Carnaby's Cockatoo in Warradarge Region Western Australia.

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BACKGROUND

SynergyRED develops renewable energy projects, including wind farms, solar farms and battery storage, in south-west Australia.

SynergyRED is seeking to update advice regarding black cockatoos species in south-west Australia, and specifically for its wind farm locations, including the Warradarge Region.

Scope of Summary

Provide a separate technical report on south-west Australia black cockatoo species that includes the following for six locations namely: Warradarge, King Rocks, Burekup, Darkan, Scott River and Albany that includes the following.

1. Species occurrence, including likelihood;
2. Seasonal migration patterns, including changes over time;
3. Habitat preferences;
4. Main food sources, including changes over time;
5. Flight behaviour, including flight heights; and
6. Recommendations for timing of surveys.
7. Consideration of potential direct and indirect impacts from wind farms.

CARNABY'S COCKATOO SPECIES BACKGROUND INFORMATION

Carnaby's Cockatoo *Calyptorhynchus latirostris* (subgenus *Zanda*)
Carnaby's Cockatoo is listed as 'fauna that is rare or likely to become extinct' (generally referred to as threatened fauna) under the Western Australian Biodiversity Conservation Act 2016, Wildlife Conservation (Specially Protected Fauna) Notice 2010(2). It has been given a ranking of Endangered by the Western Australian Threatened Species Scientific Committee. It is also listed as Endangered under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.

Distribution

Carnaby's Cockatoo is endemic to the south-west of Western Australia, north to the lower Murchison River and east to Nabawa, Wilroy, Waddi Forest, Nugadong, Manmanning, Durokoppin,

Noogar (Moorine Rock), Lake Cronin, Ravensthorpe Range, head of Oldfield River, 20 km ESE of Coondingup and Cape Arid; also casual on Rottnest Island (Johnstone and Storr 1998).

Distribution map of Carnaby's Cockatoo.

Status and Habitat Preferences

Status

This species is a postnuptial nomad, tending to move west after breeding. For example, most birds breeding in Badgingarra, Dandaragan, Coorow and Moora region tend to move west after breeding into higher rainfall areas especially the near-coastal *Banksia* scrubs e.g. at Wanagarren Nature Reserve, Nilgen Nature Reserve and Yanchep area, then many of these move further south on the Swan Coastal Plain to areas such as Neerabup, Gnangara, Wanneroo, Burns Beach and including the Perth metropolitan area.

It is uncommon to common in the subhumid zone and wetter parts of the semiarid zone, scarce and patchily distributed in the drier parts of its range (north of Arrowsmith Lake and east of Marchagee, New Norcia, Toodyay, Tarin Rock and Lake Magenta) and scarce to

moderately common in deep south-west (south of Margaret River, Nannup and Bridgetown and east of Albany).

Usually occur in pairs or small flocks, also large flocks (up to 10,000) in non-breeding season (late spring to mid-winter), especially at *Banksia* scrubs and pine plantations on the northern Swan Coastal Plain. Because of the large-scale post-war clearing of semiarid sandplains, this species has declined in much of the wheatbelt. There has been an apparent shift in its breeding range further west and south since the middle of last century with a more rapid increase in the past 40 years into the Jarrah-Marri forests of the Darling Scarp and the Tuart forests of the Swan Coastal Plain.

Preferred Habitat and Food

Generally, favours proteaceous scrubs and heaths and adjacent woodlands and forests, this species has also adapted to feeding on plantations of *Pinus* spp. which were introduced in the early 1930s. They have been observed feeding on a wide range of foods including seeding *Banksia, Dryandra, Corymbia, Eucalyptus, Hakea, Grevillea, Lambertia, Melaleuca, Pinus, Callitris, Jacaranda, Helianthus, Macadamia, Prunus, Liquidambar, Mesomelaena, Citrullus* and *Erodium*; also flower buds, flowers and nectar of *Banksia, Callistemon, Corymbia, Dryandra, Eucalyptus, Grevillea* and *Protea,* and insect larvae and insects from under bark and from wood of live or dead trees and shrubs. Also farmlands, especially with crops of Canola and weeds including storksbill.

Roost sites include stands of River Gums, Flat-topped Yates, exotic eucalypts and pines.

Breeding

Breeding is recorded from early July to mid-December. Mainly in semiarid and subhumid interior from the lower Murchison, Three Springs district south to the Stirling Range, west to Cockleshell Gully, Cataby, Regans Ford, Gingin, Yanchep, Serpentine, Mandurah, Lake Clifton, Bunbury, Nannup and Tone River and east to Manmanning, Kellerberrin, Woolundra, Lake Cronin, Hatters Hill and near Ravensthorpe (Storr–Johnstone Bird Data Bank). There has been an apparent shift in its breeding range further west and south since the middle of last century with a more rapid increase in the past thirty years in the Darling Range and Tuart forests of the Swan Coastal Plain.

Small numbers breed in patches of Wandoo on the Coorow-Green Head Road, also at Cockleshell Gully, in Lesueur National Park and along Marchagee Track.

Breeding Requirements

Carnaby's Cockatoo display strong pair bonds and mate for life. They nest in hollows of smooth-barked eucalypts especially Salmon Gum *Eucalyptus salmonophloia* and Wandoo *Eucalyptus wandoo* but nests have also been found in other eucalypts including York Gum *Eucalyptus loxophleba,* Flooded Gum *Eucalyptus rudis,* Tuart *Eucalyptus gomphocephala* and the rough-barked Marri *Corymbia calophylla.* On the Swan Coastal Plain most nests are in Tuart.

In the central wheatbelt, Three Springs, Coorow, Watheroo, Badgingarra and Dandaragan region, pairs begin to move back to their breeding sites in September-October (some as late as mid-November) and begin renovating or looking for a suitable nest hollow. Eggs are laid on a mat of wood chips at the bottom of a large hollow (mostly top entry hollows) ranging from a few centimetres to 5 m deep; clutch 1-2 (mostly two but only one young rarely two reared). Incubation lasts 29 days and only the female incubates and broods. The nestling is brooded by the female during which time both rely on the male for food. The female then leaves the nest each day at dawn, sometimes returning mid-morning (with the male) to feed the chick. After about 2-3 weeks she ceases to brood, and the chick is fed by one or both parents in the morning and late evening. Breeding success is largely dependent on suitable feeding habitat adjacent to the nest site to provide the necessary food for the survival of the chick.

Social Organisation, Flocking and Migration and Movements

Most breeding in the northern wheatbelt is completed by the end of January or early February and family groups begin to move west towards the coast and amalgamate into larger foraging flocks on the northern section of the Swan Coastal Plain.

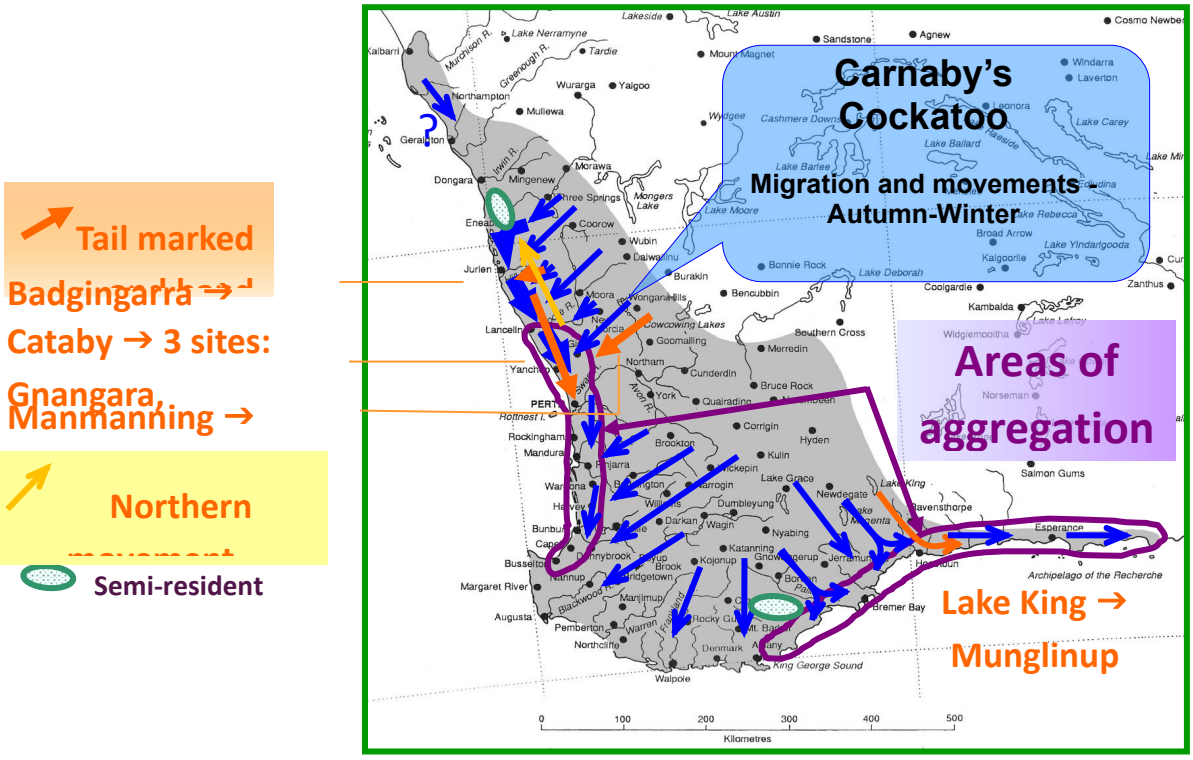
However, there are some exceptions to this westward and southward yearly movement. For example, tracking data has shown post-breeding movement from Cataby to as far north as Dongara and the Chapman Valley (approximately 290 km) in late March-April. Additionally, a flock of 300–400 birds (including adult and juvenile) remain during the autumn-winter period in the Eneabba area. These birds roost in tall river gums in and around the township and forage in both remnant native vegetation and adjacent farmlands.

Judging from the few banding recoveries and tail marked birds there is a strong movement of birds from the northern wheatbelt west and south onto the coastal plain. For example a female banded at a breeding site at Manmanning on 1 December 1971, was shot near Gingin on 27 February 1972 (a distance of 138 km WSW); a bird banded at Badgingarra on 15 November 1970 was hit by a car near Jurien Bay on 21 April 1973 (a distance 56 km WNW); and three tail-marked chicks from Cataby were recorded in the Perth region (Gnangara pine plantation, at Wanneroo and at Cottesloe, a distance of approximately 160 km SSW from their fledging site).

The latter tail marking study provided valuable information on the migration pathway of birds from the central wheatbelt west and south onto the Swan Coastal Plain.

Of interest also was a female tagged and tracked from Cataby to Chapman Valley. On 2 March 2023 she was at Cataby, on 5 March 30 km north of Geraldton, and by 6 March 2023, had relocated 250 km north of Cataby to the Chapman Valley. A flock of about 150–170 was estimated at the Chapman valley autumn roost on 26 April 2023 (Z. Kissane pers. comm). This northward movement is unusual for mid-west populations, with most birds in the past moving south-west onto the Swan Coastal Plain in autumn-winter.

Judging from recent surveys there is a proportion of populations in the mid-west that are becoming more sedentary and remaining in or near their breeding area post breeding.



Migration and Movements in the Warradarge area

Most if not all of the Carnaby's Cockatoos that occur in the Warradarge area are non-breeding autumn-winter visitors probably from breeding sites well to the north-east and east of Warradarge i.e. Three Springs-Carnamah region and west in the Mt Peron-Lesueur region (Cockleshell Gully and Stockyard Gully). Virtually all the Carnaby's Cockatoos that breed in the northern and mid-western parts of the wheatbelt are post-nuptial migrants, tending to move west after breeding in January-February to the coast then south onto the Swan Coastal Plain.

Judging from our data bank all birds from the Three Springs, Carnamah, Coorow, Dandaragan, Badgingarra and Moora regions completely vacate their breeding sites by the end of February and aggregate into large flocks in the Kwongan heaths and pine plantations on the northern Swan Coastal Plain. Occasionally a flock of 60–100 birds remain in the Badgingarra National Park area into March-April. The reverse migration occurs in July-August (sometimes later) as birds return to their breeding sites. The exception to this movement is the large flock of about 300–400 that remain in the Eneabba region throughout the entire autumn-winter period.

The Eneabba flock roosts in the township in tall river gums and leave the roost at dawn each day to forage in patches of native vegetation including remnant vegetation and mine site rehabilitation areas and in adjacent farmlands.

This flock has been observed foraging mainly in patches of remnant bushland on Eneabba Creek just north of Eneabba township, areas west of the Eneabba mine, areas around Lake Indoon and cleared farmlands to the east and west of the township. One of the main foods reported on farmlands were the seeds of the Afghan or Pie Melon *Citrullus lanatus* a summer growing annual native to Africa that is widespread in paddocks and along roadsides in the Eneabba area. The melon has a large spherical fruit (up to 15 cm across) that is produced in the autumn at a time when Carnaby's Cockatoos are arriving in the area. It has large seeds

and Carnaby's Cockatoos were observed feeding on the seeds of recently broken green melons and old yellow and rotted melons. This cockatoo has not been recorded feeding on Pie Melons in any other part of its range.

The Eneabba flock may forage and roost as far south as Warradarge, depending on rainfall and flowering of Banksias etc., as well as fires that destroyed large areas of foraging habitat in the Eneabba region over past few years.

Also noteworthy on a regional basis are reports of large numbers feeding in *Banksia* woodland in the Arrowsmith floodout 20 km north of Eneabba and the Lake Logue and Beekeepers Nature Reserve areas in July 2008. Also, more recently in July 2022 a flock of over 500 was photographed feeding in *Banksia* woodland near Jurien Bay, no doubt birds returning to mid-west breeding sites.

Observations for Warradarge Region from Storr-Johnstone Bird Data Bank

K. Spurge, 26 February 2002. Flock of 1000 at Bidgerabbie Hill. Evening came into drink then flew off to SE returning in morning to feed on Redgum (Marri).

M. Mannion,4 September 2008. Group of birds flying high over Badgingarra, heading north.

M. Mannion,4 September 2008.Single bird calling on the wing as it flew eastward along the Jurien Bay Road.

M. Mannion, 19 January 2009. Flock of 100 flying across Brand Highway from tall pines on east of highway down Banovich Road in westerly direction at Warradarge. A few minutes later the same group observed in low heath north of Banovich Road flying low along valley near powerline corridor in northerly direction. Birds stopped and foraged in farm paddocks near native vegetation.

M. Mannion, 22 January 2009. Flock of 20-40 in tall eucalypts behind Badgingarra post office.

M. Mannion, 7 February 2009. Flocks absent from Warradarge area for past two weeks.

M. Mannion, February 2009. The Warradarge Roadhouse owner reported that birds were roosting in trees behind the roadhouse flying in from south-west but not seen for past month.

M. Mannion, 20 February 2009. Warradarge, 5 birds flying west across the Brand Highway north of roadhouse between rows of pines on each side of road.

M. Mannion, 27 February 2009. Recorded birds calling from pines just north of Warradarge Roadhouse.

M. Mannion, 4 June 2009. Warradarge, 2 birds flying west over Brand highway just south of roadhouse.

M. Mannion, 11 June 2009. Warradarge, large flock playing high up in strong westerly wind near pines at Banovich Road.

R. E. Johnstone and T. Kirkby, 22 June 2009 flocks of 150 and 70 were observed feeding on *Banksia* nectar and *Pinus* seeds near the Marchagee Track turn off.

M. Mannion, 25 June 2009. Warradarge, flock feeding in road verge on ridge immediately north of Banovich Road.

M. Mannion, 13 August 2009. Warradarge, flock of about 100 feeding in native vegetation in road verge to east of parking bay to south of Banovich Road.

R. E. Johnstone and T. Kirkby, on 18 August 2009 at 0630 hr a flock of 73 left the Eneabba roost site (Darling Street at 29. 49. 22.6 S, 115. 16. 23.2 E) and flew, fast and direct to the

south. At the same time a small group was heard heading west. At 0715 hr the flock of 73 was recorded feeding on *Dryandra sessilis* and seeds from *Banksia attenuata* near the Eneabba rubbish tip access road at 29. 50. 27.6 S, 115. 16. 39.2 E. At one stage this group flew up to meet a group of Red-tailed Black Cockatoos flying high towards the west. This mixed flock then flew north for a short distance before the Carnaby's Cockatoos returned.

Another interesting observation is a flock of 30 and later 40 playing on thermals and moving north to join another flock when a Wedge-tailed Eagle was overhead. Recent evidence was also found of birds feeding on *Dryandra sessilis* and *Dryandra* spp. 11 km south of Eneabba.

R.E. Johnstone and T. Kirkby, September 2009 pairs and small flocks were recorded flying into Wandoo woodland at 1700 hr at Dookanooka Nature Reserve at 29°36'00" S, 115°38'09" E. Also two nest trees were located in the Dookanooka Nature Reserve at 29. 35. 55 S, 115. 38. 28.1 E. Adjacent to this site were other patches of woodland that were potential breeding areas including areas of woodland at 29. 35. 21 S, 115. 41. 17 E and 29. 34. 35 S, 115. 41. 58 E on both sides of road.

R.E. Johnstone, 25 September 2009 a breeding pair was observed (female flushed from hollow) at a hollow in a Wandoo at a creek crossing on the Green Head Road at 30. 04. 10.8 S, 115. 14. 35.7 E. A flock of 50 had been feeding for the past month in *Banksia* woodland near Jurien opposite the turn off to Drovers Cave Road (G. Briggs pers. comm). This is the westernmost breeding record for this region and judging from the habitat available there is probably a small breeding population in this patch of Wandoo.

R. E. Johnstone, some sections of the Dandaragan – Moora and Dandaragan – Gingin Roads, road verges contain trees with suitable hollows, but no evidence of breeding has been reported. The Storr – Johnstone Bird Data Bank contains breeding records at 15 and 17 km south of Dandaragan on the Gingin Road.

R. E. Johnstone and T. Kirkby. Small numbers are recorded breeding on the central section and western end of the Marchagee Track at Coomallo Creek and Herschell Range area (Johnstone and Kirkby 2008); and about 40 – 50 pairs breed in the Waddi Forest area west of Coorow (Storr – Johnstone Bird Data Bank). North of Coorow we located patches of York Gum and Salmon Gum woodland with potential breeding hollows at 29. 50. 51 S, 116. 00. 49 E and patches of Salmon Gum woodland at 29. 49. 12 S, 116. 00. 01 E and at Petah Creek crossing at 29. 46. 45 S, 115. 56. 03 E. There was also an extensive patch of Wandoo woodland with many large trees at 29. 28. 38.7 S, 115. 40. 12.4 E (on private property).

Diet

In the food descriptions, the genus *Dryandra* has been retained contra Mast and Thiele (2007) who combined *Dryandra sessilis* as *Banksia sessilis*, *Dryandra praemorsa* as *Banksia undata* and *Dryandra lindleyana* as *Banksia dallanneyi*.

Carnaby's Cockatoo has been observed feeding on a wide range of foods including the seeds of *Banksia incrassata, B. baxteri, B. coccinea, B. menziesii, B. grandis, B. prionotes, B. speciosa, B. ilicifolia, B. longifolia, B. ericifolia, B. quercifolia, B. hookeriana, Dryandra fraseri, D. praemorsa, D. carlinoides, D. squarrosa, D. sessilis, Corymbia calophylla, C. citriodora, Eucalyptus patens, E. todtiana, E. marginata, E. caesia, E. salmonophloia, Hakea erinacea, H. laurina, H. incrassate, H. lasiantha, H. lissocarpha, H. stenocarpa, H. trifurcata, Hakea undulata, H. prostrata, H. lasianthoides, H. cucullata, Grevillea* spp., flower buds, flowers and nectar of *Banksia attenuata, B. ericifolia, B. grandis, B. ilicifolia, B.*

menziesii, Callistemon spp., *Corymbia calophylla, Dryandra lindleyana, D. squarrosa, D. sessilis, D. purdieana, D. erythocephala, Eucalyptus erythrocorys, E. gomphocephala, E. patens, E. robusta, Grevillea robusta, Stenocarpus sinuatus, Protea* spp., insect larvae and insects (including weevils) from under bark, from wood of live and dead trees and shrubs, from galls and from flowers and flower stems, of Acacia spp. (including *A. saligna* and *A. pentedenia*) *Banksia* spp., *Eucalyptus* spp., *Jacksonia, Agonis* and *Xanthorrhoea*; exotic trees and weeds including *Pinus* spp. (including *P. radiata, P. caribaea* and *P. canariensis*), *Callitris, Jacaranda, Helianthus, Macadamia, Prunus, Carya, Liquidambar styraciflua, Mesomelaena* spp., *Citrullus lanatus* and *Erodium* spp.; also the flesh and juice of apples and persimmons. Also recorded feeding on windrows of Canola and spilled seed on ground.

Important foods in the Warradarge region

Major food in the Warradarge- Eneabba region includes *Banksia* spp. (especially *B. attenuata, B. hookeriana, B. leptophylla, B. kippistiana* and *B. sessilis)*, *Hakea* spp. (especially *H. eneabba, H. spathulata, H. smilacifolia, H. polyanthema, H. psilorrhyncha, H. flabellifolia* and *H. costata)* and *Lambertia multiflora.* Also flower buds, flowers and nectar and insect larvae and insects from under bark and from wood of live or dead trees and shrubs. In farmland, Canola, Wild Radish *Raphanus raphanistrum,* Storksbill *Erodium botrys*, Pie Melon *Citrullus lanatus* and Lupins *Lupinus* are important foods. Probably also Canola from harvested windrows.

Foraging Habitat

In the Warradarge region foraging mainly in patches of remnant bushland e.g. in South Eneabba Nature Reserve, in road verges along the Coorow-Green Head Road, in Alexander Morrison National Park and to south in the Badgingarra National Park. Also in farm trees especially pines.

Recommended Timing for Surveys

Surveys for black cockatoos should be carried out in April-June and November-December to determine migration patterns and breeding season.

STATEMENT COCKATOOS AND WINDFARMS

General Observations of Habitat Usage and Potential Impacts of Wind Turbines

Carnaby's Cockatoo usually fly just above the ground in open areas, or just above the vegetation in heathlands or continuous tracts of vegetation. There are very few reports of birds flying at Turbine Rotor Sweep height. At Cataby, pairs and flocks flew between foraging sites and over cleared farmland at about 5-8 m and occasionally at 10-15 m and avoided the adjacent windfarm turbines and the power transmission towers.

On several occasions at Eneabba birds have been observed using thermals from large buildings, and on one occasion a flock was observed circling very high when pursued by pair of hunting Wedge-tailed Eagles. Also a literature record of White-tailed Black Cockatoos in acrobatics in hot air pillars formed by a fire in vent of huge hollow trunk of tree (D. Keast, WA Naturalist Vol 13, 8 p.205.) and M. Mannion observed a large flock playing in a strong westerly wind at Warradarge in June 2009.

At windfarms at Cataby, Walkaway, Emu Downs and Joanna Plains cockatoos appear to show a high avoidance of turbines and avoid or manoeuvre around them. Carnaby's Cockatoos also avoid power line towers but will occasionally perch on power lines and there is one record of a bird being killed by electrocution on power line in the Perth metro area.

A mortality monitoring programme conducted at Emu Downs Wind Farm between 2006-2008 reported only three birds a Brown Songlark *Cincloramphus cruralis* a Black-shouldered Kite *Elanus caeruleus* and an Australian Raven *Corvus coronoides* that were believed to be collision related fatalities.

Monitoring at the Warradarge Wind Farm has comprised of incidental finds since operations commenced in 2020 and monthly monitoring with a sniffer dog since February 2025. As at end of May 2025, a total of 18 collision related bird fatalities have been recorded (namely 7 Australian Kestrels *Falco cenchroides*, 2 Eastern Barn Owls *Tyto javanica*, 3 Wedge-tailed Eagles *Aquila audax*, 1 Brown Falcon *Falco berigora,* 1 Australian Hobby *Falco longipennis* , 1 Australian Ringneck *Barnardius zonarius,* 1 Magpie lark *Grallina cyanoleuca*, 1 ? Singing Honeyeater or Grey Butcherbird and another unidentified or not identifiable passerine.

Birds most at risk of turbine strikes would be those visiting remnant bushland adjacent to turbines to feed e.g. migrant species including waterfowl and waders flying at night, birds of prey and other species using the updrafts and thermals to gain height e.g. Wedge-tailed Eagles, Kestrel and corvids (Australian Raven and Little Crow) that also favour high vantage points to perch as lookouts. Also night birds including owls and nightjars. Carnaby's Cockatoos would be most at risk moving from one foraging site to another. They would generally avoid turbines situated in open paddocks.

Our observations suggest that Black Cockatoos generally don't mind noise or light emissions, having been recorded roosting and breeding next too gravel extraction sites and live firing ranges, and verges on busy highways.

Cataby is one of the few areas where there is an operating wind farm (Yandin) close to a small breeding population of Carnaby's Cockatoo which has been monitored for over 20 years. Foraging habitat is present within a few hundred metres of turbines and breeding habitat as close as 3.5-4 km. This small breeding population has remained stable since the wind farm was commissioned in 2021.

Carnaby's Cockatoos at this location use both Cataby Brook and Minyulo Brook, as well as road verges, as their major flight lines, particularly to and from nest sites, and are sometimes recorded flying over open paddocks, especially on migration.

While it was not a specific objective of this monitoring program to assess changes in Carnaby's Cockatoo behaviour at the wind farm, we have not observed any Carnaby's Black Cockatoo flying towards turbines or high voltage towers, suggesting they may avoid close proximity to the wind farm. However, turbines have been well positioned in open farmland and so there is limited reason for this species to venture within the wind farm.

Risk of windfarm related mortality.

The principle threat to cockatoos from windfarms is from direct bird strikes by the turbines or by catching birds in the wind currents created by the turbines. Carnaby's Cockatoos generally fly at about 5-15 m above ground, occasionally 15 – 100 m above the ground (i. e. about turbine height) and rarely 100-300 above ground in thermals or avoiding birds of prey. Overall, we believe that the probability of birds encountering and flying into turbines is very low for the following reasons.

1. There is a low rate at which Carnaby's Cockatoos appear to visit open farmland in the Warradarge area.
2. Birds would be most at risk during their north-south migrations and when flying to and from roosting, feeding and watering sites however actual site utilization would be very low. The Warradarge project site is mostly cleared farmland and has little feeding, roosting and breeding habitat in close proximity.
3. Carnaby's Cockatoos generally fly below turbine height (5– 15 m.) Above ground they are very competent flyers in poor light (dawn, dusk and twilight) and would be capable of avoiding wind turbines. Our data bank contains several records of small flocks flying through the canopy of eucalypt woodlands at dusk; flying into and through pine plantations at dusk and dawn; and small groups returning to nest hollows in eucalypt woodlands after dark.
4. The Storr-Johnstone Bird Data Bank contains no records of cockatoos hitting power lines. There is however one record of a bird that died from electrocution after landing on a power pole. Concentration of birds at grain spills on major roads in the south-west results in high mortality from vehicle strikes. For example, up to three birds a day were killed by vehicle strikes along the Chester Pass Road (Stirling Range) in 2024. In the Perth area most road kills come from busy roads near pine plantations and from birds feeding in street trees or on road verges. Flocks of Carnaby's Cockatoos are regularly observed in Perth suburbs between late spring and mid-winter visiting pine groves and street trees and negotiating a maze of power lines and buildings.
5. Bird Impact Mortality Monitoring at Warradarge Windfarms has so far listed; 7 Australian Kestrels, 2 Eastern Barn Owls, 3 Wedge-tailed Eagles, 1 Brown Falcon, 1 Australian Hobby , 1 Australian Ringneck, 1 Magpie Lark , 1 ?Singing Honeyeater or Grey Butcherbird and 1 unidentified passerine bird. Other species recorded at another mid-west windfarm (Emu Downs) between 2006 and 2008 were Black-shouldered Kite, Australian Raven and Brown Songlark.
6. Carnaby's Cockatoos are unlikely to utilise the Warradarge site on a regular basis due to its position well away from any suitable feeding, breeding or roosting habitat so no impact of proposed development is anticipated.

CONCLUSION

Based on our current knowledge on Carnaby's Cockatoos in the Warradarge region I believe that this species is unlikely to be significantly affected by the proposed wind farm expansion. There will also be little direct or indirect impacts on birds as they are unlikely to be displaced from any significant area of foraging habitat. Carnaby's Cockatoos are known to be competent flyers and appear to be good at detecting and avoiding wind turbines. The current wind farm has shown that it is a source of mortality for local populations of some common species such as the Australian Kestrel, Eastern Barn Owl and Wedge-tailed Eagle.

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