Conservation significance of Leard State Forest for Swift Parrots

A report for Lock the Gate

Project number: 2303

Document control

Draft Date: 19/12/2024

Final Date: 02/03/2025

John Muchan, Ecologist

Botanical Animal Ecology

botanical.animal.ecology@gmail.com

Executive Summary

- Approximately 3,800 ha of native vegetation has been removed mainly from Leard State Forest under current Boggabri, Tarrawonga, Maules Creek (BTM) mining approvals. Much of this vegetation was suitable habitat for Swift Parrot (Umwelt 2017). This includes 1,665 ha of habitat for Swift Parrots cleared under the original Maules Creek Coal Mine (MCCM).
- Despite extensive clearing for the Boggabri, Tarrawonga, Maules Creek (BTM) complex of coal mines, the Leard State Forest continues to provide habitat for many woodland birds including nationally and state listed threatened species such as the Swift Parrot, Diamond Firetail, Brown Treecreeper and Turquoise Parrot.
- Since the commencement of coal mining in 2006, Swift Parrots have been detected in the Leard across four separate years; 2012, 2014, 2022 & 2023 (Idemitsu 2018, NSW Government 2024a).
- White Box within the Leard exhibited a general lack of blossom through to the end of August 2024 thus providing limited foraging value to nomadic nectarivorous birds such as the Swift Parrot.
- No Swift Parrots were detected in the Leard during the targeted surveys conducted in August 2024 on behalf of Lock the Gate.
- The targeted surveys conducted in August 2024 did not include areas within the mining leases (CL368 or CL375) or the exclusive use areas.
- At the time of writing, no publicly available Swift Parrots records exist for the western slopes of north-central NSW in 2024 suggesting the species was likely absent from this area in 2024.
- It is unknown at this time whether any Swift Parrots were detected in the 2024 season by surveys conducted on behalf of the mining operations within Leard.
- BirdLife Australia does not have any dedicated Swift Parrot Search sites in Leard State Forest, nor anywhere else on the Liverpool Plains.
- Two nationally listed and nine state listed threatened bird species were observed during the targeted surveys for Swift Parrots. All of these species were previously known to occur in the Leard State Forest.

- The Leard contains significant areas of open forest with a very high density of large White Box trees (45 large trees per hectare vs. benchmark condition of 10 large trees per hectare) providing excellent habitat for Swift Parrots.
- Native vegetation clearing to facilitate the MCCM expansion is estimated to result in the removal of approximately 50,000 Swift Parrot feed trees including more than 19,000 large White Box.
- Background research into the history of Swift Parrot sightings in the Leard and surrounds undertaken by Botanical Animal Ecology determined that:
  - The NSW Government's BioNet Atlas did not contain any Swift Parrot records corresponding to the 2012 or 2014 observations in Leard made by Parsons Brinckerhoff (Idemitsu 2018). As a result of this work, these extremely valuable records are now included in BioNet Atlas, doubling the publicly accessible data on the number of years that the species has been observed in the Leard.
  - Two Swift Parrot records within MCCM offset properties from 2022 appear to be absent from the BioNet Atlas (ERM 2023, Whitehaven Coal 2021).
  - The BioNet Atlas does not contain any records of Swift Parrots which were observed within Whitehaven Coal's Willeroi BOA from 2019 (Whitehaven Coal 2019).
- Botanical Animal Ecology has contacted the NSW Government Department of Climate Change, Energy, the Environment and Water to further investigate the issue of missing Swift Parrot records.
- The MCCM Continuation Project is clearly within 'habitat critical to the survival' of the Swift Parrot as defined in the *National Recovery Plan for the Swift Parrot* (Australian Government 2024a).
- The MCCM Continuation Project is clearly within a priority site for the species and arguably also within a priority area for the species based on the NSW Department of Planning & Environment (2024) Saving our Species strategy for the Swift Parrot.
- There is a strong case for the Leard to qualify as an Important Bird & Biodiversity Area (IBA) based on its regular use by Swift Parrots (BirdLife International 2020).

Introduction

Project brief

It is our understanding that Whitehaven Coal is applying to continue mining at the Maules Creek Coal Mine (MCCM) beyond their current lease which ends in 2034 (Whitehaven Coal 2023). The application for the continuation of MCCM will include an extension of the open cut area to the east of the current extent of approved surface development (see Figure 1). The proposed extension to the open cut lies entirely within the mining lease boundary (title CL375) though additional native vegetation would be cleared within the MCCM exclusive use area to the east of CL375 . The proposed mine expansion will involve clearing over 660 hectares of native vegetation within Leard State Forest ('the Leard') (Premise 2024). The native vegetation to be cleared is primarily mapped as Plant Community Type (PCT) 592: Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest in the Brigalow Belt South Bioregion and Nandewar Bioregion (NSW Government 2023). Approximately 435 hectares of PCT: 592 would be cleared for the proposed MCCM expansion.

Clearing of this native vegetation has the potential to significantly impact several matters of national environmental significance (MNES) listed under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) including the Critically Endangered Swift Parrot *Lathamus discolor*. Swift Parrots have been recorded feeding on the nectar of flowering White Box *Eucalyptus albens* in the Leard on numerous occasions since 2012 (BioNet Atlas 2024).

Botanical Animal Ecology was engaged to conduct targeted surveys for Swift Parrots in the Leard during the 2024 survey season. These surveys include the following scope of work:

- Background research into Swift Parrot records and survey efforts in the local area including records from Atlas of Living Australia, BioNet Atlas, BirdLife Australia's Birdata & Cornell Lab's eBird.
- Background research into ecological assessments / monitoring / reporting conducted for major activities in the local area e.g. Idemitsu's Boggabri Coal Mine, Whitehaven's Maules Creek Coal Mine & Whitehaven's Tarrawonga Coal Mine.

- Background research via the Protected Matters Search Tool (PMST) into other EPBC Act listed threatened species and / or threatened ecological communities (TECs) that may be present.

- Field survey for Swift Parrots consisting of:
  - Area searches for Swift Parrots each morning and afternoon (suitable conditions allowing).
  - Habitat mapping for Swift Parrots identifying key habitat features such as:
    - Abundant food sources where other nectarivorous birds are present,
    - Large, old trees of key foraging tree species,
    - Areas of high mistletoe abundance,
    - Areas of high lerp abundance.
  - Opportunistic surveys for other EPBC Act listed threatened species / TECs.

- Survey report (this report) containing:
  - Summary of Swift Parrot activity and monitoring in the local area.
  - Survey methods including locations, dates, times & conditions.
  - Survey results.
  - Discussion on the importance of the study area for Swift Parrots.

- Survey data
  - Data collected during the field surveys provided to Lock the Gate in the form of spreadsheets and geospatial data files.

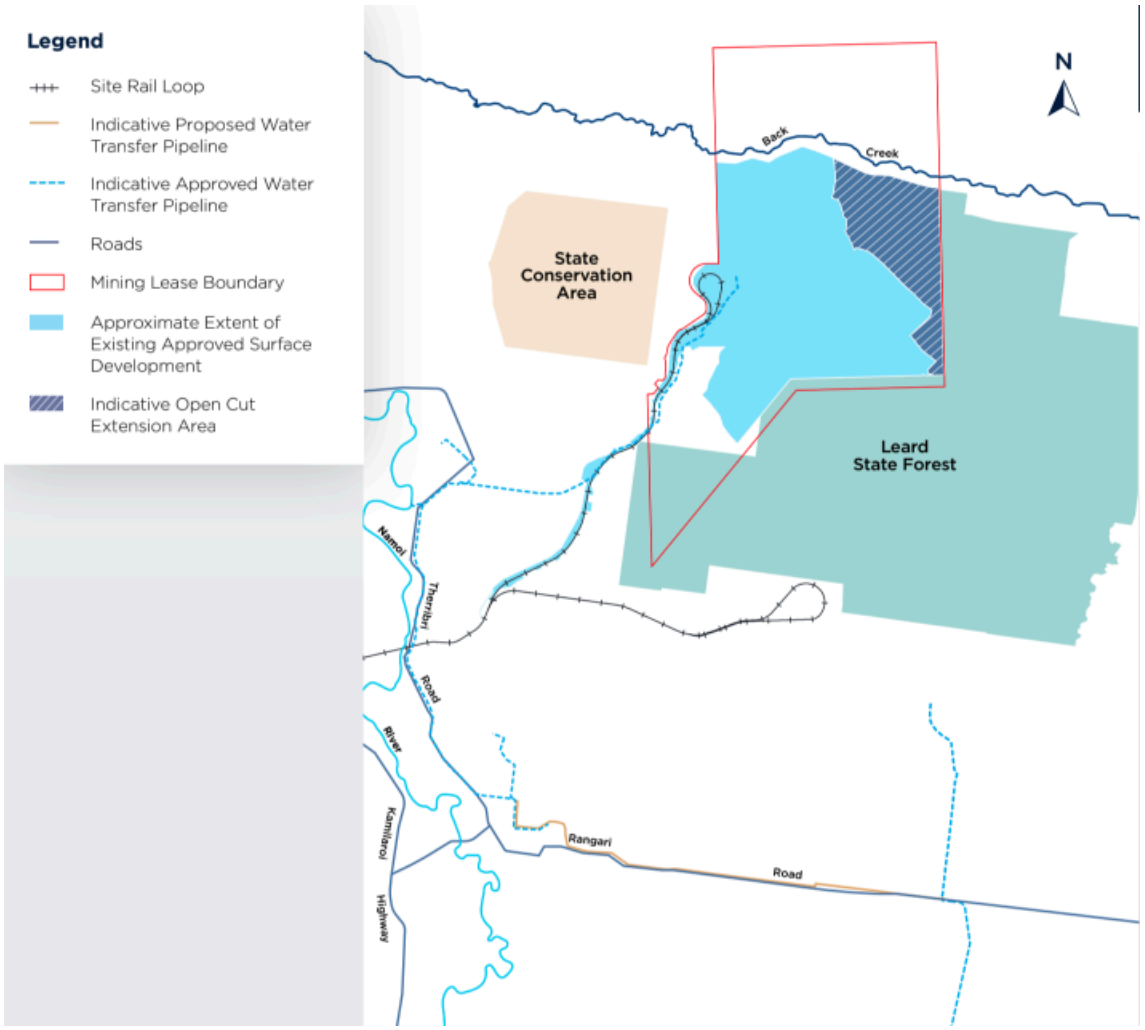


Figure 1 — Map of Whitehaven Coal's Maules Creek Coal Mine showing proposed open cut extension area [Source: Whitehaven Coal (2023)]

Ecology of Swift Parrots

Swift Parrots are small, nectarivorous parrots endemic to south-eastern Australia. Each autumn (from mid-February) the entire population of Swift Parrots, estimated in 2020 at around 750 individuals, migrate from their summer breeding grounds in Tasmania to overwinter in south-eastern mainland Australia (Webb, Stojanovic and Heinsohn 2019). Once the birds reach the mainland they disperse widely to forage, primarily in eucalypts, for nectar and *psyllid* lerps. Most birds are not detected on the mainland until April or May. In New South Wales (NSW) the species forages in forests and woodlands of the coastal and western slopes regions (Australian Government 2024b).

Swift Parrots are a highly mobile nomadic species. The use of suitable habitat by Swift Parrots is strongly tied to local resource availability (e.g. nectar / lerps) and competition from other bird species. Groups of birds can briefly pass through some habitats feeding opportunistically while, in other habitats, foraging occurs over several days, weeks or months (Stojanovic et al. 2015). Swift Parrots favour large, mature trees which provide more reliable foraging resources than younger trees. The species can exhibit high site fidelity returning to foraging sites repeatedly over multiple years (MacNally and Horrocks 2000). In the Western Slopes region of NSW, vegetation communities containing any one of four key tree species are considered to provide important foraging habitat for Swift Parrots (Australian Government 2011). These tree species are:

- **Mugga Ironbark** *Eucalyptus sideroxylon* (primarily nectar),
- **White Box** *E. albens* (primarily nectar),
- **Inland Grey Box** *E. microcarpa* (primarily lerps),
- **Yellow Box** *E. melliodora* (primarily lerps).

The Leard State Forest contains extensive stands dominated by large White Box thus constituting important Swift Parrot foraging habitat.

Swift Parrot conservation

Conservation of Swift Parrots has been an issue for over two decades (Allchin, Kirkpatrick and Kriwoken 2013). The species was listed as endangered before the inception of the national EPBC Act in 1999. At that time it was listed as Vulnerable and, as a result of continuing decline, was ‘upgraded’ to Endangered before being further ‘upgraded’ to Critically Endangered in 2016. The status change to Critically Endangered was informed by Heinsohn *et al.* (2015) which estimated an 80 - 95% decrease in the remaining Swift Parrot population over only three generations (12 - 18 years). Species monitoring data show the species population continues to decline with extinction possible within ten years (BirdLife Australia 2024a).

The broad-scale clearing of native vegetation that has occurred throughout Victoria, New South Wales and Tasmania since the European Invasion of Australia has resulted in a largely barren and highly fragmented landscape for Swift Parrots (Saunders and Russell 2016). Estimates suggest that over 80% of Victoria's Box-Ironbark habitat, which is a principal overwintering range of Swift Parrots, has been cleared in less than 200 years. Over the

same period upwards of 70% of Box-Ironbark has been cleared in New South Wales (Australian Government 2019). Ongoing incremental clearing of remaining Swift Parrot habitat for economic development continues to contribute to the decline of the species via “death by a thousand cuts” (Saunders and Russell 2016). Habitat loss and alteration from industrial development (e.g. coal mines) as well as negative impacts such as nest failures, drought, altered rainfall patterns, extreme wildfires and flowering failure from fossil-fuel driven anthropogenic climate change are identified in the species' national recovery plan as current threatening processes (Australian Government 2024a). In a similar vein, the NSW Office of Environment & Heritage (2022a) lists a number of threats relevant to fossil fuel developments, namely:

- Habitat loss and fragmentation from industrial development
- Changes in spatial and temporal distribution of habitat due to climate change.
- Reduced food availability due to drought conditions (climate change).
- High fire frequency impacting on food resource availability (climate change).

Mining in the Leard

Leard State Forest is part of Gamilaroi Country being located in the Liverpool Plains on the western slopes of north-central NSW. The forest is approximately 16 kilometres north-east of Boggabri and is surrounded primarily by agricultural land. Forming part of the catchment for the Namoi River, Leard lies within the Brigalow Belt South IBRA bioregion, one of Australia's 15 biodiversity hotspots. Within this bioregion 61% of native vegetation has been cleared and less than 3% lies within public reserves (Campbell 2011). The Leard provides habitat for a range of threatened species while also acting as a regional link between Mount Kaputar National Park to the north-east, the Pilliga to the west and the Nandewar Range to the east (Umwelt 2017).

Before the onset of mining the Leard consisted of around 8,100 hectares (ha) of native vegetation including one of the most extensive and intact stands of the nationally listed, critically endangered White Box-Yellow Box-Blakely’s Red Gum Grassy Woodland and Derived Native Grassland threatened ecological community. There are currently three coal mines operating within or adjacent to the Leard:

- Idemitsu's Boggabri Coal Mine
- Whitehaven's Maules Creek Coal Mine

- Whitehaven's Tarrawonga Coal Mine

Collectively these operations are referred to as the BTM complex. Native vegetation in the Leard has been progressively cleared from 2006, 2008 & 2014 for the Boggabri, Tarrawonga & Maules Creek coal mines respectively (Premise 2024). Under the current approvals, the BTM complex will impact approximately 3,800 ha of native vegetation, mostly within the Leard State Forest. This equates to over 40% of the Leard forest's pre-mining extent.

Methods

Reference site surveys for Swift Parrots

Several reference sites were visited prior to targeted surveys in the Leard. A reference site near Chiltern, Victoria was visited in May and August 2024. The NSW reference sites were visited in August 2024 and included areas around Gunnedah, Dandry (the Pilliga) and Weddin Mountains National Park. The two tracks along which Swift Parrots had previously been recorded in the Leard were visited at the start and end of each survey day (see Figure 2).

Targeted surveys for Swift Parrots

Targeted surveys for Swift Parrots were undertaken in the Leard on the 12th - 15th, 20th & 22nd of August 2024 in accordance with survey protocols outlined in the *Survey guidelines for Australia's threatened birds* (Australian Government 2010). Survey effort focussed on publicly accessible parts of the forest in the north-east corner of the Leard including where Swift Parrots had been recorded in previous years. Surveys for Swift Parrot did not include the following areas which were not accessible to the public:

- Boggabri Coal & Tarrawonga Coal Exclusive Use Area
- Maules Creek Coal Exclusive Use Area
- Coal Mining Lease CL368
- Coal Mining Lease CL375

Data on survey conditions are available in Table A-4 (Appendix A). Survey timing was informed by the dates of previous records within the Leard while also attempting to coincide with local White Box flowering. Survey timing was also informed by the general movement of Swift Parrots on the mainland throughout the middle of 2024. Swift Parrot movements were determined via the interrogation of the location and date of records from BirdLife's Birdata and Cornell Lab's eBird Australia databases (BirdLife Australia 2024b, eBird 2024). A list of all bird species encountered either visually or aurally was compiled as part of the surveys. This species list is available in Table A-2 (Appendix A).

Rapid habitat assessment for Swift Parrots

A rapid habitat assessment for Swift Parrots was undertaken across ten suitable habitat sites in the Leard (see Figure A-1, Appendix A). Each site was selected randomly within native vegetation corresponding to PCT: 592 and consisted of a 25 metre by 25 metre plot within which was at least one large White Box feed tree. For the purposes of this method, a feed tree was defined as a reproductively mature specimen of Eucalypt *Eucalyptus* spp. which has a flowering period that overlaps with the time that Swift Parrots are on the mainland. The large tree threshold of 50 centimetres diameter at breast height (DBH) was determined from the NSW Government (2019) *Vegetation Condition Benchmarks V1.2* based on the relevant vegetation class within each plot.

Data collected included:

- Landform
- Presence of accessible freshwater
- Presence of other nectarivorous birds
- Dominant canopy species
- Average canopy height
- Number and species of feed trees
- Number of species of large trees
- Lerp abundance
- Mistletoe abundance
- Feed tree and mistletoe flowering intensity

Data from area-based factors, e.g. number of large White Box feed trees, were processed to determine average (mean), maximum and minimum values per hectare.

The intention behind collecting and processing these data is to try to quantitatively understand the likely impacts on Swift Parrot habitat from further native vegetation clearing within the Leard due to the MCCM expansion. The data could also inform quantitative comparisons between any proposed offset sites and / or biodiversity management plans and the native vegetation proposed for removal in Leard. It must be acknowledged that, due to access restrictions to the mining lease boundary (title CL375) and exclusive use areas, the habitat data were collected outside of the proposed impact

area. However, based on PCT mapping and field observations the habitat values of the plots are expected to be very similar to the native vegetation proposed for removal.

Incidental surveys for other MNES

The Protected Matters Search Tool (PMST) (DCCEEW 2024) was used to generate a list of MNES that may occur in or relate to the Leard (see Appendix B for Protected Matters report). The list of MNES was refined to only include terrestrial fauna species considered likely to occur within the search area and likely to be incidentally encountered during the Swift Parrot surveys. This refined list is presented in Table 1 below.

Common Name	Scientific Name	Class	Presence	Threatened Category
Regent Honeyeater	*Anthochaera phrygia*	Bird	Likely	Critically Endangered
Spot-tailed Quoll	*Dasyurus maculatus maculatus (SE mainland population)*	Mammal	Likely	Endangered
Koala	*Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)*	Mammal	Known	Endangered
Hooded Robin (south-eastern)	*Melanodryas cucullata cucullata*	Bird	Known	Endangered
Major Mitchell's Cockatoo (eastern)	*Lophochroa leadbeateri leadbeateri*	Bird	May	Endangered
Diamond Firetail	*Stagonopleura guttata*	Bird	Known	Vulnerable
South-eastern Glossy Black-Cockatoo	*Calyptorhynchus lathami lathami*	Bird	Known	Vulnerable
Brown Treecreeper (south-eastern)	*Climacteris picumnus victoriae*	Bird	Known	Vulnerable
Southern Whiteface	*Aphelocephala leucopsis*	Bird	Known	Vulnerable
Superb Parrot	*Polytelis swainsonii*	Bird	May	Vulnerable
Painted Honeyeater	*Grantiella picta*	Bird	Known	Vulnerable
Grey Falcon	*Falco hypoleucos*	Bird	Likely	Vulnerable
Blue-winged Parrot	*Neophema chrysostoma*	Bird	Known	Vulnerable

Table 1 — EPBC listed terrestrial fauna species considered likely to occur and be encountered incidentally during Swift Parrot surveys (DCCEEW 2024)

Results

Swift Parrots in the Leard and surrounds

Prior to the commencement of mining operations in the Leard State Forest, via Idemitsu's Boggabri Coal Mine and Whitehaven Coal's Tarrawonga Coal Mine in 2006, there were no publicly known records of Swift Parrots in the Leard (Cumberland Ecology 2011, NSW Government 2024a). This was despite the forest providing thousands of hectares of suitable habitat for the species (Cumberland Ecology 2011). Baseline surveys for Whitehaven's Maules Creek Coal Mine began in 2008 and included surveys for Swift Parrots in the Leard (Hansen Bailey 2011). It is unclear from current publicly available documents whether any baseline monitoring was conducted for Swift Parrots as part of the initial approvals for Boggabri or Tarrawonga mines though Countrywide Ecological Services conducted numerous fauna surveys for the Boggabri and Tarrawonga projects beginning in 2005 (Resource Strategies 2012).

Swift Parrot records in the Leard are presented in Figure 2 with further details on each record available in Table A-1 (Appendix A). Since the commencement of mining in 2006, the species has been detected in the Leard across four separate years; 2012, 2014, 2022 & 2023 (Idemitsu 2018, NSW Government 2024a). Using 2008 as the start year and excluding the current winter of 2024, this corresponds to a return rate of 25% (four times in the last 16 years). Alternatively, using 2005 as the start year (the year before mining began in the Leard) and excluding the current winter of 2024, corresponds to a return rate of 20% (four times in the last 19 years).

According to Idemitsu (2022), 13 Swift Parrots and 20 Swift Parrots were observed in Leard during surveys in August 2012 and August 2022 respectively. The following year 16 Swift Parrots were recorded in the Leard in August 2023 (Idemitsu 2023). The highest number of Swift Parrots observed in the Leard under a single record is currently nine individual birds. These two observations of nine Swift Parrots were from 11 August 2022. The highest total for 2012 was six Swift Parrots observed on 9 and 13 August. In 2023, the maximum was five Swift Parrots on 3 August while the maximum for 2014 was four birds on 18 June.

The vegetation along the two tracks where Swift Parrots had previously been recorded in the north-east Leard contains high concentrations of large, tall White Box forming an open forest over a shrubby understorey. The abundance of feed trees in these locations provides excellent foraging habitat for Swift Parrots. This type of open forest, mapped as PCT: 592,

is broadly similar across much of the north-east Leard thus providing similar habitat value to Swift Parrots.

Within the broader local area Swift Parrots are known to occur:

- Within Idemitsu's Wirrilah biodiversity offset site, which lies approximately three kilometres to the east of the Leard.
- Within Whitehaven Coal's Willeroi biodiversity offset area (adjacent to Mount Kaputar National Park), which lies approximately 20 kilometres to the north of the Leard.
- In the town of Gunnedah, which lies approximately 50 kilometres to the south of the Leard.
- Within The Pilliga, which lies approximately 30 kilometres to the west of Leard.
- In the city of Tamworth, which lies approximately 100 kilometres to the south-east of the Leard.

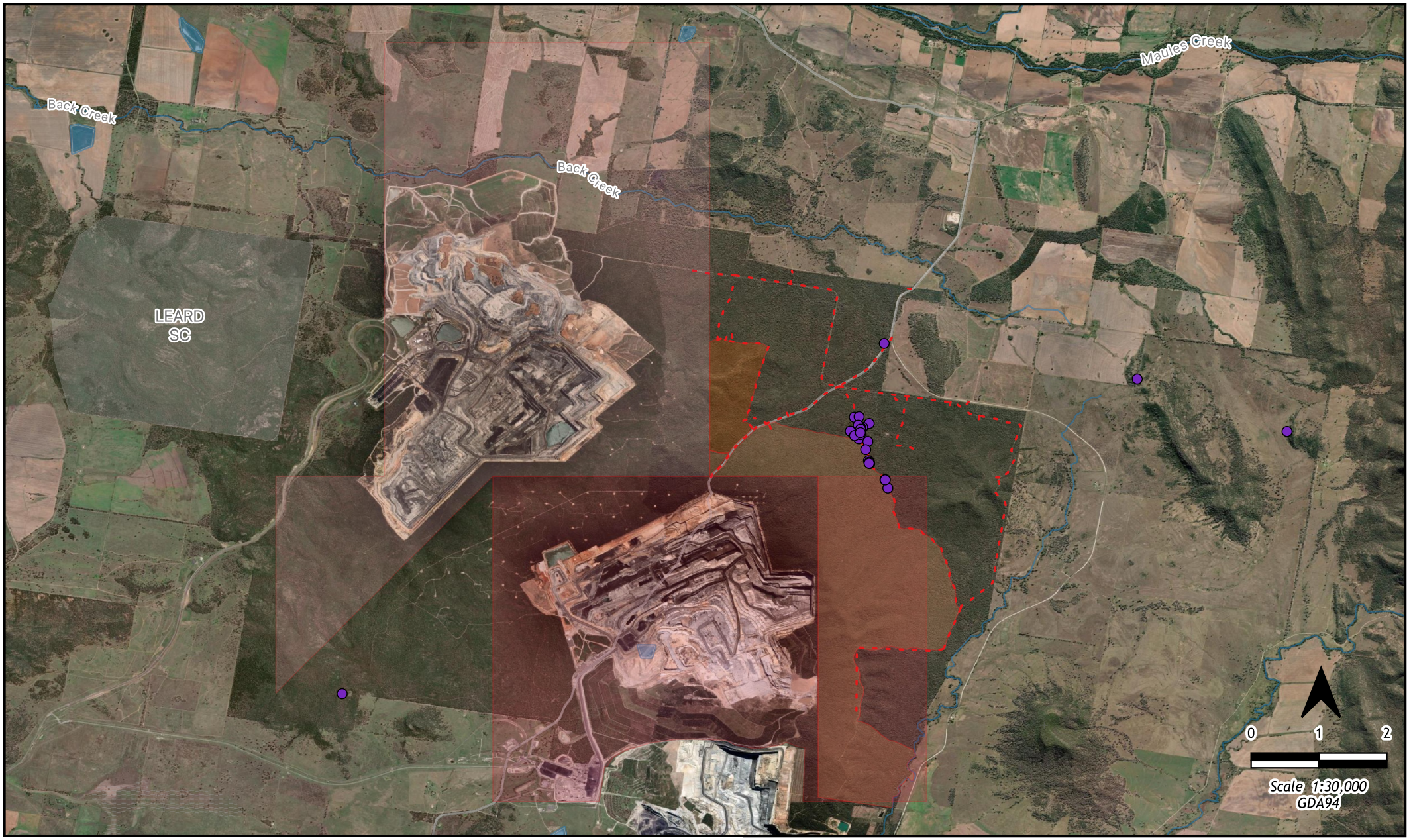
It was not until background research into the history of Swift Parrot sightings in the Leard was undertaken by Botanical Animal Ecology that it became apparent that the NSW Government's BioNet Atlas did not contain any Swift Parrot records corresponding to the 2012 or 2014 observations made by Parsons Brinckerhoff (Idemitsu 2018). As a result of this work, these extremely valuable records are now included in BioNet Atlas, doubling the publicly accessible data on the number of years that the species has been observed in the Leard.

A review of ERM's (2023) *Independent Biodiversity Audit Maules Creek Coal Pty Ltd* report found that: "*two sightings of the Swift Parrot (Lathamus discolor) were made on MCCM offset properties during nest box installation surveys undertaken in 2022*" (ERM 2023, pg. 18). Comparing the Swift Parrot records in the NSW Government's BioNet Atlas with the extent of all the Biodiversity Offset Areas subject to the current MCCM offset management plan (Whitehaven Coal 2021) suggests that, at the time of writing, these two records from 2022 are absent from BioNet Atlas. Botanical Animal Ecology has contacted the NSW Government Department of Climate Change, Energy, the Environment and Water to further investigate this issue.

A review of Whitehaven Coal's (2019) *Annual Review 2019* report found that: "*the ecological monitoring program of the Willeroi BOA included winter bird surveys that were*

undertaken in June and July 2019, and fauna monitoring of 6 sites undertaken during November 2019. During the winter bird surveys, six threatened species were recorded (Brown Treecreeper, Diamond Firetail, Hooded Robin, Little Lorikeet, Swift Parrot and Turquoise Parrot)" (Whitehaven Coal 2019, pg. 48). At the time of writing, the NSW Government's BioNet Atlas does not contain any records of Swift Parrots within the Willeroi BOA from 2019. Botanical Animal Ecology has contacted the NSW Government Department of Climate Change, Energy, the Environment and Water to further investigate this issue.

Correspondence with BirdLife Australia elucidated that the organisation does not have any dedicated Swift Parrot Search sites in Leard State Forest, nor anywhere on the Liverpool Plains (Mick Roderick, pers. comms., 20 March 2024). Given the recurrence of Swift Parrots observed in the Leard over the last decade or so coupled with the general lack of surveys by BirdLife Australia and its predecessor, the Swift Parrot Recovery Program, it could be argued that previous environmental impact assessments may have consistently understated project impacts on Swift Parrots based on a lack of historical survey effort.



LEGEND

- Swift Parrot
- Track
- Boggabri Coal & Tarrawonga Coal Exclusive Use Area
- Maules Creek Coal Exclusive Use Area
- Coal Mining Lease CL368 (Idemitsu)
- Coal Mining Lease CL375 (Whitehaven Coal)

Source: MinView (2024); NSW Government (2024); Esri (2025)

Figure 2 - Swift Parrot records in Leard State Forest

Botanical Animal Ecology

Reference site surveys for Swift Parrots

Swift Parrots were observed at the reference site near Chiltern, Victoria in the middle of May (18th & 19th) and again in early August (9th & 10th). No Swift Parrots were observed at any of the NSW reference sites visited in August 2024.

Conversations with multiple locals in the Namoi catchment corroborated **a)** the absence of any Swift Parrots records in the local area in 2024, and **b)** a general lack of foraging resources in the form of flowering eucalypts (particularly White Box) within the local area (Denise Kane, pers. comms. 16 July 2024, John Whittall pers. comms. 23 July 2024, Phil Spark pers. comms. 10 August 2024, Ros Druce, pers. comms. 21 July 2024).

Swift Parrot targeted surveys in the Leard

No Swift Parrots were detected in the Leard during the targeted surveys conducted in August 2024 on behalf of Lock the Gate. It is unknown at this time whether any Swift Parrots were detected in the 2024 season by surveys conducted on behalf of the mining operations within Leard. White Box within the Leard exhibited a general lack of blossom through to the end of August thus providing limited foraging value to nomadic nectarivorous birds such as the Swift Parrot at the time of the surveys. This was reinforced by the low numbers of other nomadic nectarivorous species such as Noisy Friarbirds *Philemon corniculatus*, Little Friarbirds *P. citreogularis* and Yellow-faced Honeyeaters *Caligavis chrysops* observed throughout the surveys.

The general movement pattern of Swift Parrots on the mainland in 2024 was as follows. The species began crossing the Bass Strait and arriving on the mainland mid to late February. Swift Parrots were consistently recorded in central and northern Victoria until September and were still being observed around Melbourne in late October. By April some parrots had travelled up the east coast of NSW with sightings in the Sydney area and as far north as Port Macquarie. Records of Swift Parrots in the southern inland slopes of NSW began to appear in June with records around Young. Five individuals were even recorded in late June near Bourke in central northern NSW. By late June Swift Parrots were also appearing in southern Queensland around Brisbane and Toowoomba. Through August and September, the birds were migrating south across the Bass Strait to their summer breeding and foraging grounds in Tasmania. Swift Parrots were still being observed on the NSW coast (south of Newcastle) and the NSW south-west inland slopes well into September with

records of Swift Parrots around Melbourne into late October (eBird 2024). At the time of writing, no Swift Parrots records exist for the western slopes of north-central NSW in 2024 suggesting the species was likely absent from this area in 2024 (Atlas of Living Australia 2024, BirdLife Australia 2024b, eBird 2024, NSW Government 2024a).

Woodland birds

Leard supports a diverse array of woodland birds, many of which are threatened at a national or state level. A total of 73 bird species were observed during the surveys. The full list of birds observed along with national and NSW conservation status is available in Table A-2 (Appendix A). The semi-colonial and aggressive Fuscous Honeyeater *Lichenostomus fuscus* was the most abundant bird observed with White-throated Treecreepers *Cormobates leucophaea* and Brown Treecreepers *Climacteris picumnus victoriae* also very common. There was a general lack of nectarivorous bird activity e.g. friarbirds, honeyeaters, lorikeets which is consistent with poor White Box flowering at the time of surveys.

Several threatened bird species were observed during the surveys. These observations are discussed in detail below. Table 2 summarises threatened bird species recorded during the surveys with the locations of records presented in Figure 3 (note: generally only one or two observations of a species were recorded geospatially).

Two EPBC listed and NSW listed bird species listed in Table 1 were observed during the targeted surveys for Swift Parrots. These were:

- **Brown Treecreeper** (south-eastern) *Climacteris picumnus victoriae* (EPBC Vulnerable)
- **Diamond Firetail** *Stagonopleura guttata* (EPBC Vulnerable)

Common name	Scientific name	Observation type	Commonwealth conservation status	NSW conservation status
Black-chinned Honeyeater (eastern)	*Melithreptus gularis gularis*	Seen	---	Vulnerable
Diamond Firetail	*Stagonopleura guttata*	Seen	Vulnerable	Vulnerable
Dusky Woodswallow (eastern)	*Artamus cyanopterus cyanopterus*	Seen	---	Vulnerable
Grey-crowned Babbler (eastern)	*Pomatostomus temporalis temporalis*	Seen	---	Vulnerable
Little Lorikeet	*Glossopsitta pusilla*	Seen	---	Vulnerable
South-eastern Brown Treecreeper	*Climacteris picumnus victoriae*	Seen	Vulnerable	Vulnerable
Speckled Warbler	*Pyrrholaemus sagittatus*	Seen	---	Vulnerable
Turquoise Parrot	*Neophema pulchella*	Seen	---	Vulnerable
Varied Sittella	*Daphoenositta chrysoptera*	Seen	---	Vulnerable

Table 2 — Nationally and state listed threatened bird species were observed during the targeted surveys for Swift Parrots

Brown Treecreeper

Brown Treecreepers were abundant during the surveys and have been consistently recorded within Leard since the 1980s (Cumberland Ecology 2011). This sedentary species is found in drier open woodlands and forests. They are insectivorous, feeding both on the ground and amongst trees and branches for insects and their larvae. Brown Treecreepers are highly sociable, exhibiting communal living and breeding behaviour. Breeding takes place from June to January with nesting material usually placed in a small tree hollow. Due to the dependence on hollows for nesting, Brown Treecreepers favour patches of vegetation with hollow-bearing trees which can take over 100 years to form (BirdLife Australia 2024c).

Diamond Firetail

Diamond Firetails were recorded on two separate occasions during the surveys. Each observation consisted of two individuals. This species has been previously recorded in the Leard several times since the 1980s (Cumberland Ecology 2011). Diamond Firetails inhabit open grassy woodlands, heathlands and grasslands where they feed on the ground on seeds and the occasional insect or their larvae. The species is mostly sedentary and are often recorded building their nests in the base of the large stick nests constructed by birds of prey. Nests are also built within dense shrubs with prickly foliage (BirdLife Australia 2024d).

Nine bird species listed under the NSW *Biodiversity Conservation Act 2016* were observed during the targeted surveys for Swift Parrots. These were:

- **Black-chinned Honeyeater** (eastern) *Melithreptus gularis gularis* (Vulnerable)
- **Brown Treecreeper** (south-eastern) (Vulnerable)
- **Diamond Firetail** (Vulnerable)
- **Dusky Woodswallow** (eastern) *Artamus cyanopterus cyanopterus* (Vulnerable)
- **Grey-crowned Babbler** (eastern) *Pomatostomus temporalis temporalis* (Vulnerable)
- **Little Lorikeet** *Glossopsitta pusilla* (Vulnerable)
- **Speckled Warbler** *Pyrrholaemus sagittatus* (Vulnerable)
- **Turquoise Parrot** *Neophema pulchella* (Vulnerable)
- **Varied Sittella** *Daphoenositta chrysoptera* (Vulnerable)

Black-chinned Honeyeater

A single Black-chinned Honeyeater was recorded during the surveys. This species has previously been recorded on four occasions in the Leard. Black-chinned Honeyeaters inhabit open eucalypt forests and woodlands, particularly those dominated by box and ironbark. This gregarious species feeds mainly on nectar and insects but will also forage on seeds. The movements of the species in response to floral resources are sometimes considered nomadic. Black-chinned Honeyeaters often breed cooperatively with the female building a woven cup-shaped nest placed high in the canopy of a tree (BirdLife Australia 2024e).

Dusky Woodswallow

Dusky Woodswallows were abundant during the surveys and have been recorded over 100 times in the Leard. This species has two separate populations with the eastern population occurring from Queensland through to South Australia. The Dusky Woodswallow inhabits open forests and woodlands where it feeds on insects taken from the wing as well as gleaned from foliage or on the ground. Dusky Woodswallows will also feed on nectar. The species breeds colonially in areas ('neighbourhoods') with nests placed in a tree fork, behind bark, in hollows or fence posts at least one metre above the ground (BirdLife Australia 2024f).

Grey-crowned Babbler

Grey-crowned Babblers were recorded numerous times throughout the surveys and have been consistently recorded in Leard since the 1980s (Cumberland Ecology 2011). The species is a sedentary, ground-dwelling, insectivore that is found in open forests and woodlands across north-western, northern, central and eastern Australia. Within these vegetation types, Grey-crowned Babblers have complex habitat requirements including: fertile or heavy soils, abundant trees with a high proportion of large trees (>90 cm DBH), a shrubby understorey with an open ground layer and sparse grass cover, as well as abundant leaf litter and woody debris (Cumberland Ecology 2011). Grey-crowned Babblers are noisy, gregarious birds often found in small groups of up to twelve individuals. The species also breeds in cooperative territorial groups building both roost nests and brood nests in tree forks. Estimates suggest that the overall population has declined by 95% since European Invasion (BirdLife Australia 2024g).

Little Lorikeet

Little Lorikeets were recorded several times during the targeted surveys with over 100 records of the species in Leard. The species primarily inhabits dry, open sclerophyll woodlands and forests usually containing tall box-ironbark eucalypts such as White Box. Like other lorikeets, Little Lorikeets are nectarivores foraging mostly on flowers in the upper canopy of eucalypts and paperbarks (*Melaleuca* spp.). They are often found with other lorikeet species e.g. Musk, Rainbow, Purple-crowned. The species is thought to be nomadic in response to foraging resources but is considered resident in some areas, particularly during the breeding season (April to December) (Cumberland Ecology 2011). Little Lorikeets nest in small hollows formed in tree limbs or trunks (BirdLife Australia 2024h).

Speckled Warbler

Speckled Warblers were recorded multiple times during the surveys with the species consistently recorded in the Leard (Cumberland Ecology 2011). The species occurs in dry sclerophyll forests and woodlands with a grassy understorey. It has a patchy distribution on and inland of the Great Dividing Range from southern Queensland to the Grampians in western Victoria. Speckled Warblers are a sedentary species that forage in small parties on the ground for insects and, occasionally, seeds. In winter, Speckled Warblers will often join mixed species feeding flocks including various thornbills (BirdLife Australia 2024i). The species breeds at ground level building a nest in a small hollow in the ground or the base of a low, dense plant (NSW Government 2022b).

Turquoise Parrot

Turquoise Parrots were recorded on three occasions during the targeted surveys. The species has been consistently recorded in the Leard (Cumberland Ecology 2011). Turquoise Parrots can be found in open, grassy woodlands in south-east Queensland, NSW and eastern / north-eastern Victoria. The species will also inhabit pastures, orchards and coastal heaths. Turquoise Parrots forage on the seeds of grasses and shrubs on or near the ground but also eat fruits, leaves, nectar, flowers and scale insects. The species breeds in solitary pairs and requires vertical or near-vertical hollows for nesting. They therefore prefer areas with abundant hollow-bearing trees and stags. While some seasonal movements do occur, Turquoise Parrots are generally considered to be resident in an area (BirdLife Australia 2024j).

Varied Sittella

Varied Sittellas were recorded once during the surveys and have been observed consistently in the Leard since the 1980s (Cumberland Ecology 2011). This sedentary species is widespread across mainland Australia inhabiting eucalypt woodlands and forests. Varied Sittellas are insectivores and exhibit distinctive foraging behaviour. They glean on tree trunks or branches moving downwards or along branches in search of food. The species builds a deep, open cup-shaped nest in the fork of a tree or along a branch. Varied Sittellas will often re-use the same nesting fork or tree in successive years (BirdLife Australia 2024k). The decline of the species is primarily attributed to declining habitat cover and quality (NSW Government 2010).

Source: MinView (2024); NSW Government (2024); Esri (2025)

LEGEND

- Black-chinned Honeyeater
- Brown Treecreeper
- Diamond Firetail
- Dusky Woodswallow
- Grey-crowned Babbler
- Little Lorikeet
- Speckled Warbler
- Turquoise Parrot
- Varied Sitella
- Track
- Boggabri Coal & Tarrawonga Coal Exclusive Use Area
- Maules Creek Coal Exclusive Use Area
- Coal Mining Lease CL368 (Idemitsu)
- Coal Mining Lease CL375 (Whitehaven Coal)

Figure 3 - Threatened birds observed during surveys

Botanical Animal Ecology

Rapid habitat assessment

All ten sites were located in an open forest dominated by White Box with a sparse to dense shrubby understorey including Feathery Hop Bush *Dodonaea sinuolata* and Pinkwood *Beyeria viscosa*. Other eucalypts such as Narrow-leaved Ironbark *E. crebra*, Bimble Box *E. populnea* and Blakely's Red Gum *E. blakelyi* were also present in some sites. General observations across the sites were that they contained high concentrations of large, tall White Box thus providing excellent foraging habitat for Swift Parrots under suitable conditions e.g. flowering & / or lerp abundance. The vegetation composition and structure of the sites was very similar to the areas where Swift Parrots have previously been recorded in north-east Leard. Almost all sites were located on flat terrain and none had accessible freshwater. While other nectarivorous birds were present at all sites this was primarily due to the presence of Fuscous Honeyeaters and general nectivore activity was very low.

There was an average of eight feed trees per site which corresponds to approximately 123 feed trees per hectare. Over 95% of all feed trees were White Box. Each site had an average of three large trees corresponding to a large tree density of 45 large trees per hectare. All large trees in the ten plots were White Box. This large tree density significantly exceeds the benchmark condition of ten large trees per hectare for the corresponding Western Slopes Dry Sclerophyll Forests vegetation class. In other words, the Leard contains significant areas of open forest with a very high density of large White Box trees. Average canopy height across all sites was 18.5 metres.

Lerp abundance at the time of the surveys was very low with lerps observed on 0.1 - 10% of foliage across all sites. Mistletoe abundance was also low with between one to ten individual mistletoe plants observed in eight out of the ten sites. One site had between 10 to 20 mistletoes with mistletoes absent in site SP9. No mistletoes were observed to be flowering at the time of the surveys.

The flowering intensity of White Box within the survey sites was very low at the time of the surveys. White Box at seven of the ten sites was recorded as exhibiting <1% of maximum flowering with no White Box flowering observed at the remaining three sites.

While public access within the mining leases and exclusive use areas was not possible, observations from multiple locations along the boundaries looking in, combined with PCT mapping, suggest that much of the vegetation within CL375 and the MCCM exclusive use

area is very similar in structure and composition to the rapid habitat assessment sites. Based on the estimates provided by Premise (2024) approximately 435 ha of PCT: 592 would be removed within CL375 and the MCCM exclusive use area as part of the proposed MCCM expansion. Using the average density of feed trees and large trees from this rapid habitat assessment we estimate that the clearing of approximately 435 hectares of PCT: 592 to facilitate the MCCM expansion will result in the removal of approximately 50,000 feed trees, more than 19,000 of which would be large White Box.

Processed data from the rapid habitat assessment for Swift Parrots within the Leard is summarised in Table A-3 (Appendix A).

Discussion

The importance of the Leard for Swift Parrots

Since mining activities began in the Leard in the mid-2000s, targeted surveys have detected Swift Parrots foraging in the forest's large flowering White Box across four separate years (2012, 2014, 2022, 2023), or approximately once every four to five years. This return rate suggests the species is exhibiting high site fidelity to the Leard when flowering conditions are suitable. The strong recurrence of Swift Parrots in the Leard lies in stark contrast to the assertion by Cumberland Ecology in 2011 that: "*On current data Swift Parrots are unlikely to make significant recurrent use of the site*" (Cumberland Ecology 2011, pg. I-50) and that "*the Project (MCCM) is not likely to significantly impact Swift Parrot"* (Cumberland Ecology 2011, pg. I-53).

Approximately 3,800 ha of native vegetation has been removed mainly from Leard under current BTM mining approvals. Much of this vegetation was suitable habitat for Swift Parrot (Umwelt 2017). This includes 1,665 ha of habitat for Swift Parrots cleared under the original MCCM.

National Recovery Plan for the Swift Parrot - Australian Government

The *National Recovery Plan for the Swift Parrot* (Australian Government 2024a) defines foraging habitat critical to the survival for the Swift Parrot on the Australian mainland as "*All preferred foraging species within known and likely foraging habitat on the mainland including… White Box (E. albens)*" (Australian Government 2024a, pg. 15) before outlining that "*Whenever possible, habitat critical to the survival of the Swift Parrot should not be destroyed*" (Australian Government 2024a, pg. 15). Given the Leard State Forest contains extensive stands dominated by large White Box that are known foraging habitat for Swift Parrots, the Leard must be considered habitat critical to the survival for the Swift Parrot. Protecting areas deemed habitat critical to survival from developments (e.g. mining activity) is identified in the *National Recovery Plan for the Swift Parrot* (Australian Government 2024a) as a Priority One (highest priority) action to ensure the conservation of the species.

Whitehaven Coal's (2015) *Maules Creek Coal Mine Threatened Fauna Implementation Plan* recognises that a key threat to rehabilitation actions or biodiversity offsets for Swift Parrots is the "*time lapse required to reach appropriate successional stage in restoration*

and/or rehabilitation" (Whitehaven Coal 2015, pg. 24). Under the *National Recovery Plan for the Swift Parrot* (Australian Government 2024a) "*if avoidance or mitigation [for a project] has been found to be impossible, any developments that proceeded in areas of 'habitat critical to survival' [must] have provided offsets compliant with the approved offset regulations and calculators and provided measurable benefits to the Swift Parrot population in line with strategies outlined in this recovery plan*" (Australian Government 2024a, pg. 25). Given the rapid population decline of Swift Parrots, it appears unlikely Whitehaven Coal will be able to provide suitable offsets for clearing known Swift Parrot habitat that will have measurable benefits to Swift Parrots within the extremely short time frame required to reverse the extinction trajectory of this critically endangered species.

Lastly, given Australia's commitment under the Paris Agreement in 2015 to substantially reduce global greenhouse gas emissions to hold global temperature increase to well below 2°C above pre-industrial levels and pursue efforts to limit it to 1.5°C above pre-industrial levels, it is increasingly difficult to argue that in 2024 (almost ten years later) avoiding the expansion of a thermal coal mine such as MCCM is impossible (UN 2024).

Saving our Species strategy for the Swift Parrot - NSW Government

The Saving our Species strategy for the Swift Parrot prepared by the NSW Government Department of Planning & Environment (2024) identifies several critical actions to guide management to mitigate threats to Swift Parrots. Of relevance to industrial developments such as fossil fuel projects are: 1) the protection of large old trees, 2) ensuring the recruitment of large old trees by retaining medium-sized trees and 3) "*engage the community in the identification and enhanced management of priority sites. Priority sites are those that (1) have been used by a large proportion of the population, or (2) have been used in multiple seasons, or (3) have been used for an extended period of time within a season. Engage stakeholders in the identification and development of site-based management projects for priority areas, being areas containing a high proportion of priority sites, or areas that contribute to the overall diversity and distribution of resources available to swift parrots under a range of environmental conditions*" (NSW Government 2024c).

As Swift Parrots have been detected in the Leard across multiple seasons, the forest clearly qualifies as a priority site for the species. Furthermore, given the Leard is a priority site outside of the typical range of Swift Parrots in NSW, namely along the coast

and south-west slopes, it could also be argued that the forest makes a significant contribution "*to the overall diversity and distribution of resources available to swift parrots under a range of environment conditions*" and therefore also qualifies as a priority area (NSW Government 2022a).

Important Bird & Biodiversity Areas - BirdLife International

BirdLife International (2020) has developed a set of global criteria to identify whether sites qualify as Important Bird & Biodiversity Areas (IBAs). IBA Criterion A1 applies to Globally Threatened Species, such as the Swift Parrot, which are classified under the International Union for Conservation of Nature (IUCN) Red List as Critically Endangered (CR) (IUCN 2024). To satisfy IBA Criterion A1, a site "*is known or thought regularly to hold significant numbers of a Globally Threatened species*" (BirdLife International 2020, pg. 3). Further guidance on significant numbers under Criterion A1 stipulates that "*it is recommended that to meet A1, a site must support: at least 1 individual of a CR or EN species with a Global population of 1,500 individuals or fewer, including those classified on the IUCN Red List a CR(PE) and CR(PEW)*" (BirdLife International 2020, pg. 5). The criteria also specify that the word "regular" can include "*sites which meet habitat requirements for qualifying species on a cyclical basis"* (BirdLife International 2020, pg. 5) e.g. heavy White Box flowering. More than one individual Swift Parrot has been recorded in the Leard across four separate years (2012, 2014, 2022, 2023). The strong recurrence of Swift Parrots in the Leard presents a strong case for the forest to be considered an IBA for the species.

The importance of the Leard for woodland birds

According to BirdLife Australia (2024l) over 80% of Australia's temperate woodlands have been cleared since European Invasion of Australia in the late 18th century. Over 30% of Australia's terrestrial bird species depend on woodlands to survive and at least one in five of these species is at risk of extinction (BirdLife Australia 2024k). Despite extensive clearing for the BTM complex of coal mines, Leard continues to provide habitat for many woodland birds including nationally and state listed threatened species such as the Diamond Firetail, Brown Treecreeper and Turquoise Parrot. As outlined in Cumberland Ecology (2011), increasing fragmentation and diminishing sizes of woodland patches are major drivers of woodland bird decline in NSW. What currently remains of the Leard still provides important habitat resources for many woodland birds. Of particular value is the forest's high density of large hollow-bearing trees, which are difficult to replace in the

landscape without significant spatial & / or temporal lags, given the decades to centuries required for large trees to grow and hollows to form.

Recommendations

As a result of this work we recommend the following:

- Use all available means to determine **whether any Swift Parrots were recorded in Leard in 2024 via surveys conducted on behalf of the mining operations** e.g. question 2024 Swift Parrot survey outcomes at community consultation meetings.
- Insist the environmental impact assessment for MCCM Continuation Project includes an **assessment of cumulative impacts** to Swift Parrots from previous habitat clearing for the BTM complex and other previously approved developments in the local area.
- Any objections to the MCCM Continuation Project should highlight that rapid habitat assessment data estimate the development will result in the removal of approximately **50,000 Swift Parrot feed trees** including more than **19,000 large White Box trees**.
- Any objections to the MCCM Continuation Project could highlight that a biodiversity assessment for the original MCCM project failed to accurately identify that a **significant impact** to Swift Parrots was likely under the EPBC Act (Cumberland Ecology 2011, pg. I-53).
- Any objections to the MCCM Continuation Project should highlight that the project is clearly within '**habitat critical to the survival**' of the Swift Parrot as defined in the *National Recovery Plan for the Swift Parrot* (Australian Government 2024a).
    - Protecting areas deemed habitat critical to survival from developments (e.g. mining activity) is identified in the *National Recovery Plan for the Swift Parrot* (Australian Government 2024a) as a **Priority One (highest priority) action** to ensure the conservation of the species.
    - Biodiversity offsets for Swift Parrots from developments within habitat critical to the survival of the Swift Parrot are **unlikely to provide measurable benefits to the species** in the context of the extremely rapid decline in the species' population.
- Any objections to the MCCM Continuation Project should highlight that the project is clearly within a **priority site** for the species and arguably also within a **priority area** for the species based on the NSW Department of Planning & Environment (2024) Saving our Species strategy for the Swift Parrot.

- Any objections to the MCCM Continuation Project should highlight that there is a strong case for the Leard to qualify as an **Important Bird & Biodiversity Area (IBA)** based on its regular use by Swift Parrots.
- Consider engaging an ecologist to conduct Swift Parrot surveys in the Leard State Forest across **autumn & winter 2025**. Conducting these surveys would depend on the project decision timeline for the Maules Creek Coal Mine Continuation Project.

References

Allchin, R., Kirkpatrick, J. and Kriwoken, L. (2013) 'On Not Protecting the Parrot: Impact of Conservation and Planning Legislation on an Endangered Species in Tasmania', *Journal of International Wildlife Law & Policy*, 16(1), pp. 81–104. Available from: https://doi.org/10.1080/13880292.2013.764777.

Atlas of Living Australia (2024). *Lathamus discolor* (Shaw, 1790) Swift Parrot - Occurrence records map. Available from: https://spatial.ala.org.au/?q=lsid:https:%2F%2Fbiodiversity.org.au%2Fafd%2Ftaxa%2F4cb195fd-b127-44cb-ad85-a62d224e9a96&qualityProfile=ALA. Accessed 2 November 2024.

Australian Government (2011) *National Recovery Plan for the Swift Parrot* Lathamus discolor.

Australian Government (2019) *Draft National Recovery Plan for the Swift Parrot* (Lathamus discolor).

Australian Government (2024a) *National Recovery Plan for the Swift Parrot Lathamus discolor*.

Australian Government (2024b) *Lathamus discolor* — Swift Parrot. Commonwealth of Australia Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=744.

BirdLife Australia (2024a) Tasmanian Government to log more Swift Parrot habitat. Available from: https://birdlife.org.au/news/tasmanian-government-logging-plans-uncovered/.

BirdLife Australia (2024b) Birdata - Swift Parrot. Available from: https://birdata.birdlife.org.au/explore#map=-22.5083100_136.0786120_4&species_id=309. Accessed 2 November 2024.

BirdLife Australia (2024c) Brown Treecreeper. Available from: https://birdlife.org.au/bird-profiles/brown-treecreeper/.

BirdLife Australia (2024d) Diamond Firetail. Available from: https://birdlife.org.au/bird-profiles/diamond-firetail/.

BirdLife Australia (2024e) Black-chinned Honeyeater. Available from: https://www.birdsinbackyards.net/species/Melithreptus-gularis.

BirdLife Australia (2024f). Dusky Woodswallow. Available from: https://birdlife.org.au/bird-profiles/dusky-woodswallow/.

BirdLife Australia (2024g). Grey-crowned Babbler. Available from: https://www.birdsinbackyards.net/species/Pomatostomus-temporalis.

BirdLife Australia (2024h). Little Lorikeet. Available from: https://birdlife.org.au/bird-profiles/little-lorikeet/.

BirdLife Australia (2024i). Speckled Warbler. Available from: https://www.birdsinbackyards.net/species/Chthonicola-sagittata.

BirdLife Australia (2024j). Turquoise Parrot. Available from: https://www.birdsinbackyards.net/species/Neophema-pulchella.

BirdLife Australia (2024k). Varied Sittella. Available from: https://www.birdsinbackyards.net/species/Daphoenositta-chrysoptera.

BirdLife Australia (2024l). Woodland Birds. Available from: https://birdlife.org.au/programs/woodland-birds.

BirdLife International (2020) *Guidelines for the application of the IBA criteria - Final version, July 2020*. Available from: https://datazone.birdlife.org/userfiles/images/Guidelines%20for%20the%20application%20of%20the%20IBA%20criteria_final%20approved%20version_July2020.pdf.

Cumberland Ecology (2011) *Ecological Impact Assessment - Appendix I: Maules Creek Coal Project - Ecological Assessment*. Report for Hansen Bailey on behalf of Whitehaven Coal Limited.

Campbell, R. (2011). *Assessment of the habitat value of Leard State Forest*, Report for the Maules Creek Community Council (MCCC), prepared by Economists at Large, Melbourne, Australia.

eBird (2024). Swift Parrot (*Lathamus discolor*) - Species Map - eBird. Available from: https://ebird.org/map. Accessed 2 November 2024.

Hansen Bailey (2011) *Environmental Assessment Statement - Maules Creek Coal Mine Environmental Assessment*. Report for Aston Coal 2 Pty Limited.

Heinsohn, R. et al. (2015) 'A severe predator-induced population decline predicted for endangered, migratory swift parrots (*Lathamus discolor*)', *Biological Conservation*, 186, pp. 75 - 82.

Idemitsu (2022) *Boggabri Coal Mine 2022 Annual Review (30 March 2023)*.

Idemitsu (2023) *2023 Annual Review (March 2024)*.

IUCN 2024. Swift Parrot. Available from: https://www.iucnredlist.org/ja/species/22685219/130886700.

MacNally, R. and Horrocks, G. (2000) 'Landscape-scale conservation of an endangered migrant:the Swift Parrot (Lathamus discolor) in its winter range', *Biological Conservation*, 92(3), pp. 335–343. Available from: https://doi.org/10.1016/S0006-3207(99)00100-7.

NSW Government (2010) Varied sittella (Daphoensitta chrysoptera) - vulnerable species listing. NSW Office of Environment & Heritage. Available from: https://www2.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations/2008-2010/varied-sittella-daphoensitta-chrysoptera-vulnerable-species-listing.

NSW Government (2019) Vegetation Condition Benchmarks V1.2. NSW Government Department of Climate Change, Energy, the Environment and Water. Available from: https://datasets.seed.nsw.gov.au/dataset/vegetation-condition-benchmarks-v1-2.

NSW Government (2022a) Swift Parrot - profile. NSW Office of Environment & Heritage. Available from: https://threatenedspecies.bionet.nsw.gov.au/profile?id=10455.

NSW Government (2022b) Speckled Warbler - profile. NSW Office of Environment & Heritage. Available from: https://threatenedspecies.bionet.nsw.gov.au/profile?id=10722.

NSW Government (2023) NSW State Vegetation Type Map. NSW Government Department of Climate Change, Energy, the Environment and Water. Available from: https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map.

NSW Government (2024a) BioNet Atlas - Species Sightings Search - Swift Parrot *Lathamus discolor*. Available from: https://atlas.bionet.nsw.gov.au/UI_Modules/ATLAS_/AtlasSearch.aspx. Accessed 2 November 2024.

NSW Government (2024b) Swift Parrot (*Lathamus discolor*): Saving our Species strategy. Available from: https://savingourspecies.environment.nsw.gov.au/project/645.

Premise (2024) *Maules Creek Continuation Project, EPBC Act Review of Threatened Species, Ecological Communities and Migratory Species*. Report for Whitehaven Coal Limited.

Resource Strategies (2012) *Tarrawonga Coal Project Environmental Assessment*. Report for Tarrawonga Coal Pty Ltd.

Saunders, D. and Russell, T. (2016) 'Settlement and Swift Parrots - historic and ongoing habitat loss for a critically endangered species (1788 - 2016)', *Papers and Proceedings of the Royal Society of Tasmania*, 150(2), pp. 55–74.

Stojanovic, D. et al. (2015) 'Exploiting the richest patch has a fitness pay-off for the migratory swift parrot', *Journal of Animal Ecology*, 84, pp. 1194–1201. Available from: https://doi.org/10.1111/1365-2656.12375.

Umwelt (2017) *Leard Forest Regional Biodiversity Strategy Stage 2 - Strategy Report*, Report for NSW Planning & Environment.

UN (2024) The Paris Agreement, Available from: https://www.un.org/en/climatechange/paris-agreement.

Webb, M.H., Stojanovic, D. and Heinsohn, R. (2019) 'Policy failure and conservation paralysis for the critically endangered swift parrot', *Pacific Conservation Biology*, 25(2), pp. 116–123.

Whitehaven Coal (2019) *Annual Review 2019 Tarrawonga Coal Mine*, Available from: https://whitehavencoal.com.au/Documentations/Tarrawonga%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Annual%20Reviews/TAR%20-%20Annual%20Review%202019.pdf?v=1695726595.

Whitehaven Coal (2021) *Offset Management Plan*, Available from: https://whitehavencoal.com.au/Documentations/Maules%20Creek%20Mine/Environmental%20Management,%20Monitoring%20&%20Compliance/Environmental%20Management%20Plans,%20Strategies%20and%20Programs/MCC-Offset%20Management%20Plan%20EPBC%20Approved.pdf?v=1695726608.

Whitehaven Coal (2023) *Application for the continuation of Maules Creek Coal Mine - December 2023*, Available from: https://whitehavencoal.com.au/wp-content/uploads/2024/02/December-2023-Maules-Creek-Continuation-Project-fact-sheet.pdf.

Appendix A - Survey data

Table A-1 - Historic records of Swift Parrots in the Leard

Sighting Key	Latitude (Y)	Longitude (X)	Date	Count	Location
SDFKI0169750	-30.57552	150.19109	10/08/2022	1	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SDFKI0169751	-30.57601	150.19072	10/08/2022	3	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SDFKI0169866	-30.57270	150.19003	11/08/2022	3	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SDFKI0169867	-30.57263	150.19077	11/08/2022	9	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SDFKI0169868	-30.57367	150.19232	11/08/2022	9	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SDFKI0169869	-30.57643	150.19212	11/08/2022	2	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SDFKI0169870	-30.57425	150.19133	03/08/2023	1	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SDFKI0169871	-30.57446	150.19099	03/08/2023	1	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SDFKI0169872	-30.57424	150.19098	03/08/2023	1	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SDFKI0169873	-30.57429	150.19092	03/08/2023	3	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SDFKI0169874	-30.57941	150.19221	03/08/2023	1	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SDFKI0169875	-30.58230	150.19475	03/08/2023	5	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SDFKI0169876	-30.58358	150.19519	03/08/2023	4	Intersection of Leards Forest Rd and Goonbri Rd, Boggabri, NSW, 2382
SLHPI0191203	-30.56136	150.19463	18/06/2014	4	Goonbri Road/ Leard Forest Road intersection, Boggabri
SLHPI0191204	-30.57506	150.19092	16/08/2012	1	North-east corner Leard State Forest, east Leard Forest Road, Boggabri
SLHPI0191205	-30.57536	150.19096	16/08/2012	1	North-east corner Leard State Forest, east Leard Forest Road, Boggabri

Sighting Key	Latitude (Y)	Longitude (X)	Date	Count	Location
SLHPI0191206	-30.57394	150.19064	16/08/2012	2	North-east corner Leard State Forest, east Leard Forest Road, Boggabri
SLHPI0191207	-30.57984	150.19240	15/08/2012	1	North-east corner Leard State Forest, east Leard Forest Road, Boggabri
SLHPI0191208	-30.57484	150.18941	13/08/2012	6	North-east corner Leard State Forest, east Leard Forest Road, Boggabri
SLHPI0191209	-30.57552	150.19006	12/08/2012	1	North-east corner Leard State Forest, east Leard Forest Road, Boggabri
SLHPI0191210	-30.57962	150.19235	12/08/2012	1	North-east corner Leard State Forest, east Leard Forest Road, Boggabri
SLHPI0191211	-30.57454	150.19099	10/08/2012	1	North-east corner Leard State Forest, east Leard Forest Road, Boggabri
SLHPI0191212	-30.57770	150.19179	09/08/2012	2	North-east corner Leard State Forest, east Leard Forest Road, Boggabri
SLHPI0191213	-30.58233	150.19479	09/08/2012	1	North-east corner Leard State Forest, east Leard Forest Road, Boggabri
SLHPI0191214	-30.57979	150.19231	09/08/2012	6	North-east corner Leard State Forest, east Leard Forest Road, Boggabri
SLHPI0191215	-30.57507	150.19096	09/08/2012	2	North-east corner Leard State Forest, east Leard Forest Road, Boggabri
SLHPI0191216	-30.61520	150.11131	16/08/2012	2	South-west corner of Leard State Forest, west Leard Forest Road, Boggabri

Note: Latitude & longitude data are in GDA94

Table A-2 - Bird species observed during surveys including national & NSW conservation status

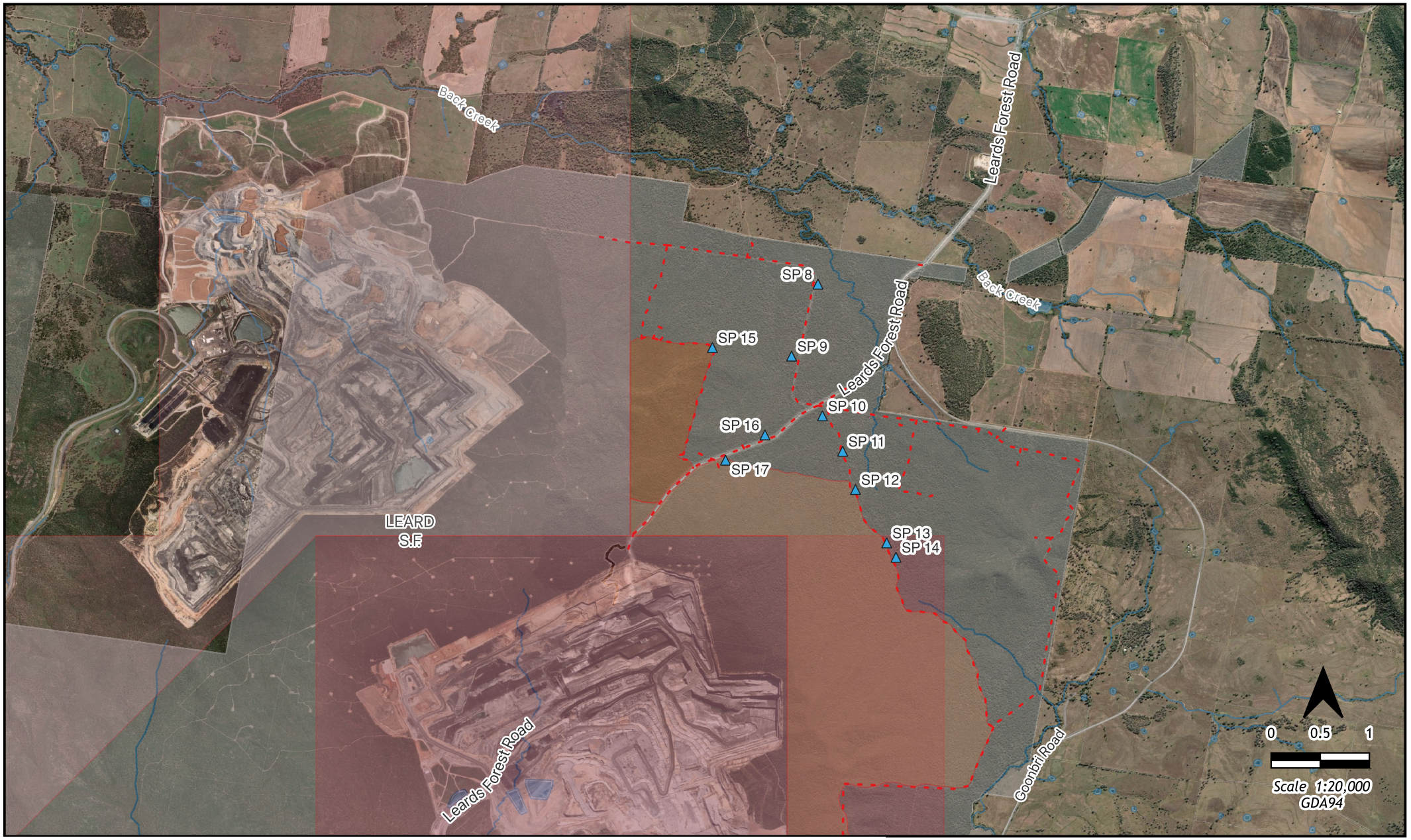
Common name	Scientific name	Observation type	Commonwealth conservation status	NSW conservation status
Apostlebird	*Struthidea cinerea*	Seen	---	---
Australian King-Parrot	*Alisterus scapularis*	Seen	---	---
Australian Owlet-nightjar	*Aegotheles cristatus*	Heard	---	---
Australian Raven	*Corvus coronoides*	Heard	---	---
Australian Ringneck	*Barnardius zonarius*	Seen	---	---
Bar-shouldered Dove	*Geopelia humeralis*	Heard	---	---
Black-chinned Honeyeater (eastern)	*Melithreptus gularis gularis*	Seen	---	Vulnerable
Black-eared Cuckoo	*Chalcites osculans*	Heard	---	---
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	Seen	---	---
Blue-faced Honeyeater	*Entomyzon cyanotis*	Seen	---	---
Brown-headed Honeyeater	*Melithreptus brevirostris*	Heard	---	---
Chestnut-rumped Thornbill	*Acanthiza uropygialis*	Seen	---	---
Cockatiel	*Nymphicus hollandicus*	Seen	---	---
Common Bronzewing	*Phaps chalcoptera*	Seen	---	---
Crested Pigeon	*Ocyphaps lophotes*	Seen	---	---
Diamond Firetail	*Stagonopleura guttata*	Seen	Vulnerable	Vulnerable
Double-barred Finch	*Taeniopygia bichenovii*	Seen	---	---

Common name	Scientific name	Observation type	Commonwealth conservation status	NSW conservation status
Dusky Woodswallow (eastern)	*Artamus cyanopterus cyanopterus*	Seen	---	Vulnerable
Eastern Rosella	*Platycercus eximius*	Seen	---	---
Eastern Shrike-tit	*Falcunculus frontatus*	Seen	---	---
Eastern Yellow Robin	*Eopsaltria australis*	Seen	---	---
Fan-tailed Cuckoo	*Cacomantis flabelliformis*	Seen	---	---
Fuscous Honeyeater	*Ptilotula fusca*	Seen	---	---
Galah	*Eolophus roseicapilla*	Seen	---	---
Golden Whistler	*Pachycephala pectoralis*	Seen	---	---
Grey Butcherbird	*Cracticus torquatus*	Heard	---	---
Grey Fantail	*Rhipidura albiscapa*	Seen	---	---
Grey Shrike-thrush	*Colluricincla harmonica*	Seen	---	---
Grey-crowned Babbler (eastern)	*Pomatostomus temporalis temporalis*	Seen	---	Vulnerable
Inland Thornbill	*Acanthiza apicalis*	Seen	---	---
Jacky Winter	*Microeca fascinans*	Seen	---	---
Laughing Kookaburra	*Dacelo novaeguineae*	Heard	---	---
Little Corella	*Cacatua sanguinea*	Heard	---	---
Little Friarbird	*Philemon citreogularis*	Seen	---	---

Common name	Scientific name	Observation type	Commonwealth conservation status	NSW conservation status
Little Lorikeet	*Glossopsitta pusilla*	Seen	---	Vulnerable
Little Raven	*Corvus mellori*	Heard	---	---
Mistletoebird	*Dicaeum hirundinaceum*	Seen	---	---
Musk Lorikeet	*Glossopsitta concinna*	Seen	---	---
Nankeen Kestrel	*Falco cenchroides*	Seen	---	---
Noisy Friarbird	*Philemon corniculatus*	Seen	---	---
Noisy Miner	*Manorina melanocephala*	Seen	---	---
Peaceful Dove	*Geopelia placida*	Seen	---	---
Pied Butcherbird	*Cracticus nigrogularis*	Heard	---	---
Pied Currawong	*Strepera graculina*	Seen	---	---
Purple-backed Fairy-wren	*Malurus assimilis*	Seen	---	---
Red-capped Robin	*Petroica goodenovii*	Seen	---	---
Red-rumped Parrot	*Psephotus haematonotus*	Seen	---	---
Red-winged Parrot	*Aprosmictus erythropterus*	Seen	---	---
Rufous Fantail	*Rhipidura rufifrons*	Heard	---	---
Rufous Whistler	*Pachycephala rufiventris*	Seen	---	---
Shining Bronze-cuckoo	*Chalcites lucidus*	Heard	---	---
South-eastern Brown Treecreeper	*Climacteris picumnus victoriae*	Seen	Vulnerable	Vulnerable

Common name	Scientific name	Observation type	Commonwealth conservation status	NSW conservation status
Speckled Warbler	*Pyrrholaemus sagittatus*	Seen	---	Vulnerable
Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*	Seen	---	---
Spotted Bowerbird	*Chlamydera maculata*	Seen	---	---
Spotted Pardalote	*Pardalotus punctatus*	Heard	---	---
Striated Pardalote	*Pardalotus striatus*	Seen	---	---
Striped Honeyeater	*Plectorhyncha lanceolata*	Seen	---	---
Superb Fairy-wren	*Malurus cyaneus*	Seen	---	---
Tree Martin	*Petrochelidon nigricans*	Seen	---	---
Turquoise Parrot	*Neophema pulchella*	Seen	---	Vulnerable
Varied Sittella	*Daphoenositta chrysoptera*	Seen	---	Vulnerable
Wedge-tailed Eagle	*Aquila audax*	Seen	---	---
Weebill	*Smicrornis brevirostris*	Heard	---	---
Welcome Swallow	*Hirundo neoxena*	Seen	---	---
Western Gerygone	*Gerygone fusca*	Seen	---	---
White-bellied Cuckoo-shrike	*Coracina papuensis*	Seen	---	---
White-plumed Honeyeater	*Ptilotula penicillata*	Seen	---	---
White-throated Treecreeper	*Cormobates leucophaea*	Heard	---	---
White-winged Chough	*Corcorax melanorhamphos*	Heard	---	---
Willie Wagtail	*Rhipidura leucophrys*	Seen	---	---

Common name	Scientific name	Observation type	Commonwealth conservation status	NSW conservation status
Yellow Thornbill	*Acanthiza nana*	Seen	---	---
Yellow-faced Honeyeater	*Caligavis chrysops*	Seen	---	---



LEGEND

- Survey point
- Track
- Boggabri Coal & Tarrawonga Coal Exclusive Use Area
- Maules Creek Coal Exclusive Use Area
- Coal Mining Lease CL368 (Idemitsu)
- Coal Mining Lease CL375 (Whitehaven Coal)

Source: MinView (2024); NSW Government (2024); Esri (2025)

Figure A-1 - Survey points for rapid habitat assessment

Botanical Animal Ecology

Table A-3 - Rapid habitat assessment data & calculations

Variable / Site	SP 8	SP 9	SP 10	SP 11	SP 12	SP 13
Landform	Flat	Flat	Flat	Flat	Flat	Flat
Accessible freshwater?	Not present	Not present	Not present	Not present	Not present	Not present
Other nectivores present?	Y	Y	Y	Y	Y	Y
Dominant canopy species	White Box	White Box	White Box	White Box	White Box	White Box
Average canopy height (m)	20	20	20	20	20	20
Number of feed trees - TOTAL	6	6	5	7	5	7
Number of White Box *E. albens feed trees*	5	6	5	6	5	7
Number of Bimble Box *E. populnea feed trees*	1	---	---	---	---	---
Number of Blakely's Red Gum *E. blakelyi feed trees*	---	---	---	1	---	---
Number of large trees - TOTAL	3	4	3	1	2	3
Number of White Box *E. albens large trees*	3	4	3	1	2	3
Lerp abundance	0.1 - 10% foliage	0.1 - 10% foliage	0.1 - 10% foliage	0.1 - 10% foliage	0.1 - 10% foliage	0.1 - 10% foliage
Mistletoe abundance	1 - 10	0	1 - 10	1 - 10	1 - 10	1 - 10
White Box *E. albens flowering intensity*	Not present	Not present	<1% of maximum flowering	<1% of maximum flowering	<1% of maximum flowering	<1% of maximum flowering
Narrow-leaved Ironbark *E. crebra flowering intensity*	---	---	Not present	---	---	---
Bimble Box *E. populnea flowering intensity*	Not present	---	---	---	---	---
Blakely's Red Gum *E. blakelyi flowering intensity*	---	---	---	Not present	---	---
Box Mistletoe *A. miquelii flowering intensity*	Not present	Not present	Not present	Not present	Not present	Not present

Table A-3 (cont.) - Rapid habitat assessment data & calculations

Variable / Site	SP 14	SP 15	SP 16	SP 17	Average (per site)	Average (per ha)	Estimate of loss (# trees in 435 ha)
Landform	Flat	Slope	Flat	Flat	---	---	---
Accessible freshwater?	Not present	Not present	Not present	Not present	---	---	---
Other nectivores present?	Y	Y	Y	Y	---	---	---
Dominant canopy species	White Box	White Box	White Box	White Box	---	---	---
Average canopy height (m)	15	15	20	15	18.5	---	---
Number of feed trees - TOTAL	11	6	9	15	7.7	123.2	53,592
Number of White Box *E. albens feed trees*	11	6	9	14	7.4	118.4	51,504
Number of Bimble Box *E. populnea feed trees*	---	---	---	1	---	---	---
Number of Blakely's Red Gum *E. blakelyi feed trees*	---	---	---	---	---	---	---
Number of large trees - TOTAL	2	2	3	5	2.8	44.8	19,488
Number of White Box *E. albens large trees*	2	2	3	5	2.8	44.8	19,488
Lerp abundance	0.1 - 10% foliage	0.1 - 10% foliage	0.1 - 10% foliage	0.1 - 10% foliage	---	---	---
Mistletoe abundance	1 - 10	1 - 10	10 - 20	1 - 10	---	---	---
White Box *E. albens flowering intensity*	<1% of maximum flowering	Not present	<1% of maximum flowering	<1% of maximum flowering	---	---	---
Narrow-leaved Ironbark *E. crebra flowering intensity*	Not present	---	---	---	---	---	---
Bimble Box *E. populnea flowering intensity*	---	---	---	---	---	---	---
Blakely's Red Gum *E. blakelyi flowering intensity*	---	---	---	---	---	---	---
Box Mistletoe *A. miquelii flowering intensity*	Not present	Not present	Not present	Not present	---	---	---

Table A-4 - Targeted survey conditions data

Survey ID	SP 1	SP 2	SP 3	SP 4	SP 5	SP 6	SP 7	SP 8	SP 9	SP 10
Date	12/08/2024	12/08/2024	12/08/2024	13/08/2024	13/08/2024	13/08/2024	14/08/2024	14/08/2024	14/08/2024	14/08/2024
Time	08:00	11:00	16:00	08:57	12:00	16:11	08:28	13:48	14:24	15:18
Wind	Light breeze	Gentle breeze	Calm	Light breeze	Calm	Light air	Light air	Gentle breeze	Gentle breeze	Light air
Wind speed (km/hr)	6 - 11	12 - 19	<1	6 - 11	<1	1 - 5	1 - 5	12 - 19	12 - 19	1 - 5
Rainfall	---	Slight rain	---	---	---	---	Slight drizzle	---	---	---
Cloud cover	90 - 100%	90 - 100%	90 - 100%	90 - 100%	90 - 100%	90 - 100%	90 - 100%	90 - 100%	90 - 100%	90 - 100%
Weather	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy
Temperature (C)	11	17	18	16	20	14	15	17	17	17
Landform	Spur	Flat	Flat	Slope	Gully	Slope	Flat	Flat	Flat	Flat
Accessible freshwater?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other nectivores present?	N	Y	Y	Y	Y	N	N	Y	Y	Y
Dominant canopy species	White Box	White Box	White Box	White Box	White Box	Narrow-leaved Ironbark	White Box / Grey Box	White Box	White Box	White Box

Survey ID	**SP 11**	**SP 12**	**SP 13**	**SP 14**	**SP 15**	**SP 16**	**SP 17**	**SP 18**	**SP 19**	**SP 20**	**SP 21**
Date	15/08/2024	15/08/2024	15/08/2024	15/08/2024	15/08/2024	15/08/2024	15/08/2024	16/08/2024	16/08/2024	19/08/2024	20/08/2024
Time	08:30	09:14	09:54	11:10	13:35	15:09	15:43	07:54	11:54	11:55	15:41
Wind	Calm	Calm	Light air	Calm	Light air	Light air	Light air	Calm	Light air	Gentle breeze	Gentle breeze
Wind speed (km/hr)	<1	<1	1 - 5	<1	1 - 5	1 - 5	1 - 5	<1	1 - 5	12 - 19	12 - 19
Rainfall	Slight rain	Moderate rain	Moderate rain	---	---	---	---	---	---	---	---
Cloud cover	90 - 100%	90 - 100%	90 - 100%	90 - 100%	90 - 100%	30 - 70%	30 - 70%	Sky obscured	70 - 90%	30 - 70%	0 - 10%
Weather	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Partly cloudy	Partly cloudy	Fog	Mostly cloudy	Partly cloudy	Clear
Temperature (C)	15	16	16	17	18	19	19	14	17	18	23
Landform	Flat	Flat	Flat	Flat	Slope	Flat	Flat	Gully	Gully	Gully	Flat
Accessible freshwater?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Ephemeral Stream	Ephemeral Stream	Puddle	Puddle
Other nectivores present?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Dominant canopy species	White Box	White Box	White Box	White Box	White Box	White Box	White Box	White Box	White Box	White Box	White Box

Appendix B - EPBC Act Protected Matters report

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 13-May-2024

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	8
Listed Threatened Species:	46
Listed Migratory Species:	10

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	3
Commonwealth Heritage Places:	None
Listed Marine Species:	18
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	11
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	900 - 1000km upstream from Ramsar site	In feature area
Riverland	900 - 1000km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	1100 - 1200km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities			[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community likely to occur within area	In feature area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community may occur within area	In feature area
Mount Kaputar land snail and slug community	Endangered	Community likely to occur within area	In buffer area only
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community likely to occur within area	In feature area
New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands	Critically Endangered	Community may occur within area	In buffer area only
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community likely to occur within area	In feature area
Weeping Myall Woodlands	Endangered	Community likely to occur within area	In feature area

Community Name	Threatened Category	Presence Text	Buffer Status
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat known to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Lophochroa leadbeateri leadbeateri Major Mitchell's Cockatoo (eastern), Eastern Major Mitchell's Cockatoo, Pink Cockatoo (eastern) [82926]	Endangered	Species or species habitat may occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat known to occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area	In feature area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
FISH			
Bidyanus bidyanus Silver Perch, Bidyan [76155]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Maccullochella peelii			
Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area	In feature area
MAMMAL			
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat known to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
Nyctophilus corbeni			
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat known to occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat may occur within area	In buffer area only
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Pseudomys pilligaensis			
Pilliga Mouse, Poolkoo [99]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
Androcalva procumbens			
[87153]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bertya mollissima [18382]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Cadellia pentastylis Ooline [9828]	Vulnerable	Species or species habitat known to occur within area	In feature area
Callistemon pungens [55581]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area
Homopholis belsonii Belson's Panic [2406]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium aschersonii Spiny Peppercress [10976]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lepidium monoplocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat known to occur within area	In feature area
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Swainsona murrayana Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat may occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Vincetoxicum forsteri listed as Tylophora linearis [92384]	Endangered	Species or species habitat likely to occur within area	In feature area
REPTILE			
Anomalopus mackayi Five-clawed Worm-skink, Long-legged Worm-skink [25934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat likely to occur within area	In feature area
Uvidicolus sphyrurus Border Thick-tailed Gecko, Granite Belt Thick-tailed Gecko [84578]	Vulnerable	Species or species habitat known to occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area	In buffer area only
Migratory Wetlands Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [13296]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Corporation [13295]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [13297]	NSW	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Bubulcus ibis as Ardea ibis](#) Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Chalcites osculans as Chrysococcyx osculans](#) Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
[Neophema chrysostoma](#) Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
[Pterodroma cervicalis](#) White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In buffer area only
[Rostratula australis as Rostratula benghalensis (sensu lato)](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Leard	CCA Zone 3 State Conservation Area	NSW	In feature area
Mount Kaputar	National Park	NSW	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Boggabri Coal Mine SSD 09_0182 Modification 8	2021/8875		Assessment	In feature area
Extension to Existing Operations at Boggabri Coal Mine	2009/5256		Post-Approval	In feature area
Controlled action				
Maules Creek Coal Project	2010/5566	Controlled Action	Post-Approval	In feature area
Queensland Hunter Gas Pipeline, approximately 825 km in length	2008/4483	Controlled Action	Completed	In feature area
Rocglen Coal Mine Extension Project	2010/5502	Controlled Action	Post-Approval	In buffer area only
Tarrawonga Coal Project	2011/5923	Controlled Action	Post-Approval	In feature area
Vickery Coal Mine Extension Project, Gunnedah, NSW	2016/7649	Controlled Action	Post-Approval	In feature area
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Queensland Hunter Gas Pipeline, approximately 833 km in length	2008/4620	Not Controlled Action	Completed	In feature area
Tarrawonga Coal Mine Modification	2019/8531	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Vickery Coal Project	2012/6263	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Bioregional Assessments			[Resource Information]
SubRegion	BioRegion	Website	Buffer Status
Namoi	Northern Inland Catchments	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111