department of the Environment, 2013). Under the Act, important populations are:

- Likely to be key source populations either for breeding or dispersal
- Likely to be necessary for maintaining genetic diversity, and/or
- At or near the limit of the species range.

Is an important population likely to be present?

This species has not been recorded within the proposed action, but the species has been observed in similar adjacent habitats within wider locality (10kms). This species, if occurring in the proposed action area, would not be at the limit of their known range; nor would any population there be likely to be a key source population or necessary for maintaining genetic diversity. Therefore, it is considered that any population of the species that may be present is unlikely to be an ‘important population’.

H3.12.5 SIGNIFICANT IMPACT CRITERIA

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION

There is no defined important population defined for the South-eastern Glossy Black Cockatoo, however the extent of occurrence is estimated to be 470,000 km^2. The distribution for the species extends from Mitchell, Queensland eastern New South Wales to East Gippsland in Victoria throughout the forest of the Great Diving Range extending west into the Riverina of New South Wales. In the absence of no defined important population and the species distribution, it is unlikely the proposed action will lead to a long-term decrease in the overall population.

REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION

The area of occupancy is 40,000 km^2 throughout the species range. It is unlikely the proposed action will reduce the area of occupancy.

FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS

It is unlikely the proposed action will fragment the population into two or more populations in consideration of the species area of occupancy and the location of the proposed action.

ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. Habitat critical to the survival or important habitats of a species or ecological community refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal.
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators).
- to maintain genetic diversity and long-term evolutionary development; or
- for the reintroduction of populations or recovery of the species or ecological community

The proposed action has the potential to impact 295.64 ha of suitable habitat for South-eastern Glossy Black-Cockatoo. There is therefore potential for foraging/breeding habitat to be impacted, however considering this covers less than 0.01% of the AOO of the species and that this habitat is not limiting within the locality, it is highly unlikely that habitats within the proposed action area will be critical to the survival of the species. Habitat that is considered critical for the survival of the species includes:

- In NSW foraging habitat includes feed trees such as drooping sheoak (*Allocasuarina verticillata*), broom bush sheoak (*Allocasuarina diminuta*), mallee sheoak (*Allocasuarina gymnanathera*), Belah (*Casuarina cristata*) mainly in NSW and at times feeds on buloke (*Allocasuarina luehmannii*). Of these species, *Allocasuarina luehmannii* is present on site which the species feeds on at different times.
- Critical breeding habitat includes trees such narrow-leaved ironbark (*Eucalyptus crebra*) which is present on site. As outlined in the conservation advice (DCCEEW 2022), the trees may be living or dead and a potential nest hollow requires the following:
    - >8 m above ground.
    - Located in branches >30 cm in diameter.
    - Branch or stem no more than 45^o from vertical; and
    - Minimum entrance diameter of >15 cm

DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION

The proposed action will not disrupt the breeding cycle of an important population.

MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE

The proposed action may remove up to 295.64 ha of potential habitat. No exclusive habitat features will be affected by the removal of this habitat.

Although the removal of assumed habitat will represent an incremental loss of habitats depleted by cumulative impacts locally, similar habitats to those in the proposed action occur widely in adjacent woodland, and the habitat losses are unlikely to threaten the long-term survival of the species in the locality. It is therefore unlikely to cause the species to significantly decline.

RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT

It is not likely that invasive species (such as introduced predators) that are harmful to these species would become further established as a result of the proposed action. While there is limited potential for the proposed action to introduce additional weeds and pathogens within the proposed action area and surrounding locality, mitigation measures would be implemented and as such, the proposed action is considered unlikely to result in invasive species becoming established in the habitat.

INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE

There is a low-level threat of Psittacine Beak and Feather Disease (PBFD) to South-eastern Glossy Black-Cockatoo which is caused by psittacine circovirus, typically transferring between adults, nestlings and contaminated nest hollows (Department of the Environment, 2015). It is predicted that the incidence of this disease may increase with increased competition for nest hollows. If hollow-bearing trees are removed by the proposed action, this may slightly increase the competition for nest hollows by the species within the immediate locality, however it is not considered that this will cause the species to decline as this area of habitat constitutes less than 0.01% of the total AOO of the species and only a very small proportion of the population would therefore be impacted by this localised increase in a threat which is already considered low-level.

INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES

A national recovery plan has not been developed for the South-eastern Glossy Black-Cockatoo.

CONCLUSION

The key considerations as part of the assessment process for the species includes the specific habitat critical for breeding in narrow-leaved ironbark (*Eucalyptus crebra*). There is an absence of hollow bearing trees and the trees with hollows need to consider the specific requirements for the species. In addition, the foraging habitat present on site includes *Allocasuarina luehmannii* and the species is known to occasionally feed. Given these parameters and the area of occupancy for the species, it is unlikely the proposed action will have a significant impact, and the breeding and foraging habitat is considered as part of the ongoing assessment process.

H3.13 BROWN TREECREEPER (EASTERN SUBSPECIES)

Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*) – Vulnerable

H3.13.1 DESCRIPTION

The brown treecreeper (south-eastern) (*Climacteris picumnus victoriae*) is considered the largest treecreeper in Australia. It is found across the east coast of NSW and extends into western areas of the Murray River. The Brown Treecreeper is a grey-brown bird with black streaks on the lower breast and belly, and black bars on the undertail (DCCEEW 2023). The treecreeper has a pale face, with a dark line through the eye, and a dark crown.

H3.13.2 RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

Department of Climate Change, Energy, the Environment and Water (2023). *Conservation Advice for* Climacteris picumnus victoriae *(brown treecreeper (south-eastern))*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/67062-conservation-advice-31032023.pdf. In effect under the EPBC Act from 31-Mar-2023.

H3.13.3 SPECIFIC IMPACTS

The Brown Treecreeper was not recorded during the surveys completed by Cumberland Ecology in 2020 and 2021 or WSP in 2024. There were no BioNet records within 10 km of the proposed action area. The Brown treecreeper can be found in western Victoria through central NSW to the east coast and up to the Bunya Mountains of Queensland. The Brown Treecreepers do not disperse well from family groups and tend to be reduced to several sub-populations within its range in Eucalypt Forests and Woodlands. The main threat for this species includes land clearing and further fragmentation within the Brown Treecreeper's range. For the proposed action the associated PCTs are 4039, 4015, 3431, 3315, and 3314.

H3.13.4 EPBC ACT SIGNIFICANT IMPACT ASSESSMENT

The following assessment has been undertaken following the Matters of National Environmental Significance, Significant Impact Guidelines 1.1 (Department of the Environment, 2013). Under the Act, important populations are:

- Likely to be key source populations either for breeding or dispersal
- Likely to be necessary for maintaining genetic diversity, and/or
- At or near the limit of the species range.

1 Lead to a long-term decrease in the size of an important population of a species

The Brown Treecreeper habitat includes woodlands and dry open eucalypt forests with an absence of a shrub layer with abundant invertebrates, logs and intact ground storey vegetation. The population is scattered across it's known distribution and estimated to be isolated populations due to landscape fragmentation. There are limited records in the locality of the proposed action area for the Brown Treecreeper and the landscape is highly fragmented. The proposed action area has canopy regrowth which may reduce the suitable foraging habitat for the Brown Treecreeper, however given the lack of records and limited habitat it is unlikely the proposed action will contribute to any long-term decrease in the size of the overall Brown Treecreeper's population.

Reduce the area of occupancy of an important population

The area of occupancy for the Brown Treecreeper is estimated to be 30,00km^2 which is highly fragmented. The proposed action area will potentially remove 228.50 (ha) of suitable habitat. However, the Brown Treecreeper's area of occupancy are small, isolated populations where the species is recorded and given the low dispersal rate and lack of records it is unlikely the proposed action would impact the overall area of occupancy.

Fragment an existing important population into two or more populations

The proposed action will not fragment an important population into two or more populations.

Adversely affect habitat critical to the survival of a species

Habitat critical to the survival of a species refers to areas that are necessary for activities such as:

- Foraging, breeding, roosting, or dispersal
- For the long-term maintenance of the species including the maintenance of other species essential to the survival of the species, such as pollinators
- To maintain genetic diversity and long-term evolutionary development
- For the reintroduction of populations or recovery of the species.

Habitat critical to the survival of the brown treecreeper (south-eastern) includes areas that have:

- Relatively undisturbed grassy woodland with native understorey.
- Habitat structure should be quite open at ground level so that birds are able to feed on or near the ground and maintain vigilance against predators.

- The required degree of openness is mostly likely to be created by moderate levels of disturbance by fire and/or grazing.
- Large living and dead trees which are essential for roosting and nesting sites and for foraging.
- Fallen timber which provides essential foraging habitat
- Hollows in standing dead or live trees and tree stumps are also essential for nesting.

Overall, the vegetation condition in the proposed action area has been modified through historic land clearing, pasture improvement for agriculture, potentially forestry and mining operations. The boundaries are a mix native tree plantings containing local indigenous trees and other Australian native canopy trees planted in rows for screening. Habitat critical to the species within the proposed action area is limited due to the canopy regrowth creating patches of dense shrub layer, the ground storey vegetation is native and non-native with some fallen timber. The tree canopy is open parts but there is an absence of tree hollows, logs and open native ground cover vegetation across the PCTs. It is therefore considered that the proposed works will not impact habitat critical for the survival of Brown Treecreeper.

Disrupt the breeding cycle of an important population

The proposed action is unlikely to disrupt the breeding cycle of an important population due to the limited habitat on site and limited records in the locality.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The proposed action is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

Result in invasive species that are harmful to a vulnerable species becoming established in the Vulnerable species' habitat

There is potential the vegetation clearing can result invasive species establishing however to mitigate these risks weed management and hygiene protocols will be incorporated in the construction environmental management plan using best practice methods.

Introduce disease that may cause the species to decline, or

There are no known disease issues affecting this species.

Interfere substantially with the recovery of the species.

There is currently no National Recovery Plan in place for this species.

Conclusion

It is unlikely the proposed action will have a significant impact on the Brown Treecreeper' population and dispersal. The proposed action area is modified and offers limited critical habitat for the species to breed, forage and disperse.