

## 4. Threatened Species

### 4.1 Ecosystem Credit species

The following ecosystem credit species were returned by the ecosystem and paddock tree calculator as being associated with the PCTs present on the development site:

Table 4-1 Ecosystem credit species predicated by the BAM-C

CE = Critically Endangered, E = Endangered, V = Vulnerable

Common Name	Scientific Name	Vegetation Types(s)
<b>Barking Owl</b>  <b>V – BC Act</b>	<i>Ninox connivens</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion
<b>Black Falcon</b>  <b>V – BC Act</b>	<i>Falco subniger</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
<b>Black-chinned Honeyeater (eastern subspecies)</b>  <b>V – BC Act</b>	<i>Meliphreptus gularis gularis</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion
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<p><b>Brown Treecreeper (eastern subspecies)</b>  <b>V – BC Act</b></p>	<p><i>Climacteris picumnus victoriae</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p>
<p><b>Diamond Firetail</b>  <b>V – BC Act</b></p>	<p><i>Stagonopleura guttata</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p>
<p><b>Dusky Woodswallow</b>  <b>V – BC Act</b></p>	<p><i>Artamus cyanopterus cyanopterus</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p> <p>766-Carex sedgeland of the slopes and tablelands</p>
<p><b>Flame Robin</b></p>	<p><i>Petroica phoenicea</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p>

<p><b>V – BC Act</b></p>		<p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p>
<p><b>Gang-gang Cockatoo</b>   <b>V – BC Act</b></p>	<p><i>Callocephalon fimbriatum</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p>
<p><b>Glossy Black-Cockatoo</b>   <b>V – BC Act</b></p>	<p><i>Calyptorhynchus lathami</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p>
<p><b>Grey-crowned Babbler (eastern subspecies)</b>   <b>V – BC Act</b></p>	<p><i>Pomatostomus temporalis temporalis</i></p>	<p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p>
<p><b>Grey-headed Flying-fox</b>   <b>V – BC Act</b>  <b>V – EPBC Act</b></p>	<p><i>Pteropus poliocephalus</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p>

<p><b>Hooded Robin (south-eastern form)</b></p> <p><b>V – BC Act</b></p>	<p><i>Melanodryas cucullata cucullata</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p>
<p><b>Koala</b></p> <p><b>V – BC Act</b></p> <p><b>V – EPBC Act</b></p>	<p><i>Phascolarctos cinereus</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p>
<p><b>Large Bent-winged Bat</b></p> <p><b>V – BC Act</b></p>	<p><i>Miniopterus orianae oceanensis</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p>
<p><b>Little Eagle</b></p> <p><b>V – BC Act</b></p>	<p><i>Hieraaetus morphnoides</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion</p>

		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion
		766-Carex sedgeland of the slopes and tablelands
<b>Little Lorikeet</b>	<i>Glossopsitta pusilla</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>V – BC Act</b>		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
<b>Painted Honeyeater</b>	<i>Grantiella picta</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>V – BC Act</b>		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
<b>V - EPBC Act</b>		268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion
<b>Powerful Owl</b>	<i>Ninox strenua</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>V – BC Act</b>		
<b>Regent Honeyeater</b>	<i>Anthochaera phrygia</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>CE- BC Act</b>		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
<b>CE – EPBC Act</b>		268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion
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<p><b>Rosenberg's Goanna</b></p> <p><b>V – BC Act</b></p>	<p><i>Varanus rosenbergi</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p>
<p><b>Scarlet Robin</b></p> <p><b>V – BC Act</b></p>	<p><i>Petroica boodang</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p> <p>766-Carex sedgeland of the slopes and tablelands</p>
<p><b>Speckled Warbler</b></p> <p><b>V – BC Act</b></p>	<p><i>Chthonicola sagittata</i></p>	<p>1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion</p> <p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p>
<p><b>Spotted Harrier</b></p> <p><b>V – BC Act</b></p>	<p><i>Circus assimilis</i></p>	<p>266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</p> <p>277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion</p> <p>278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion</p>

		766-Carex sedgeland of the slopes and tablelands
<b>Spotted-tailed Quoll</b>	<i>Dasyurus maculatus</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>V – BC Act</b>		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
<b>E – EPBC Act</b>		268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion
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<b>Square-tailed Kite</b>	<i>Lophoictinia isura</i>	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
<b>V – BC Act</b>		268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
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<b>Superb Parrot</b>	<i>Polytelis swainsonii</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>V – BC Act</b>		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
<b>V – EPBC Act</b>		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion
<b>Swift Parrot</b>	<i>Lathamus discolor</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>E – BC Act</b>		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
<b>CE – EPBC Act</b>		268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion

		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
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<b>Turquoise Parrot</b>	<i>Lathamus discolor</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>V – BC Act</b>		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		268-White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
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<b>Varied Sittella</b>	<i>Daphoenositta chrysoptera</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>V – BC Act</b>		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
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<b>White-bellied Sea-Eagle</b>	<i>Haliaeetus leucogaster</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>V – BC Act</b>		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
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		278-Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South Western Slopes Bioregion
<b>White-fronted Chat</b>	<i>Epthianura albifrons</i>	766-Carex sedgeland of the slopes and tablelands
<b>V – BC Act</b>		
<b>White-throated Needletail</b>	<i>Hirundapus caudacutus</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>V – EPBC Act</b>		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
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		766-Carex sedgeland of the slopes and tablelands
<b>Yellow-bellied Glider</b>	<i>Petaurus australis</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>V – BC Act</b>		
<b>Yellow-bellied Sheath-tail-bat</b>	<i>Saccolaimus flaviventris</i>	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
<b>V – BC Act</b>		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		766-Carex sedgeland of the slopes and tablelands

#### 4.1.1 Species excluded from the assessment

No Ecosystem Credit Species were excluded from the assessment. All are considered to have suitable habitat within the development site.

## 4.2 Species Credit Species

The BAM Calculator predicted 25 species credit species to occur at the development site, as presented in Table 4-2. A desktop assessment was undertaken for habitat constraints and geographic restrictions to determine which species would be included or excluded for further targeted surveys in the development site.

#### **4.2.1 Candidate species to be assessed**

The candidate species to be assessed can be found in Table 4-2 (below).

Table 4-2 Candidate species credit species requiring assessment.

Species Credit Species	Habitat components and geographic limitations	Sensitivity to gain class	NSW Listing Status	National listing status	Habitat Components and abundance on site	Included /Excluded	Reason for Inclusion or exclusion
<b>Fauna Species</b>							
<b><i>Anthochaera phrygia</i></b> Regent Honeyeater	Mapped Important Areas	High	Critically Endangered	Critically Endangered	No mapped important habitat (ref)	Excluded	Development Site not within an area of Mapped Important Habitat
<b><i>Aprasia parapulchella</i></b> Pink-tailed Legless Lizard	Rocky areas or within 50m of rocky areas	High	Vulnerable	Vulnerable	Rocky areas within development site	Included	Habitat components within development site.
<b><i>Burhinus grallarius</i></b> Bush Stone-curlew	Fallen/standing dead timber including logs	High	Endangered	Not Listed	Fallen Timber within development site	Included	Habitat components within development site.
<b><i>Callocephalon fimbriatum</i></b>	Hollow bearing trees	High	Vulnerable	Not Listed	Abundant Hollow Bearing Trees	Included	Habitat components within

<b>Gang-gang Cockatoo (Breeding)</b>	Eucalypt Tree species with hollows greater than 9cm diameter				within development site		development site.
<b><i>Calyptorhynchus lathami</i> Glossy Black-Cockatoo (Breeding)</b>	Hollow bearing trees Living or dead trees with hollows greater than 15cm diameter and greater than 8cm above ground	High	Vulnerable	Not Listed	Abundant Hollow Bearing Trees within development site	Included	Habitat components within development site.
<b><i>Cercartetus nanus</i> Eastern Pygmy-possum</b>		High	Vulnerable	Not Listed		Included	Habitat components within development site.
<b><i>Chalinolobus dwyeri</i> Large-eared Pied Bat</b>	Cliffs, or within 2km of rocky areas containing caves, overhangs, escarpments, outcrops or crevices or old mines and tunnels.	High	Vulnerable	Not Listed	No caves, mines or tunnels within 2km locality	Excluded	Habitat components not within development site.
<b><i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle (Breeding)</b>	Living or dead mature trees within 1km of a river, lake, large dam, creeks, wetlands and coastlines	High	Vulnerable	Not Listed	Development site not within 1km of large waterbody	Excluded	Habitat components not within development site.

<b><i>Hieraaetus morphoides</i></b> <b>Little Eagle</b> <b>(Breeding)</b>	Nest trees – live (occasionally dead large old trees within vegetation)	Moderate	Vulnerable	Not Listed	Large paddock trees within development site	Included	Habitat components within development site.
<b><i>Lathamus discolor</i></b> <b>Swift Parrot</b> <b>(Breeding)</b>	Mapped Important Areas	Moderate	Endangered	Critically Endangered	No mapped important habitat (ref)	Excluded	Development Site not within an area of Mapped Important Habitat
<b><i>Litoria booroolongensis</i></b> <b>Booralong Frog</b>	Permanent Streams with fringing vegetation cover and cobble banks or other rock structures.	High	Endangered	Endangered	No permanent streams or large wetlands within development site.	Excluded	No Habitat components within development site.
<b><i>Litoria castanea</i></b> <b>Spotted Tree Frog</b>	Require large permanent ponds or slow flowing 'chain-of-ponds' streams with abundant emergent vegetation such as bulrushes and aquatic vegetation.	Very High	Critically Endangered	Endangered	No permanent streams or large wetlands within development site.	Excluded	No Habitat components within development site.
<b><i>Lophoictinia isura</i></b> <b>Square-tailed Kite</b>	Nest Trees	Moderate	Vulnerable	Not Listed	Large Paddock Trees within development site	Included	Habitat components within

<b>(Breeding)</b>							development site.
<b><i>Miniopterus oriana</i> <i>oceanensis</i> Large Bent-winged Bat (Breeding)</b>	Caves, Tunnels, Mine, Culverts or other structures known to be used for breeding. Nest roosts with number of individuals greater than 500.	Very High	Vulnerable	Not Listed	No Caves, tunnels or mines known as roosts in development site.	Excluded	No habitat components within development site.
<b><i>Myotis Macropus</i> Southern Myotis</b>	Hollow bearing trees, bridges, caves or artificial structure within 200m of riparian zones. (Rivers, creeks, billabongs, lagoons, dams)	High	Vulnerable	Not Listed	Abundant hollow bearing trees within development site	Included	Habitat components within development site.
<b><i>Ninox connivens</i> Barking Owl (Breeding)</b>	Hollow bearing trees Living or dead trees with hollows greater than 20cm diameter and greater than 4m above the ground	High	Vulnerable	Not Listed	Abundant hollow bearing trees within development site	Included	Habitat components within development site.
<b><i>Ninox strenua</i> Powerful Owl</b>	Hollow bearing trees Living or dead trees with hollows greater than 20cm diameter.	High	Vulnerable	Not Listed	Abundant hollow bearing trees within development site	Included	Habitat components within development site.

<b><i>Petauroides volans</i></b> <b>Greater Glider</b>	Tall, montane moist eucalypt forests.	High	Not Listed	Vulnerable	No tall montane moist eucalypt forests.	Excluded	Habitat absent within development site.
<b><i>Petaurus norfolcensis</i></b> <b>Squirrel Glider</b>	Hollow bearing trees	High	Vulnerable	Not Listed	Abundant hollow bearing trees within development site	Included	Habitat components within development site.
<b><i>Phascolarctos cinereus</i></b> <b>Koala</b>	Areas identified as important habitat	High	Vulnerable	Vulnerable	Feed trees present within development site	Included	Habitat components within development site.
<b><i>Phascogale tapoatafa</i></b> <b>Brush-tailed Phascogale</b>	Hollow bearing trees	High	Vulnerable	Not Listed	Abundant hollow bearing trees within development site	Included	Habitat components within development site.
<b><i>Polytelis swainsonii</i></b> <b>Superb Parrot (Breeding)</b>	Hollow bearing trees, living or dead E. Blakelyi, E. melliodora, E. albens, E. camaldulensis, E. microcarpa, E. polyanthemos, E. mannifera, E. intertexta with hollows greater than 5cm diameter	High	Vulnerable	Vulnerable	Abundant hollow bearing trees within development site	Included	Habitat components within development site.

	and greater than 4m above ground.						
<b><i>Pteropus Poliocephalus</i></b> <b>Grey-headed Flying Fox (Breeding)</b>	Breeding Camps	High	Vulnerable	Vulnerable	No breeding camps detected within development site	Excluded	No Habitat components within development site.
<b>Flora Species</b>							
<b><i>Leucochrysum albicans</i> var. <i>tricolor</i></b> <b>Hoary Sunray</b>		Moderate	Not Listed	Endangered		Included	Suitable habitat in development site
<b><i>Swainsona recta</i></b> <b>Small Purple Pea</b>		Moderate	Endangered	Endangered		Included	Suitable habitat in development site
<b><i>Swainsona sericea</i></b> <b>Silky Swainson Pea</b>		High	Vulnerable	Not Listed		Included	Suitable habitat in development site
<b><i>Eucalyptus aggregata</i></b> <b>Black Gum</b>		High	Vulnerable	Vulnerable		Included	Suitable habitat in development site.



#### 4.2.2 Inclusions based on habitat features

An NSW Bionet search (BCD, 2021) was undertaken in August 2021 to determine if any further threatened species are considered likely to occur on the development site.

An EPBC protected matters search was also completed (Section Appendix F). No additional EPBC listed species were added to the calculator. All EPBC listed species likely to occur have already been included as part of the assessment.

No records of threatened species occur within the development site. Twelve records of the Superb Parrot (*Polytelis swainsonii*) occur within 1km of the development site. This species was already listed as a candidate species within the BAM-C. No other threatened species records occurred within 1km of the development site and no additional threatened species were added to the BAM-C.

#### 4.2.3 Candidate species requiring confirmation of presence of absence

The species listed in Table 4-3 are those considered to have habitat present within the development site. Targeted surveys have been used to assess each species as summarised below where the survey window allowed. Details of the survey methodologies and results are provided for each surveyed species in section 4.2.4 following and survey locations shown in Figure 4 1.

Table 4-3 List of species credit species requiring assessment.

Species Credit Species	Biodiversity risk weighting	Assumed to occur/survey/expert report	Present on site?	Species polygon area or count
<b>Fauna</b>				
<b>Reptiles</b>				
<i>Aprasia parapulchella</i> Pink-tailed Legless Lizard	2.0	Surveyed October 2018	No	n/a
<b>Mammals</b>				
<i>Cercartetus nanus</i> Eastern Pygmy-possum	2.0	Surveyed October 2018 and January 2019, September 2019 and July 2020.	No	n/a
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	3.0	Surveyed January 2019	No	n/a
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat	3.0	Surveyed January 2019	No	n/a

(Breeding)				
<i>Myotis Macropus</i> Southern Myotis	2.0	Surveyed January 2019	No	n/a
<i>Petaurus norfolcensis</i> Squirrel Glider	2.0	Surveyed October 2018 and January 2019	Yes	11.15 ha of woodland areas impacted
<i>Phascolarctos cinereus</i> Koala	2.0	Surveyed October 2018	No	n/a
<i>Phascogale tapoatafa</i> Brush-tailed Phascogale	2.0	Surveyed October 2018 and January 2019	No	n/a

**Aves**

<i>Anthochaera phrygia</i> Regent Honeyeater	3.0	Surveyed October 2018	No	n/a
<i>Burhinus grallarius</i> Bush Stone-curlew	2.0	Surveyed October 2018	No	n/a
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo (Breeding)	2.0	Surveyed October 2018	No	n/a
<i>Calyptorhynchus lathami</i> Glossy Black-Cockatoo (Breeding)	2.0	Surveyed September 2019 and July 2020.	No	n/a
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle (Breeding)	2.0	Surveyed October 2018	No	n/a
<i>Hieraetus morphnoides</i> Little Eagle (Breeding)	1.5	Surveyed September 2018	No	n/a
<i>Lophoictinia isura</i> Square-tailed Kite (Breeding)	1.5	Surveyed October 2018	No	n/a
<i>Ninox connivens</i> Barking Owl	2.0	Surveyed October 2018	No	n/a

(Breeding)				
<i>Ninox strenua</i> Powerful Owl	2.0	Surveyed September 2019 and July 2020.	No	n/a
<i>Polytelis swainsonii</i> Superb Parrot (Breeding)	2.0	Surveyed October 2018	Yes.	23 ha of moderate condition woodland with known sightings
<b>Flora Species</b>				
<i>Swainsona recta</i> Small Purple Pea	2.0	Surveyed October 2018	No	n/a
<i>Swainsona sericea</i> Silky Swainson Pea	2.0	Surveyed October 2018	No	n/a
<i>Eucalyptus aggregata</i> Black Gum	2.0	Surveyed October 2018	No	n/a

#### 4.2.4 Candidate species survey methods and results

Methodology for targeted surveys is detailed below and illustrated in Figure 4-8.

***Diurnal avian fauna (Gang-gang Cockatoo, Superb Parrot, Glossy Black-Cockatoo, Little Eagle, White-bellied Sea Eagle, Regent Honeyeater and Square-tailed Kite)***

A woodland bird census via vehicle and on-foot was completed between 22<sup>nd</sup> – 26<sup>th</sup> October 2018. Seven 20-minute diurnal avifauna surveys were undertaken. These points were determined in the field to represent best coverage of avian habitat features within the development site and generally occurred within woodland areas with a clear view of the surrounding habitat. Additional bird surveys were also undertaken in July 2020 and early September 2019 for detecting the Glossy Black Cockatoo.

Targeted hollow-bearing tree surveys were carried out within the development site to identify tree with suitable breeding habitat for Superb Parrot, Gang-Gang Cockatoo and Glossy Black Cockatoo. The species, number, size and height of hollows were recorded for trees along with any evidence of use. Where suitable hollows were detected, targeted surveys included stag watches and early morning and early evening surveys during optimal survey periods. Surveys for large stick nests suitable for Little Eagle or Square-tailed Kite were undertaken.

Opportunistic sightings of birds were also recorded during all field surveys.

A review of past fauna surveys within the development site (Kevin Mills & Associates, 2011, Brett Lane & Associates, 2018, and Nature Advisory, 2019) was undertaken to determine fauna species recorded during past assessments.

## SURVEY RESULTS

### **Superb Parrot**

There were four opportunistic sightings and two nests of the Superb Parrot observed during the site survey in 2019 (Figure 4-3). Past surveys by Kevin Mills and Associates (2011) detected eight sightings of Superb Parrot foraging and Brett Lane and Associates (2018) also detected 12 records of foraging Superb Parrot and two nesting birds. Previous Bionet records also show an addition 9 locations within 1km of the development site.

No known nests occurred within 100m of the development footprint however due to the abundance of sightings within the development site and abundance of hollow-bearing trees it is anticipated that nesting could occur within locations not detected or trees would likely provide future nesting opportunities. Thus, a species polygon was prepared that covered all moderate to good condition woodland that contained hollows within the development site.

No other threatened bird species were detected from the survey. The review of past fauna surveys revealed a sighting of a Little Eagle had been seen, however this occurred foraging outside the development site. No breeding nests were detected.

All avian species recorded during the surveys were recorded and provided in 0.

### **Nocturnal avifauna (Bush Stone Curlew, Barking Owl, Powerful Owl)**

#### *SURVEY EFFORT*

Spot lighting and call play back surveys were undertaken between 22nd – 25th October 2018 for the Bush-stone Curlew and Barking Owl. Spot lighting and call play back surveys were also undertaken between 18<sup>th</sup> - 24th January 2019 for the Bush-stone Curlew. Additional surveys were also undertaken in July 2020 and September 2019 for the Powerful Owl.

Call playback for Bush Stone Curlew and Forest Owl species call was played via a megaphone with a 10 minute waiting period for each call and repeated three times. No lights were used or sound made during the call play back and waiting period. Spotlighting transects were conducted in both vehicle-based and foot surveys within remnant woodland patches and isolated paddock trees following call playback sessions.

#### *SURVEY RESULTS*

No threatened nocturnal bird were detected during the surveys. One Boobook Owl (*Ninox boobook*) was heard responding to a call and one Tawny Frogmouth (*Podargus strigoides*) was observed during the nocturnal surveys. There are no known records of threatened species from past fauna surveys. These species were surveyed during the appropriate survey period and breeding species are considered absent from the site.

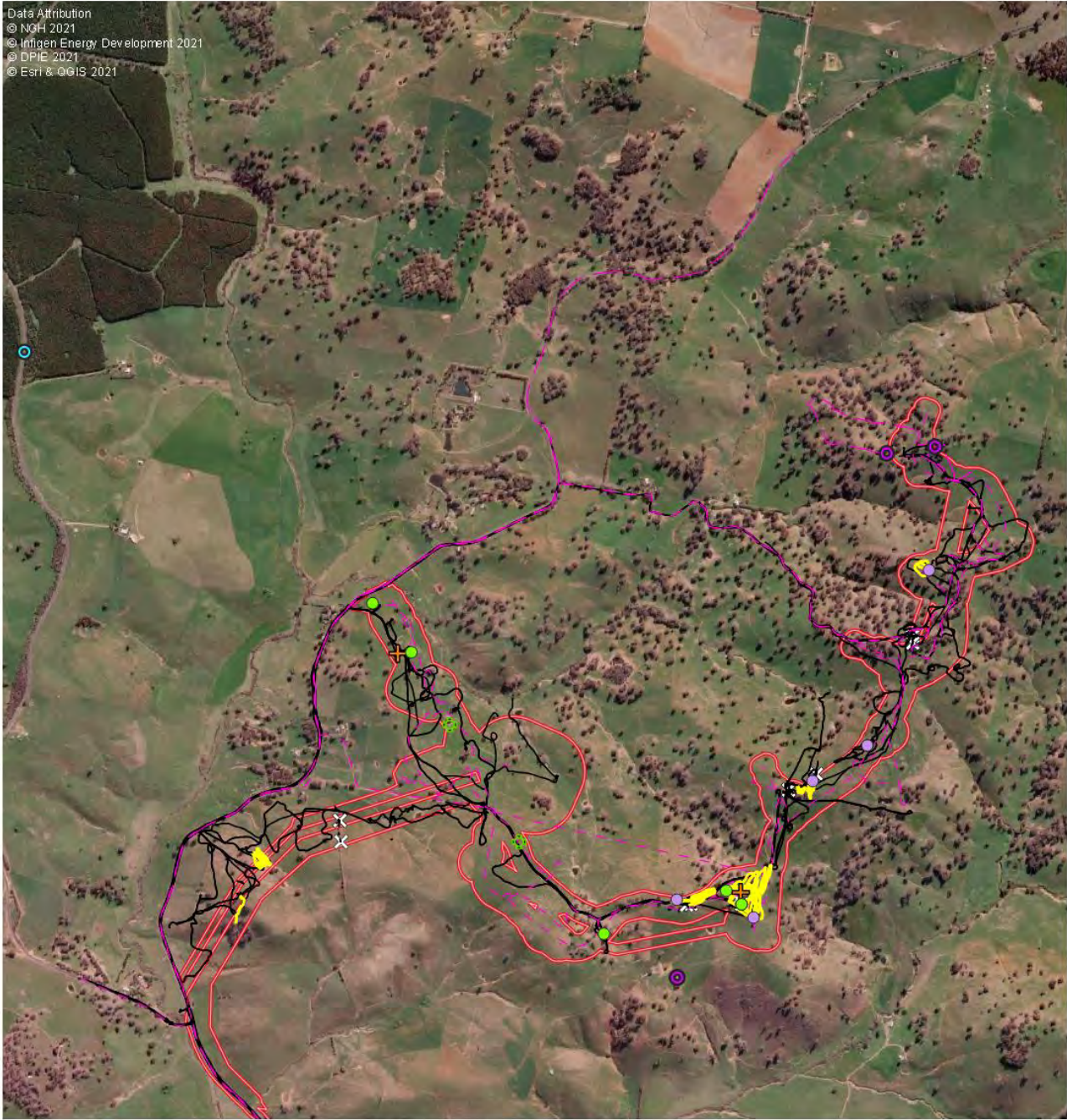
### **Mammals (Eastern Pygmy Possum, Brush-tailed Phascogale, Squirrel Glider, and Koala)**

#### *SURVEY EFFORT*

Targeted spotlighting surveys were undertaken on the evenings of the 22<sup>nd</sup> to 25<sup>th</sup> October 2018 and the 18<sup>th</sup> to the 24<sup>th</sup> of January 2019 for approximately two (2) person hours per night. A 100-watt spotlight was used in both vehicle-based and foot surveys within remnant woodland patches and isolated paddock trees. Call Playback for Squirrel glider was played via a megaphone with a 10 minute waiting period for each call and repeated three times.

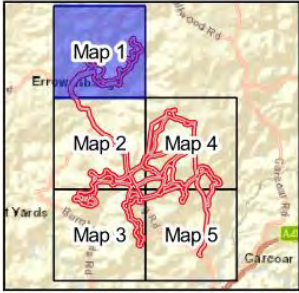
Targeted surveys for the Eastern pygmy possum and Brush-tailed Phascogale were complete using a combination of survey methods in January 2019. 12 motion-activated camera traps

(Recoynx HyperFire HC500) were deployed in woodland areas (



**18-558 Flyers Creek Wind Farm Offset Report - Survey Effort Map 1**

- Legend**
- Development Site
  - ⊙ Nocturnal
  - ⊗ Nocturnal Call Playback
  - ⊗ Vegetation Integrity Plot
  - ⊙ Rock Turning
  - Survey Effort**
  - ⊗ Amphibian
  - Diurnal Fauna & Flora
  - Avian
  - Spotlighting
  - + Koala
  - Threatened Flora



0 0.4 0.8 km

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Figure 4-3) and baited with a mix of Sardines and Honey. Camera traps were left for 11 trap nights. In addition, 26 Elliot traps were set up in woodland areas with relatively high connectivity and

habitat quality over 11 nights. A mixture of peanut butter, honey, and rolled oats were placed in traps as bait. Honey water was also sprayed around traps to attract fauna.

Targeted searches for Koalas during the day were undertaken on the 13<sup>th</sup> of September 2018 for approximately two (2) person hours. Mature feed trees via Spot Assessment Technique (SAT) were searched for signs of Koalas such as scats and scratches.

#### *SURVEY RESULTS*

The Squirrel Glider was detected during two survey periods within woodland areas in the east western areas of the development site (along vegetation which adjoins Gap Road) in October 2018, January 2019, September 2019 and July 2020. Targeted surveys were also complete in the northern areas of the development site in largely connected vegetation. However, no mammals were recorded in the north during all four survey attempts. Based on this and an evaluation of landscape connectivity, the northern habitat is discounted from other locations where Squirrel Gliders are recorded.

No other threatened mammal species were detected throughout the field surveys and no threatened mammal species have been previously recorded.

Brushtail Possum (*Trichosurus vulpecula*) were commonly spotted throughout the spotlighting transects. One Antechinus sp. and a Brushtail Possum was detected within the nocturnal camera traps. No mammals were recorded within the Elliot Traps.

#### **Mammals (Southern Myotis, Large-eared Pied Bat and Grey-headed Flying Fox)**

#### *SURVEY EFFORT*

A combination of ultrasonic detection (Anabat survey) and Harp Trapping were used to survey for threatened microbats (Figure 4-1). Two Anabat Swifts (Titely Scientific) were deployed for four nights each between 22<sup>nd</sup> and 25<sup>th</sup> October 2019 in suitable wooded habitat within a drainage line (Figure 4-1, Figure 4-3). A harp trap was set up for four nights between 18<sup>th</sup> – 24<sup>th</sup> January 2019 within suitable habitat near Gap Road.



Figure 4-1 Harp and anabat set up for bat surveys in October 2019.

#### *SURVEY RESULTS*

Anabat data was analysed by ‘Fly by Night Bat Surveys’ (Hoye, G 2019). Nine bat species were identified from the ANABAT recordings. One threatened species – Large Bent Wing Bat was determined as a probable identification. In addition, the Yellow-bellied Sheath-tail bat was previously recorded by BL & A within the Wind Farm site in 2018 (BL&A 2018a). Both these species are ecosystem credit species and do not generate species credits. No other threatened species were recorded.

One bat species recorded within the Harp Trap was unable to be identified.

No Grey-headed Flying Foxes or breeding camps were observed within the development site.

#### ***Threatened Flora (Small Purple Pea, Silky Swainson Pea, Black Gum)***

#### *SURVEY EFFORT*

Flora transects were conducted between 22<sup>nd</sup> - 28<sup>th</sup> October 2018. Transects were conducted for targeted flora species based on identified areas of suitable habitat within the development site. Flora transects were conducted each day of the survey period. Transects were conducted with two suitably qualified ecologists walking around 10m apart within areas of suitable undisturbed habitat with native understorey for both the small Purple-pea and Silky Swainson-pea. A survey was conducted throughout the development site for the Black Gum over all survey periods.

#### *SURVEY RESULTS*



No threatened flora was observed during the targeted surveys. None of the species observed at the development site are listed as threatened. Targeted species were surveyed during the appropriate survey period and are considered absent from the site. No threatened flora species polygons have been mapped for the development site.

### ***Threatened Flora (Hoary Sunray)***

#### *SURVEY EFFORT*

Hoary Sunray was not a BAM-C species when surveys were conducted in 2018 and no specific surveys for this species was undertaken. However targeted surveys were undertaken for threatened Swainsona species between 22<sup>nd</sup> – 28<sup>th</sup> October 2018 in areas containing moderate to good condition native understory. This time frame is peak flowering time for Hoary Sunray. Hoary Sunray is a conspicuous flowering forb with bright characteristic flowers that are long lasting and would have been easily observed if it were present during the transects for threatened flora species.

#### *SURVEY RESULTS*

No threatened flora was observed during the targeted surveys. None of the species observed at the development site are listed as threatened. Targeted species were surveyed during the appropriate survey period and are considered absent from the site. No threatened flora species polygons have been mapped for the development site.

### ***Threatened Reptiles (Pink -tailed legless Lizard)***

#### *SURVEY EFFORT*

Targeted surveys for this species were conducted during the 22<sup>nd</sup> - 26<sup>h</sup> October 2019 in accordance with the Survey guidelines for Australia's threatened reptiles (*Australian Government 2011*). Over the survey period two ecologists utilised the rock turning method. 13 rock turning surveys were conducted. Suitable habitat rocks which included loosely embedded rocks were turned in walking transects in suitable habitat. 150 - 200 rocks were turned.

#### *SURVEY RESULTS*

No threatened reptiles were recorded in the survey attempts. The survey transects were completed during optimal weather conditions in Spring. The majority of the rock environment included heavily embedded rocks which were unable to be turned and deemed unsuitable for the species. Targeted species were surveyed during the appropriate survey period and the species is considered absent from the site.

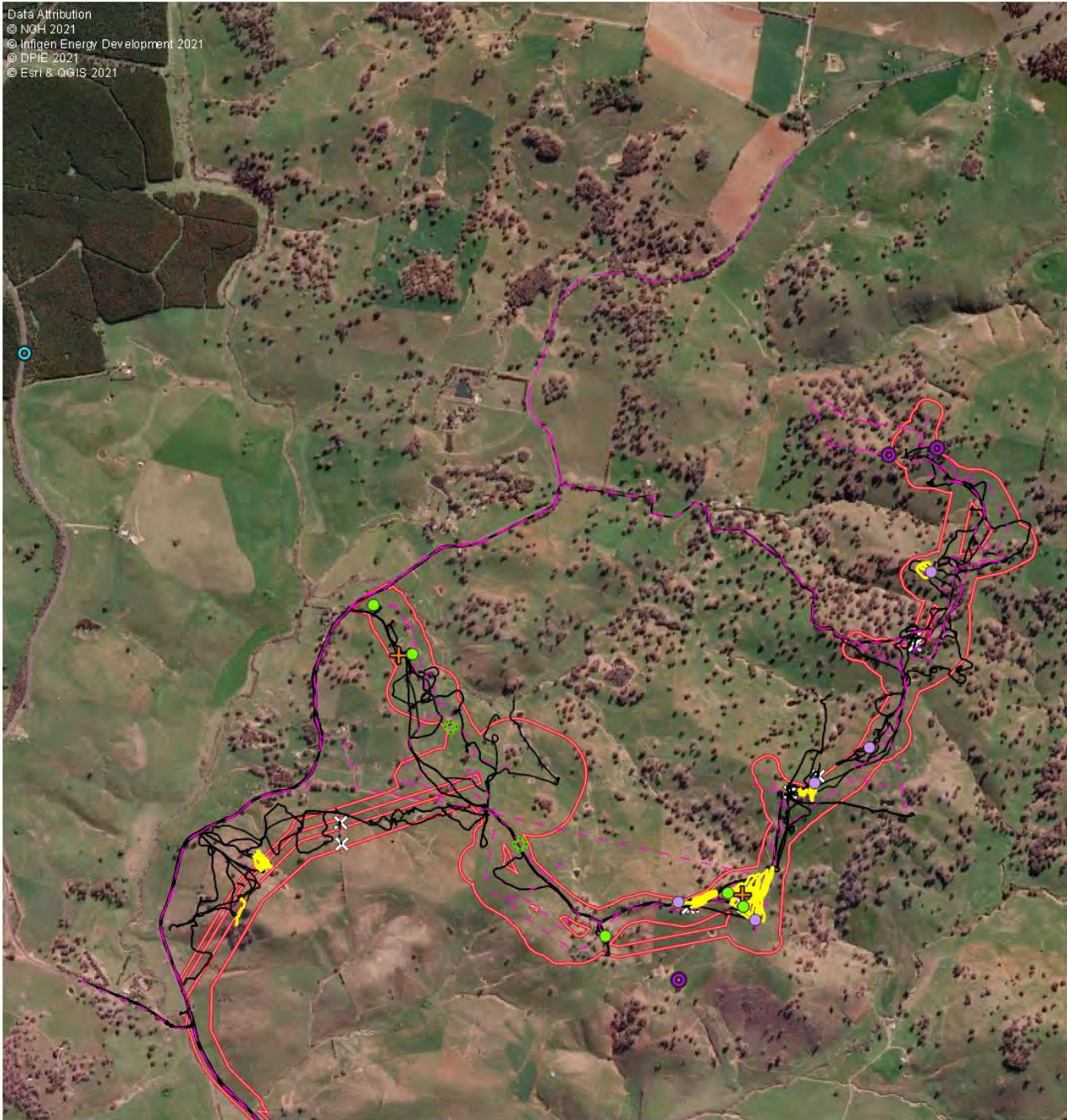


Figure 4-2 Rocky Habitat surveyed for Pink-tailed Legless Lizard

#### **4.2.5 Limitations to data, assumptions and predictions**

Where survey has been undertaken for candidate species requiring confirmation of presence or absence, this has been done employing appropriate methods and timing. Nevertheless, it is an unavoidable limitation that not all species that utilise an area will be detected. This is generally due to their cryptic nature or mobility and unpredictable movement throughout their habitat and prevailing drought conditions.

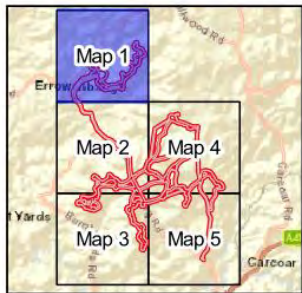
The calculation of HBTs, in particular the size and number of hollows, was made from ground level. It is possible that some hollows are present that were not visible from ground level, which may result in underestimates of the number of hollows.



**18-558 Flyers Creek Wind Farm Offset Report - Survey Effort Map 1**

- Legend**
- ▭ Development Site
  - ⊗ Nocturnal
  - ⊗ Nocturnal Call Playback
  - ⊗ Rock Turning
  - ⊗ Amphibian
  - ⊗ Avian
  - ⊗ Koala
  - Transects
  - Diurnal Fauna & Flora
  - - Spotlighting
  - Threatened Flora
  - ⊗ Vegetation Integrity Plot

0 0.4 0.8 km



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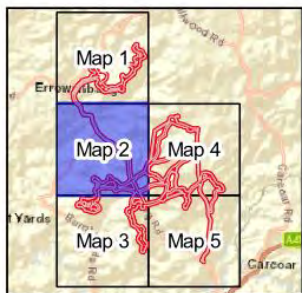


Figure 4-3 Threatened Species Surveys (map 1)



**18-558 Flyers Creek Wind Farm Offset Report - Survey Effort Map 2**

- Legend**
- Development Site
  - Vegetation Integrity Plot
  - + Amphibian
  - ▽ Anabat
  - Avian
  - + Koala
  - Nocturnal
  - Nocturnal Call Playback
  - Rock Turning
  - Transects
  - Diurnal Fauna & Flora
  - - Spotlighting
  - Threatened Flora

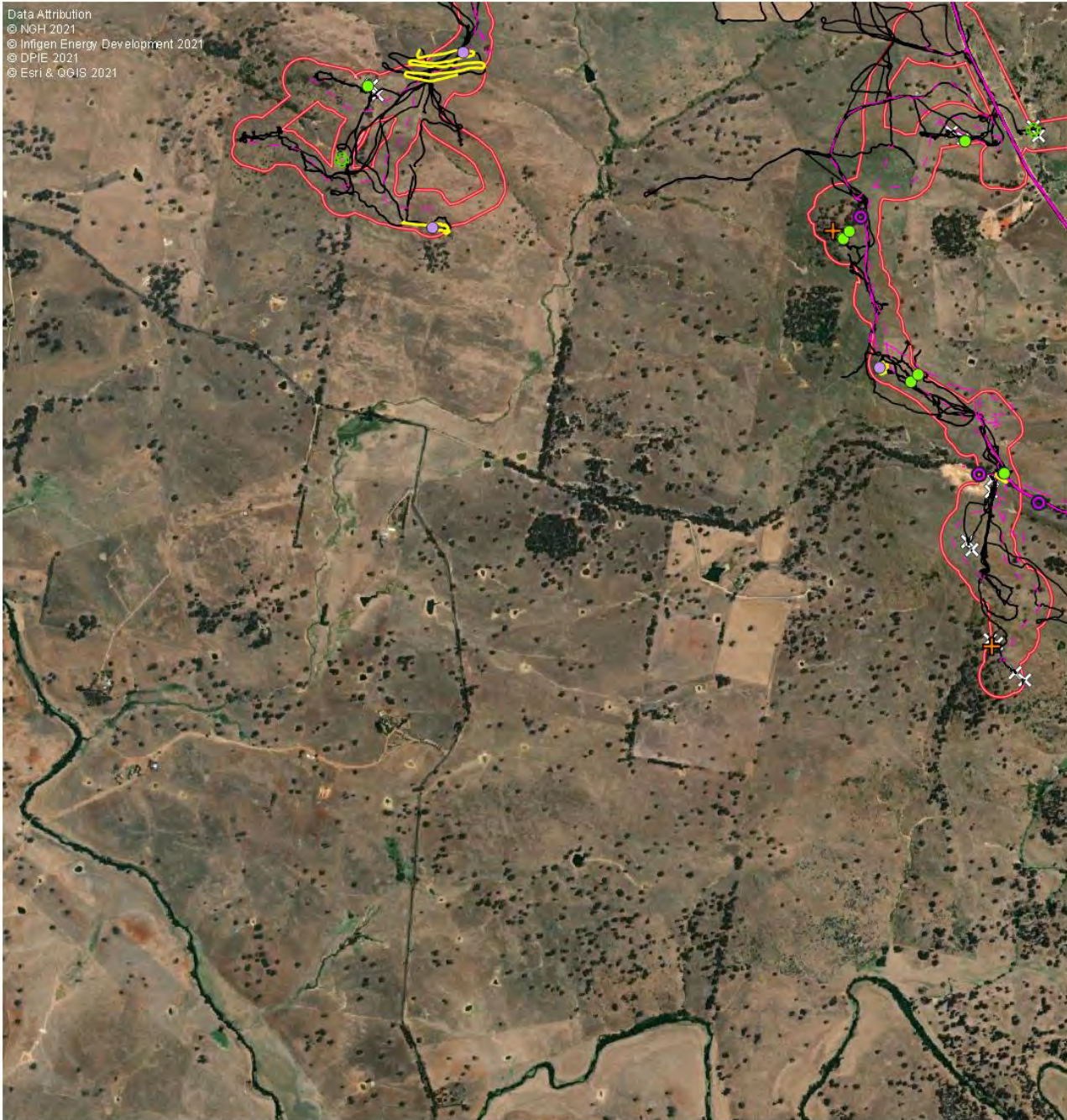


0 0.4 0.8 km

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Figure 4-4 Threatened Species Surveys (map 2)



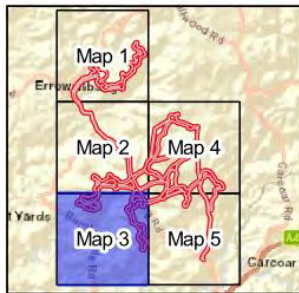
Data Attribution  
 © NGH 2021  
 © Infigen Energy Development 2021  
 © DPE 2021  
 © Esri & QGIS 2021

**18-558 Flyers Creek Wind Farm Offset Report - Survey Effort Map 3**

0 0.4 0.8 km

**Legend**

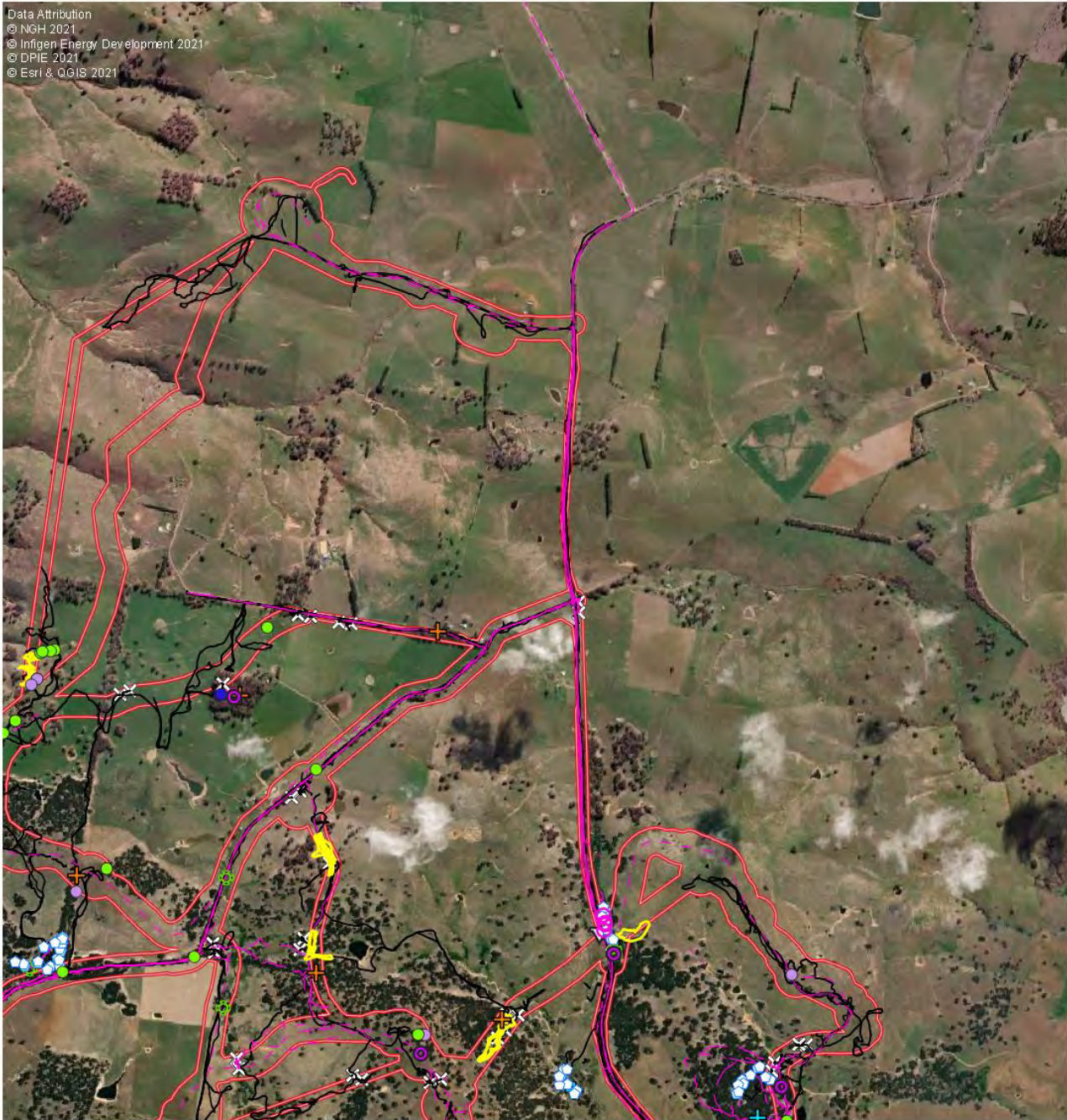
- |                           |                         |
|---------------------------|-------------------------|
| Development Site          | Nocturnal Call Playback |
| Vegetation Integrity Plot | Rock Turning            |
| <b>Survey Effort</b>      | Stag Watch              |
| Amphibian                 | <b>Transects</b>        |
| Avian                     | Diurnal Fauna & Flora   |
| Koala                     | Spotlighting            |
|                           | Threatened Flora        |



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Figure 4-5 Threatened Species Surveys (map 3)

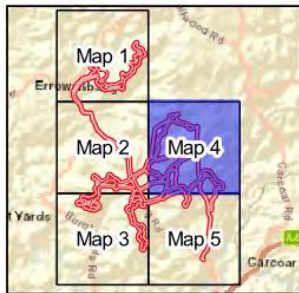


**18-558 Flyers Creek Wind Farm Offset Report - Survey Effort Map 4**

0 0.4 0.8 km

**Legend**

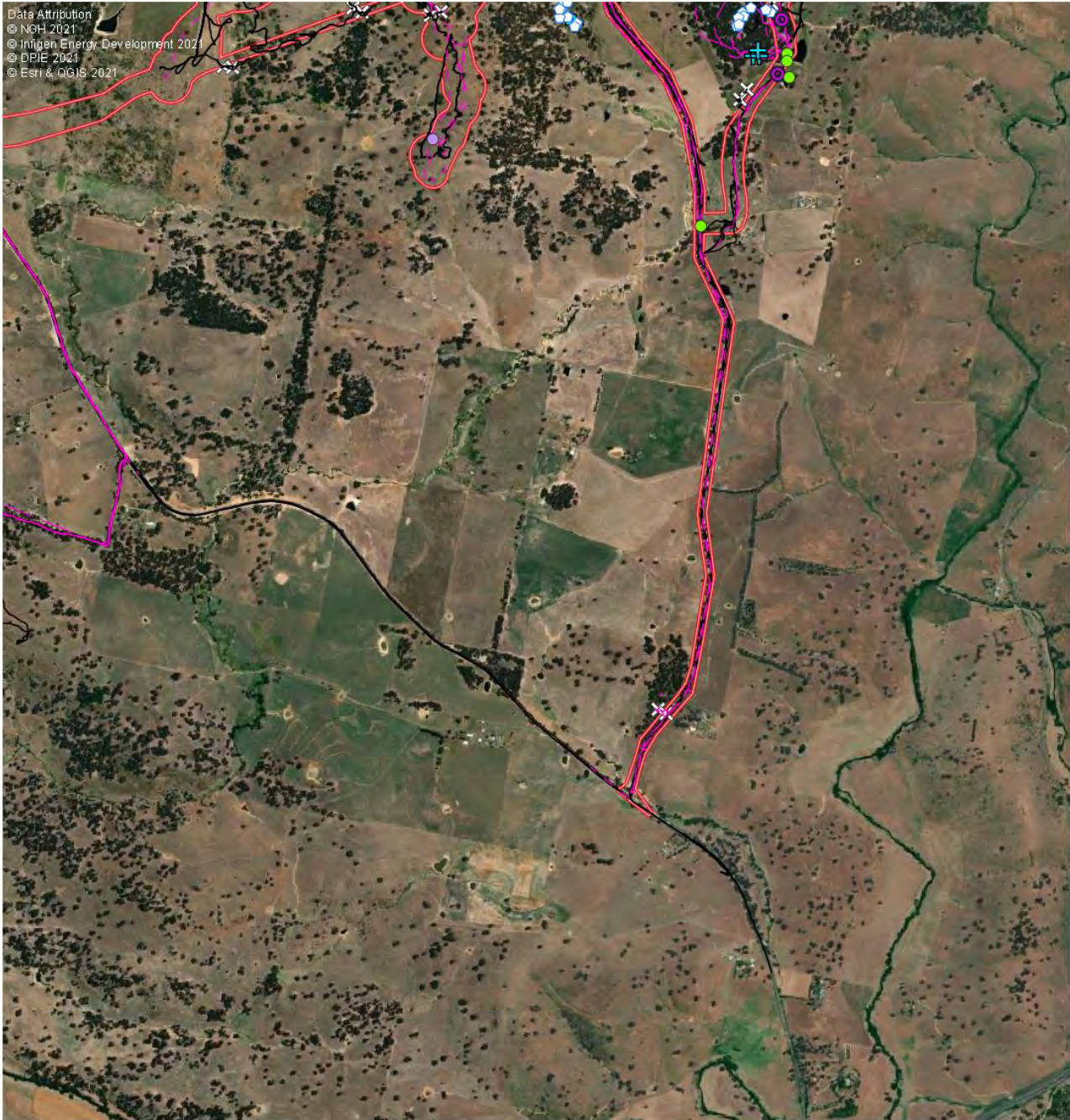
- |                           |                                 |
|---------------------------|---------------------------------|
| Development Site          | Harp Trap                       |
| Vegetation Integrity Plot | Nocturnal Call Playback         |
| Survey Effort Amphibian   | Rock Turning                    |
| Anabat                    | Stag Watch                      |
| Avian                     | Transects Diurnal Fauna & Flora |
| Camera Trap               | Spotlighting                    |
| Elliot Trap               | Threatened Flora                |
| Koala                     |                                 |



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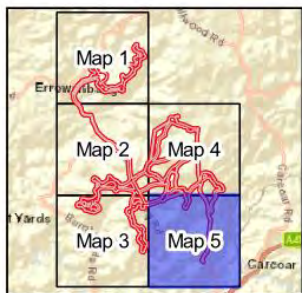
Figure 4-6 Threatened Species Surveys (map 4)



**18-558 Flyers Creek Wind Farm Offset Report - Survey Effort Map 5**

- Legend**
- Development Site
  - Vegetation Integrity Plot
  - + Camera Trap
  - Nocturnal Call Playback
  - Rock Turning
  - Transects
  - - Diurnal Fauna & Flora
  - - Spotlighting
- Survey Effort**
- Avian

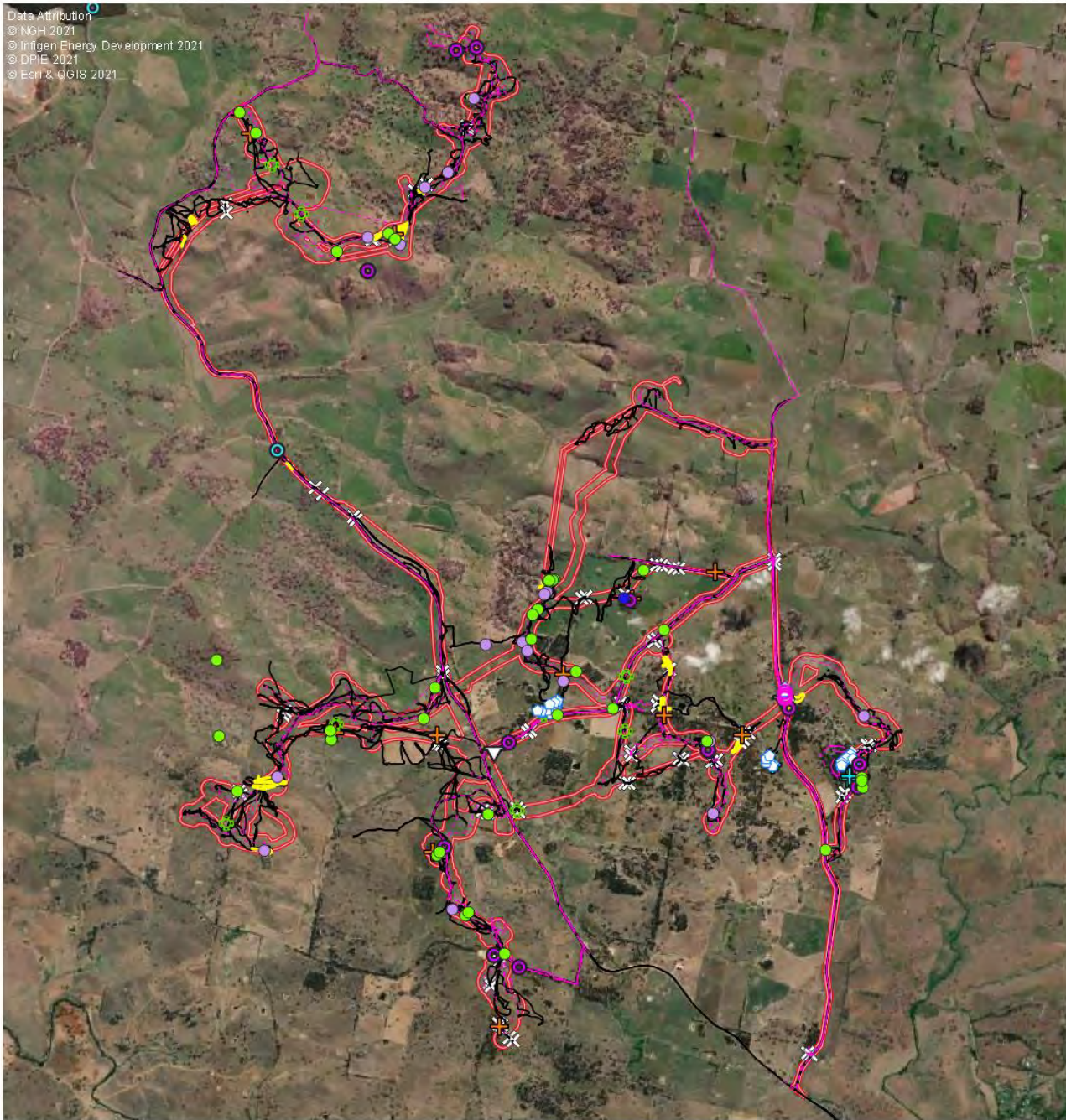
0 0.4 0.8 km



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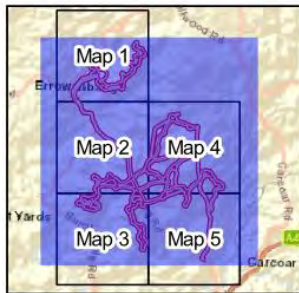
Figure 4-7 Threatened Species Surveys (map 5)



18-558 Flyers Creek Wind Farm Offset Report - Survey Effort Map 6

Legend

- |   |   |
|---|---|
| <span style="border: 1px solid red; display: inline-block; width: 10px; height: 10px;"></span> Development Site             | <span style="color: orange;">+</span> Koala                   |
| <span style="border: 1px dashed black; display: inline-block; width: 10px; height: 10px;"></span> Vegetation Integrity Plot | <span style="color: blue;">⊙</span> Nocturnal                 |
| <span style="color: green;">⊗</span> Amphibian  | <span style="color: purple;">⊙</span> Nocturnal Call Playback |
| <span style="color: blue;">∇</span> Anabat  | <span style="color: purple;">●</span> Rock Turning            |
| <span style="color: green;">●</span> Avian  | <span style="color: blue;">●</span> Stag Watch                |
| <span style="color: blue;">+</span> Camera Trap   | <span style="color: black;">—</span> Transects                |
| <span style="color: blue;">⊙</span> Elliot Trap   | <span style="color: black;">—</span> Diurnal Fauna & Flora    |
| <span style="color: pink;">⊙</span> Harp Trap   | <span style="color: red;">-</span> Spotlighting               |
|   | <span style="color: yellow;">—</span> Threatened Flora        |



0 1 2 km

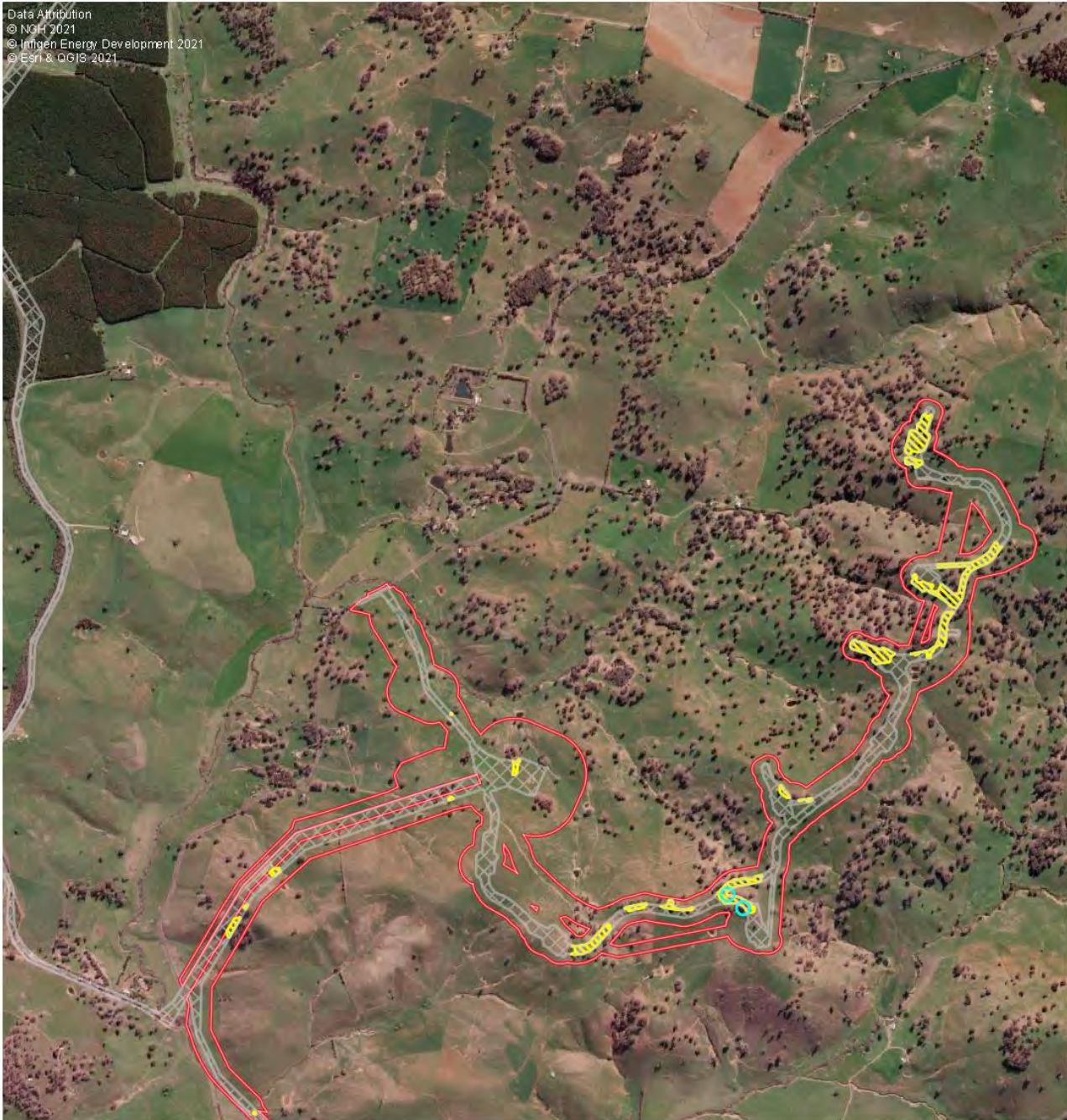
Ref: 18-558 Flyers Creek Wind Farm Offset  
Report Maps 1 Survey Effort  
Author: D. Bambrick  
Date created: 22.09.2021  
Datum: GDA94 / MGA zone 55



Figure 4-8 Threatened Species Surveys (map 6)



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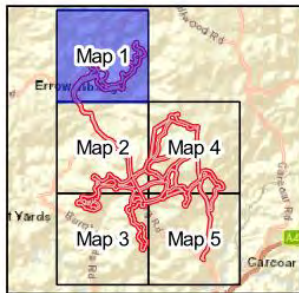


**18-558 Flyers Creek Wind Farm Offset Report**  
**Threatened Species Polygons Map 1**

**Legend**

- ▭ Development Site
- ▭ Development Footprint
- ▨ Superb Parrot
- Threatened Species Sightings
- Superb Parrot

0 0.4 0.8 km



Ref: 18-558 Flyers Creek Wind Farm Offset Report Maps \ Threatened Species Polygons  
 Author: D. Barrick  
 Date created: 22.09.2021  
 Datum: GDA94 / MGA zone 55



Figure 4-9 Threatened Species Polygons (map 1)

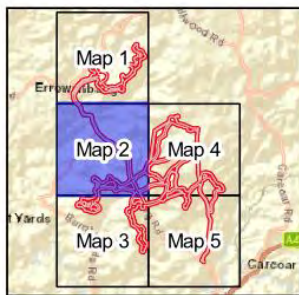


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**18-558 Flyers Creek Wind Farm Offset Report**  
**Threatened Species Polygons Map 2**

- Legend**
- Development Site
  - Development Footprint
  - Superb Parrot
  - Squirrel Glider
  - Threatened Species Sightings
  - Superb Parrot

0 0.4 0.8 km



Ref: 18-558 Flyers Creek Wind Farm Offset Report Maps \ Threatened Species Polygons  
 Author: D. Barrick  
 Date created: 22.09.2021  
 Datum: GDA94 / MGA zone 55



Figure 4-10 Threatened Species Polygons (map 2)



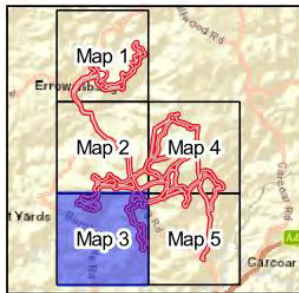
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**18-558 Flyers Creek Wind Farm Offset Report**  
**Threatened Species Polygons Map 3**

**Legend**

- Development Site
- Development Footprint
- ▨ Superb Parrot
- ▨ Squirrel Glider
- Threatened Species Sightings
- Superb Parrot

0 0.4 0.8 km



Ref: 18-558 Flyers Creek Wind Farm Offset  
 Report Maps \ Threatened Species Polygons  
 Author: D. Bambrick  
 Date created: 22.09.2021  
 Datum: GDA94 / MGA zone 55

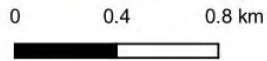
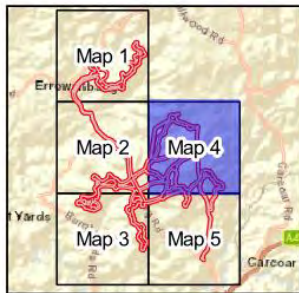


Figure 4-11 Threatened Species Polygons (map 3)



**18-558 Flyers Creek Wind Farm Offset Report**  
**Threatened Species Polygons Map 4**

- Legend**
- ▭ Development Site
  - ▭ Development Footprint
  - ▭ Superb Parrot
  - ▭ Squirrel Glider
  - Threatened Species Sightings
  - Superb Parrot
  - Squirrel Glider



Ref: 18-558 Flyers Creek Wind Farm Offset Report Maps \ Threatened Species Polygons  
 Author: D. Barrick  
 Date created: 22.09.2021  
 Datum: GDA94 / MGA zone 55



Figure 4-12 Threatened Species Polygons (map 4)

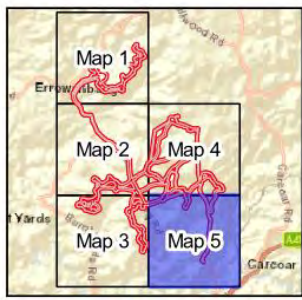


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**18-558 Flyers Creek Wind Farm Offset Report**  
**Threatened Species Polygons Map 5**

- Legend**
- ▭ Development Site
  - ▭ Development Footprint
  - ▭ Superb Parrot
  - ▭ Squirrel Glider

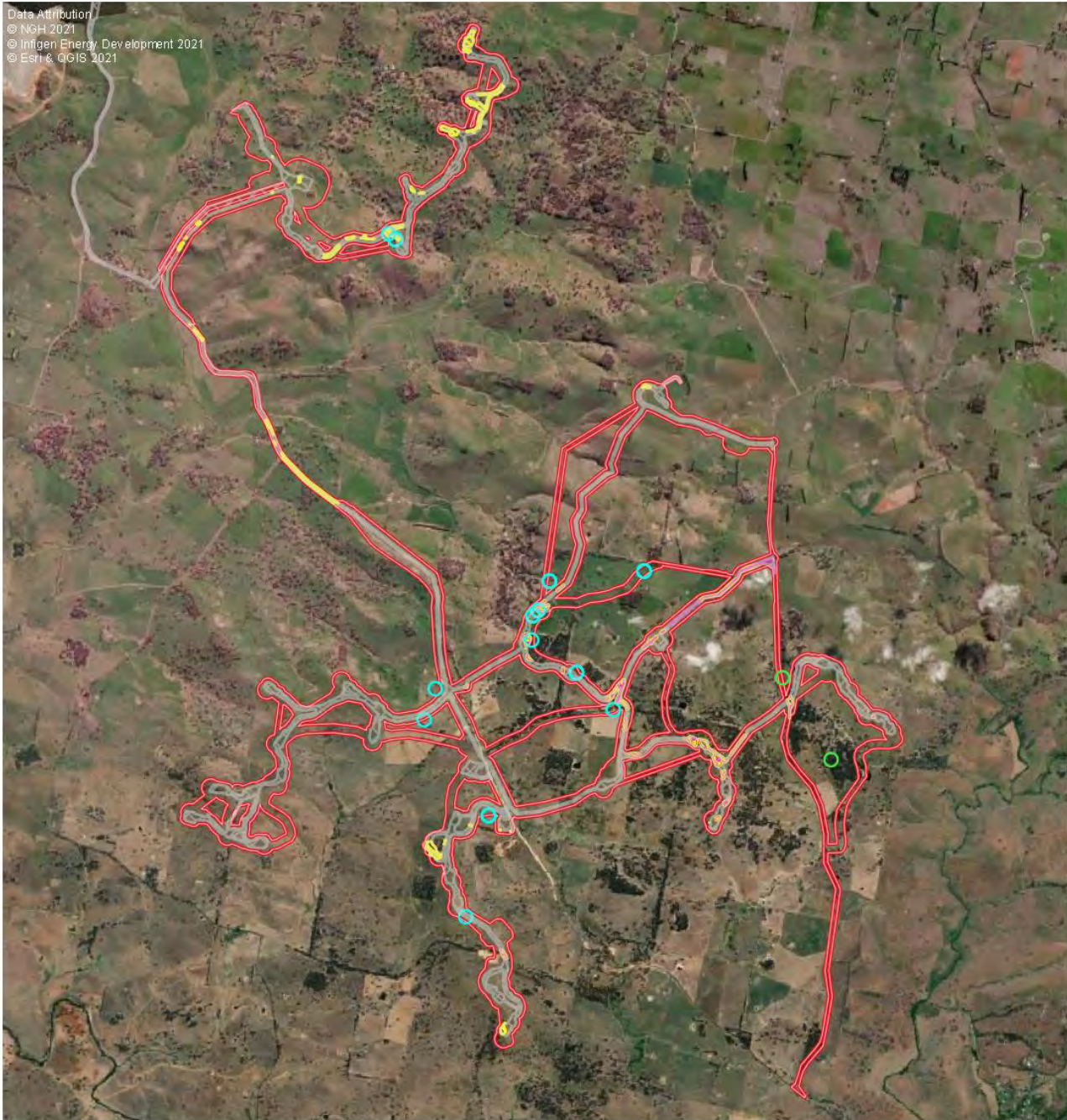
0 0.4 0.8 km



Ref: 18-558 Flyers Creek Wind Farm Offset Report Maps \ Threatened Species Polygons  
 Author: D. Barrick  
 Date created: 22.09.2021  
 Datum: GDA94 / MGA zone 55



Figure 4-13 Threatened Species Polygons (map 5)



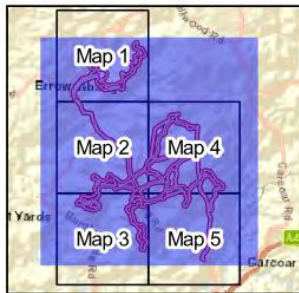
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**18-558 Flyers Creek Wind Farm Offset Report**  
**Threatened Species Polygons Map 6**

**Legend**

- ▭ Development Site
- ▭ Development Footprint
- ▭ Superb Parrot
- ▭ Squirrel Glider
- Threatened Species Sightings
- Superb Parrot
- Squirrel Glider

0 1 2 km



Ref: 18-558 Flyers Creek Wind Farm Offset Report Maps \ Threatened Species Polygons  
 Author: D. Bambrick  
 Date created: 22.09.2021  
 Datum: GDA94 / MGA zone 55



Figure 4-14 Threatened Species Polygons (map 6)

## **5. Additional Impacts that may affect offset liability**

Condition D5 of the Flyers Creek Wind Farm Project requires the credit liability to be calculated in accordance with the BAM. Therefore, an assessment of Prescribed impacts, indirect impacts and Serious and Irreversible impacts as they relate to the potential generation of credits has been completed below.

The resulting assessments suggest no additional credits should be applied to the current offset liability generated for the Development.

### **5.1 Prescribed Impacts**

#### **5.1.1 Impacts of development on the habitat of threatened species or ecological communities associated with karst, caves, crevices, cliffs and other features of geological significance**

There are no Karsts, caves, crevices, cliffs or areas of geological significance within the development site.

#### **5.1.2 Impacts of development on the habitat of threatened species or ecological communities associated with rock**

Rocky outcrops are common within the development site. One threatened species – Pink-tailed Legless Lizard is associated with rocks and could occur within the development site. Rocky habitat for this species was considered marginal as the majority of rocks were heavily embedded in the soil and surrounded by exotic dominated vegetation. This species was adequately surveyed for and not detected. There are unlikely to be any impacts to threatened species associated with rocks.

#### **5.1.3 Impacts of development on the habitat of threatened species or ecological communities associated with human made structures**

No human-made structures would be impacted by the development.

#### **5.1.4 The assessment of the impacts of development on the habitat of threatened species or ecological communities associated with non-native vegetation.**

The development footprint was designed to avoid impacts to higher condition native vegetation as much as possible, and, where impacts were unavoidable, to minimise those impacts. As a result, the development will impact on lower condition vegetation consisting of predominantly non-native species, such as exotic pasture grasses. Threatened fauna species are unlikely to rely on this habitat, and although they may utilise it for movement on occasion, it provides little foraging and breeding opportunities for native flora and fauna species within the region.

The Development will impact about 144 ha of cleared improved pasture that is within the development footprint. Birds of prey may utilise open pastures searching for prey however, removal of this non-native vegetation will not impact these species' ability to forage or hunt.

Due to pasture improvement and grazing management, cleared areas containing exotic improved pasture species are considered to be non-optimal for many native threatened fauna and flora species. No additional credits are required in response to the removal of this habitat.

### **5.1.5 Impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range**

The development footprint was selected and designed to avoid impacts to native vegetation as far as practicable and where impacts were unavoidable, offsets have been generated and would be retired. Although the development requires the removal of woodland vegetation, scattered paddock trees, and some areas of low condition grasslands, the area to be removed is a narrow linear footprint which would not isolate adjoining vegetation patches which are already heavily fragmented.

Areas in the south-west of the development site have a relatively intact woodland connectivity. The patch size for woodland vegetation in this area was above 100 ha. These areas provide adequate cover and protection for fauna movement through the landscape. Squirrel gliders (*Petaurus norfolcensis*) were recorded along Gap Road in areas with *Acacia dealbata* present. Additional recordings were in patches of vegetation which adjoin to Gap Road further south.

The Development would involve the removal of 11.15 ha of Squirrel glider habitat and for the majority of the site would not include fragmentation of habitat as the majority of surrounding vegetation would remain. The majority of impact areas are narrow and linear (cabling and access roads are 20m -25m wide) and would only remove the edges of larger patches of vegetation. However, the construction of the access road and cabling across Gap Road has the potential to reduce connectivity of habitat for the Squirrel glider locally. Squirrel Gliders can glide up to 70 metres (van der Ree *et al.* 2003). The construction of an access road along Gap Road could create a gap in canopy cover about 100m wide from the removal of two trees. Trees may be required for removal to allow for the turning circle of trucks carrying wind turbines. If these trees are removed this would reduce connectivity for the species between known locations of the Squirrel Glider. Mitigation measures include the development of a Squirrel Glider Management Plan (SGMP) incorporated as part of the SGMP committed to in the 132kv transmission line BDAR (NGH, 132kv Transmission line BDAR). The SGMP would include the optimal crossing points and location of squirrel glider crossing poles over the access track to reduce connectivity impacts for the species along Gap Road. An indicative location is shown in Figure 5-1.

During operation wind turbines have the potential to impact the movement of species across the landscape through collision with turbines. However, a Bird and Bat Adaptive Management Plan (BBAMP) (Nature Advisory, 2019) has been completed and approved for the Development and provides an adaptive approach to monitoring and responding to bird and bat impacts during operation of the Wind Farm. The management plan includes specific management contingencies for key species and groups identified through a risk assessment. The risk assessment identified that no species were considered at high or severe risk of impact. The majority of species were determined to have a negligible impact and 5 species were considered low likelihood of impact. A robust carcass monitoring program would be completed to detect birds and bats that collide fatally with wind turbines. Mitigation measures will be in place to reduce possible interactions between birds and bats and operating wind turbines including additional surveys if monitoring identifies an impact trigger.

With these measures in place, it is considered that the development would not significantly impact the ability of threatened species to move across the landscape upon completion. No additional species credits have been applied.



### **5.1.6 Impacts of development on the movement of threatened species that maintains their life cycle**

No known migratory routes occur within the development site. The development site occurs within a highly altered landscape consisting predominately of cleared agricultural land. Threatened species that may move within or through the development site would have adapted tolerance to existing disturbance.

The Squirrel Glider was identified in the development site in two survey periods. The Squirrel Glider is an arboreal and agile mammal which relies on hollow-bearing trees for shelter and breeding. The Development involves the removal of 11.15 ha of woodland habitat which contains hollow-bearing trees. If these hollow-bearing trees are removed, the following mitigation measures are required as part of the proposed Flora and Fauna Management Plan:

- Retention of hollow-bearing trees where possible
- Avoid clearing during the breeding season (April to November) to minimise impact on the life cycle of this species.
- If clearing occurs during April to November, ensure a qualified ecologist completes the following:
  - A pre-clearance survey of the trees proposed to be removed. This may include installation of cameras in the weeks leading up to the planned tree removal.
  - Is on site to supervise tree removal to manage any threatened species discovered during operations.
  - Placement of suitable man-made hollow bearing structures within the surrounding area.

Due to the linear nature of the development footprint, vegetation containing suitable roosting and breeding habitat would be retained where possible and specific measures put in place to avoid further connectivity issues including a glider pole on Gap Road then additional credits would not be required.

Superb Parrots were identified in the development site in all survey periods since the assessment phase of the Development commenced. A Superb Parrot targeted survey was completed by Nature Advisory during the breeding period (Superb Parrot Targeted Survey (SPTS) 2019). Targeted surveys in accordance with the BAM were also completed by NGH in 2018 and 2019. During the 2019 surveys two hollow bearing trees were identified as active breeding trees. Given the extensive sightings of the species across the development site, woodland vegetation suitable for future breeding in proximity to recorded sightings has been considered as part of the offsets generated for the Development. The SPTS determined that based on observations of flight paths the Superb Parrot was considered well below the level considered in the BBAMP to represent a risk to the species movement.

### **5.1.7 Impacts of development on water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities**

There are no water bodies present in the development site that sustain threatened species and threatened ecological communities. Therefore, the development will not impact any threatened aquatic species or ecological communities reliant on hydrological processes.

To ensure the development does not impact water quality and hydrological processes within the broader landscape; mitigation measures include sediment barriers and spill management protocols to control the quality of water runoff from the site into the surrounding environment.

### **5.1.8 Impacts of vehicle strikes on threatened species or on animals that are part of a TEC**

An increase in vehicle traffic during construction, and required maintenance periods, may slightly increase the risk of vehicle strike on threatened species occurring in or near the development site. However, this traffic would be predominantly between dusk and dawn, and is not considered likely to greatly increase the existing level of vehicle strike risk to fauna presented by rural traffic. During the operational phase of the Development, the increase in vehicles traversing the site for maintenance and monitoring is unlikely to significantly increase the threat of vehicle strikes to fauna in adjacent Box Gum Woodland communities. Vehicles and machinery are regularly used in the landscape for agricultural practices. It is recommended that site management actions be taken to enforce and reduce site speed limits and limiting traffic during dawn and dusk, which would minimise impacts of vehicle strike.

### **5.1.9 Impacts of development on the habitat of threatened species or ecological communities associated with non-native vegetation**

The development footprint was designed to avoid impacts to higher condition native vegetation as much as possible, and, where impacts were unavoidable, to minimise those impacts. As a result, the development will impact on lower condition vegetation consisting of predominantly non-native species, such as exotic pasture grasses. Threatened fauna species are unlikely to rely on this habitat, and although they may utilise it for movement on occasion, it provides little foraging and breeding opportunities for native flora and fauna species within the region.

### **5.1.10 Impacts of wind turbine strikes on protected animals**

The majority of the wind farm consists of ridges and gentle slopes predominantly void of tree cover, with only a small proportion of the proposed turbines likely to be within Superb Parrot habitat. The majority of the impacts to Superb Parrot habitat would be through the clearing of hollow bearing trees and woodland vegetation for construction of the access tracks and cabling.

Activities of Superb Parrots and other protected animals within the wind farm site will be monitored through the implementation of the BBAMP and a monitoring program will be initiated that will cover the period of occupancy of Superb Parrots on site. Monitoring will take place at a frequency that will provide adequate data on flight patterns in order to identify, and mitigate for, at risk behaviours.

## **5.2 Indirect Impacts**

Indirect impacts can occur when the development or activities relating to the construction or operation of the development affect native vegetation, threatened ecological communities or threatened species habitat beyond that of the development site. Indirect impacts of the development can include soil and water contamination, increased edge effects, or the generation of excessive dust, light or noise. Indirect impacts that must be considered are listed in the BAM.

Retained vegetation within the development site may be impacted indirectly by the Development. An assessment of indirect impacts is shown in Table 5-1.

Indirect Impacts are considered to be minimal and no biodiversity credits are required.

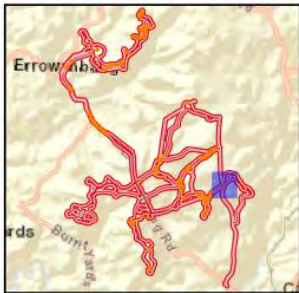


18-558 Flyers Creek Wind Farm Offset Report - Squirrel Glider prescribed impacts

0 0.1 0.2 km

**Legend**

- ▭ Development Site
- ▭ Development Footprint
- ▭ Impacts to Squirrel Glider Connectivity
- Squirrel Glider Sighting



Ref: 18-558 Flyers Creek Wind Farm Offset Report Maps \ Squirrel Glider  
 Author: D. Bambrick  
 Date created: 19.10.2021  
 Datum: GDA94 / MGAzone 55



Figure 5-1 Prescribed impacts on Squirrel Glider Connectivity

Table 5-1 Indirect Impacts

Nature of impact	Extent	Frequency	Duration timing	and TEC, threatened species and habitats likely to be affected	Consequence
Indirect impacts (those listed below are included in the BAM)					
<b>Inadvertent impacts on adjacent habitat or vegetation</b>	150 ha of retained vegetation on site.	Irregular	Construction Phase – Short Term	Box-gum Woodland Superb Parrot Squirrel Glider Ecosystem credit species listed in section 4.1	<ul style="list-style-type: none"> <li>• Potential loss of native flora and fauna habitat</li> <li>• Potential for injury and mortality of fauna to increased traffic and construction</li> <li>• Disturbance to stags, fallen timber, and small bush rocks</li> </ul> Mitigation measures to clearly mark vegetation to be retained would reduce any impacts to the adjacent habitat.
<b>Reduced viability of adjacent habitat due to edge effects</b>	150 ha of retained vegetation on site	Constant	Operational Phase – Long Term	Box-gum Woodland Superb Parrot Squirrel Glider Ecosystem credit species listed in section 4.1	<ul style="list-style-type: none"> <li>• Degradation of TECs</li> <li>• Loss of native flora and fauna habitat</li> </ul> The retained vegetation is already highly fragmented and partially cleared. The development has avoided areas of more intact vegetation and no fragmentation would occur. The impacts are likely to be minor in nature and would result in a negligible consequence for bioregional persistence
<b>Reduced viability of adjacent habitat due to noise, dust or light spill</b>	150 ha of retained vegetation on site	Rare	Construction Phase – Short Term	Box-gum Woodland Superb Parrot Squirrel Glider Ecosystem credit species listed in section 4.1	<ul style="list-style-type: none"> <li>• May alter fauna activities and/or movements</li> <li>• Minor loss of foraging or breeding habitat</li> </ul> Impacts would be short term during construction. The combined impacts are likely to be minor in nature if they occur at all and would result in a negligible consequence for bioregional persistence
<b>Transport of weeds and pathogens from the site to adjacent vegetation</b>	Possible.	Possible	Construction & Operational Phase: Long-term	Box-gum Woodland Ecosystem credit species listed in section 4.1	<ul style="list-style-type: none"> <li>• Degradation of TECS and threatened species habitat through weed encroachment.</li> </ul> Mitigation measures implemented for weed hygiene protocols should limit impacts to TECs.

<b>Increased risk of starvation, exposure and loss of shade or shelter</b>	Possible	Rare	Construction & Operational Phase: Long-term	Superb Parrot Squirrel Glider Ecosystem credit species listed in section 4.1	<ul style="list-style-type: none"> <li>Loss of foraging habitat</li> </ul> <p>Some impacts would occur through loss of habitat however 150 ha of native vegetation would be retained immediately surrounding the development. The impacts are likely to be minor in nature and would result in a negligible consequence for bioregional persistence.</p>
<b>Cumulative loss of breeding habitat and competition for remaining resources</b>	Unknown – no other known proposed developments within locality. 132kv transmission line impacting 7.47 ha of native vegetation.	Possible	Construction Phase – Long Term	Superb Parrot Squirrel Glider Ecosystem credit species listed in section 4.1	<ul style="list-style-type: none"> <li>Cumulative loss of vegetation clearing.</li> </ul> <p>The impacts of 132kv transmission line have been assessed within the Flyers Creek Modification 5 BDAR and Biodiversity Offsets have been generated.</p>
<b>Trampling of threatened flora species</b>	None – no threatened flora species	Absent	n/a	n/a	None
<b>Inhibition of nitrogen fixation and increased soil salinity</b>	Unlikely	Absent	n/a	n/a	None
<b>Fertiliser drift</b>	Unlikely – no fertilisers to be used	Absent	n/a	n/a	None
<b>Rubbish dumping</b>	Unlikely	Absent	n/a	n/a	None
<b>Wood collection</b>	Unlikely – no increased community access to site.	Absent	n/a	n/a	None
<b>Bush rock removal and disturbance</b>	Unlikely – no increased community access to site.	Absent	n/a	n/a	None
<b>Increase in predatory species populations</b>	Unlikely – Current pest management practices to continue	Rare	Construction & Operational Phase: Long-term	Superb Parrot Squirrel Glider Ecosystem credit species listed in section 4.1	Increased predation of threatened fauna species

<b>Increase in pest animal populations</b>	Unlikely – Current pest management practices to continue	Rare	Construction & Operational Phase: Long-term	Superb Parrot Squirrel Gider Ecosystem credit species listed in section 4.1	Increased predation of threatened fauna species
<b>Increased risk of fire</b>	None	Absent	n/a	n/a	None
<b>Disturbance to specialist breeding and foraging habitat, e.g., beach nesting for shorebirds</b>	None	Absent	n/a	n/a	None

### 5.3 Serious and Irreversible impacts

Consideration has been given to how entities with potential for Serious and Irreversible Impacts (SAII) will affect calculation of the biodiversity credit liability for the Development. An assessment of SAII has been completed below in accordance with the document *Guidance to assist a decision-maker to determine a serious and irreversible impact (DPIE, 2019)* and the BAM 2017.

The principles used to determine if a development will have serious and irreversible impact, include impacts that:

1. The determination of a serious and irreversible impact on biodiversity values is to be made by the decision-maker in accordance with the principles set out in the BC Regulation.
2. To assist the decision-maker, the document *Guidance to assist a decision-maker to determine a serious and irreversible impact* includes criteria that enable the application of the four principles set out in clause 6.7 of the BC Regulation to identify the species, populations and ecological communities that are likely to be at risk of SAIIs.
3. The assessor must identify every threatened entity at risk of an SAII that would be impacted by the Development.
4. The assessor may identify any other threatened entity impacted by the Development that is likely to be at risk of an SAII, in accordance with the four principles in the BC Regulation.
5. A decision-maker may require an assessor to include an assessment of additional threatened entities that are at risk of an SAII other than those identified in the BAM-C as part of a Development.
6. To assist the decision-maker to evaluate the extent and severity of the impact on an entity at risk of an SAII, the BDAR or BCAR must contain details of the assessment of SAIIs, in accordance with the criteria set out in Subsection 9.1.1 for impacts on each TEC and in Subsection 9.1.2 for each threatened species. All criteria must be addressed for each TEC or threatened species at risk of an SAII and likely to be impacted by the Development.

#### Threatened ecological communities

One threatened ecological community listed as a potential SAII entity be impacted by the Development;

- White Box-Yellow Box- Blakely's Red Gum Woodland BC Act (Box-gum Woodland)

#### Threatened species

There are no threatened species listed as a SAII candidates recorded at the development site.

#### Additional potential entities

No further species were considered to be potential SAII entities.

#### White Box - Yellow Box - Blakely's Red Gum Woodland (Box-gum Woodland)

An assessment of the impacts to Box-gum woodland was undertaken. Figure 5-2 shows the location of Box-gum Woodland within the development site.

- a) **the action and measures taken to avoid the direct and indirect impact on the potential entity for an SAII**

The development site covers 817 hectares. The Box-gum Woodland covers 135.89 ha in the development site which includes PCT 1330, PCT 266, PCT 268, PCT 277 and PCT 278 of low to moderate vegetation condition. The majority of Box-gum Woodland in the development site is degraded and fragmented through a long history of agricultural practices including vegetation clearing, pasture improvement and grazing.

23.8 ha of Box Gum Woodland would be impacted by the Development. This is a worst-case scenario as the footprint during construction would aim to further reduce impacts where possible. Steps have been undertaken to avoid impacting 112.05 hectares of Box-gum Woodland in the development site and mitigation measures include exclusion fencing to protect native vegetation to be retained.

Offsets have been generated for impacts to native vegetation including Box Gum Woodland.

**b) the area (ha) and condition of the TEC to be impacted directly and indirectly by the proposed development. The condition of the TEC is to be represented by the vegetation integrity score for each vegetation zone**

23.8 ha of Box Gum Woodland would be impacted by the Development.

The areas and condition of the TECs impacted by the development includes:

1. Vegetation Zone 2 PCT 1330\_Low Condition White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland) – 0.69 hectares impacted of 4.16 hectares.
2. Vegetation Zone 3 PCT 1330\_Moderate Condition White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland) - 1.26 hectares impacted of 22.59 hectares.
3. Vegetation Zone 4 PCT 266\_Low Condition White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland) - 0.52 hectares impacted of 2.66 hectares.
4. Vegetation Zone 6 PCT 268\_Moderate Condition White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland) - 1.9 hectares impacted of 20.98 hectares.
5. Vegetation Zone 9 PCT 277 Moderate Condition White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland) – 18.82 hectares impacted of 82.43 hectares.
6. Vegetation Zone 7 PCT 277\_Derived Grassland Good Condition White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland) – 0.10 hectares impacted of 0.39 hectares.
7. Vegetation Zone 12 PCT 278\_Low Condition White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland) – No impact.
8. Vegetation Zone 13 PCT 278\_Moderate Condition White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland) – 0.51 hectares impacted of 2.00 hectares.

Vegetation Zone 4 has a vegetation integrity score of <15, therefore no ecosystem credits were generated.

**c) a description of the extent to which the impact exceeds the threshold for the potential entity that is specified in the Guidance to assist a decision-maker to determine a serious and irreversible impact**



No threshold has been defined by BCS for the extent of Box-gum Woodland to be removed that constitutes a serious and irreversible impact.

**d) the extent and overall condition of the potential TEC within an area of 1000 ha, and then 10,000 ha, surrounding the proposed development footprint**

Box-gum woodland in the locality (10km) around the development site has been heavily modified and is highly fragmented. The native vegetation was historically cleared for agriculture with small remnant patches and isolated paddock trees remaining. Using GIS and State Vegetation Mapping, it is estimated 405.39 ha of Box-gum Woodland occurs within an area of 1000 ha surrounding the proposed development footprint and 2509.16 ha of Box-gum Woodland occurs within an area of 10000 ha surrounding the proposed development footprint (Figure 5-2).

**e) an estimate of the extant area and overall condition of the potential TEC remaining in the IBRA subregion before and after the impact of the proposed development has been taken into consideration**

The development site occurs on the New South Wales South West Slopes (Inland Slopes) and South East Highlands (Orange) IBRA Bioregions. The Threatened Species Scientific Committee (2006) estimates 55,798 ha of Box-gum Woodland remains in the New South Wales South West Slopes. The wind farm development proposes to remove 21.85 hectares which is <1% of the Box-gum Woodland remaining in this IBRA Region.

The South East Highlands (Orange) IBRA Bioregions estimates 59,468 hectares of Box-Gum Woodland remains. The wind farm development proposes to remove 1.95 hectares which also equates to <1% of the estimated extent remaining.

**f) an estimate of the area of the potential TEC that is in the reserve system within the IBRA region and the IBRA subregion**

In NSW Box-gum Grassy Woodland is known to occur within at least 42 reserve systems. 8,000 ha of Box-gum woodland is estimated to occur in national parks and nature reserves within the NSW South Western Slopes and tablelands IBRA Region (Benson 2008).

**g) the development, clearing or biodiversity certification proposal's impact on:**

**i. abiotic factors critical to the long-term survival of the potential TEC; for example, how much the impact will lead to a reduction of groundwater levels or the substantial alteration of surface water patterns**

Groundwater supplies and levels are unlikely to be affected by the Development and no groundwater is anticipated to be intercepted or extracted. During construction, the Development would have a short-term gross impact upon soils and possibly surface water flow, within discreet areas. These impacts are manageable with the implementation of erosion and sediment controls and would be unlikely to impact on abiotic factors critical to the long-term survival of Box-gum woodland.

**ii. characteristic and functionally important species through impacts such as, but not limited to, inappropriate fire/flooding regimes, removal of understorey species or harvesting of plants**

No characteristic or functionally important species would be lost through the removal of the Box-gum woodland. The vast majority of Box-gum woodland within the development site has been modified or degraded due to historical land use and edge effects. No impacts to the remaining Box-gum woodland are anticipated. No introduced fire or flooding regimes would occur and no increase of natural occurrences of these events is anticipated from the development.

**iii. the quality and integrity of an occurrence of the potential TEC through threats and indirect impacts**

23.8 ha of Box-gum Woodland would be impacted, removed or modified by the Development. It is likely the remaining 112.05 of Box-gum woodland within the development site would be avoided by the development and would remain unchanged from the current existing condition.

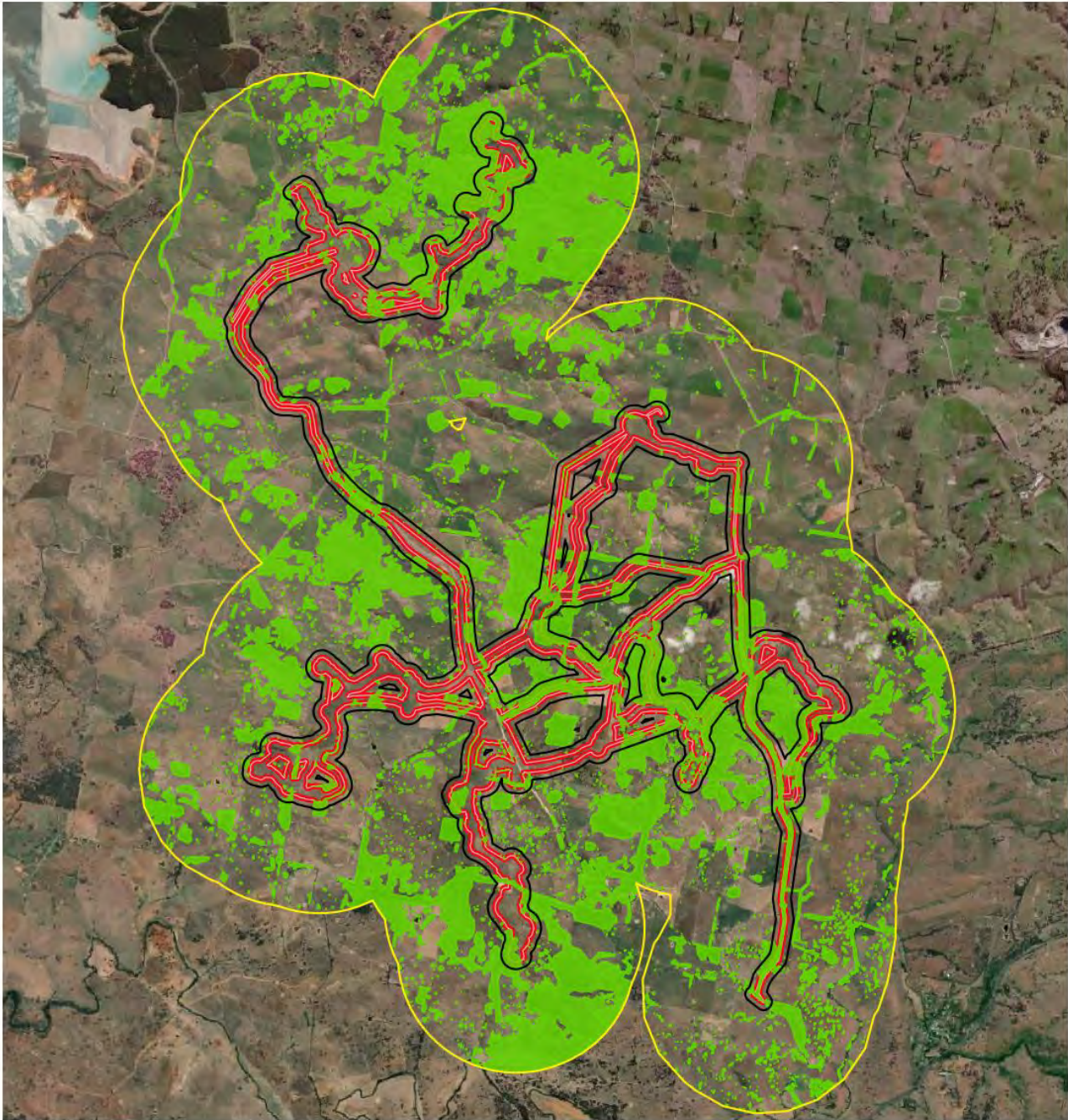
**h) direct or indirect fragmentation and isolation of an important area of the potential TEC**

The proposed wind farm development is a series of access roads and underground cabling connecting to each of the 38 turbines scattered over 817 hectares. Construction of the wind turbines will not isolate patches of Box-gum Woodland, however the Box-gum Woodland in this locality is fragmented and in modified vegetation condition. Once construction is completed, it is unlikely there will be any ongoing indirect impacts and the existing threats from cropping, grazing and weed infestation are expected to continue. A Bird and Bat Adaptive Management plan would be implemented which involves monitoring fauna collision and mortalities during operation. To prevent any other future indirect impacts such as new weed infestation, which may lead to loss of biodiversity, mitigation measures include weed hygiene and weed treatment methods.

The direct loss of 23.8 hectares of Box-gum Woodland generated 477 ecosystem credits, these credits will be retired in accordance with the NSW Biodiversity Offsets scheme.

**i) the measures proposed to contribute to the recovery of the potential TEC in the IBRA subregion.**

The 23.8 ha of Box-gum woodland to be removed will be offset by 477 ecosystem credits, which will result in the conservation of Box gum woodland, ensuring no net loss of the Box-gum Woodland in the IBRA region.



**18-558 Flyers Creek Wind Farm Offset Report**  
**Box-Gum Woodland SAI**

- Legend**
- Development Site
  - 10,000 Ha Buffer
  - 1,000 Ha Buffer
  - Box-Gum Woodland

0 1 2 km

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Ref: 18-558 Flyers Creek Wind Farm Offset  
 Report Maps \ Box-Gum Woodland SAI  
 Author: D. Bambrick  
 Date created: 16.09.2021  
 Datum: GDA94 / MGA zone 55



Figure 5-2 SAI for Box-gum Woodland

## 6. Offsets Required

### 6.1 Direct Impacts

#### 6.1.1 Changes in vegetation integrity scores

Approximately 31 ha of Native Vegetation would be impacted by the development within the development footprint. Complete clearing of native vegetation has been assumed where impacts occur. An offset is required for all impacts of development on PCTs that are associated with:

- a) a vegetation zone that has a vegetation integrity score  $\geq 15$  where the PCT is representative of an endangered or critically endangered ecological community, or
- b) a vegetation zone that has a vegetation integrity score of  $\geq 17$  where the PCT is associated with threatened species habitat (as represented by ecosystem credits), or is representative of a vulnerable ecological community, or
- c) a vegetation zone that has a vegetation integrity score  $\geq 20$  where the PCT is not representative of a TEC or associated with threatened species habitat.

No credits are generated for four zones (PCT 266\_Low Condition, PCT 268\_Derived Grasslands, PCT 277\_Derived Grassland Low Condition and 277\_Planted Roadside) as the vegetation integrity score was below the threshold. The changes in vegetation integrity scores and ecosystem credits required for each of the zone in the development site is shown in Table 6-1

Table 6-1 Ecosystem Credits required

Zone ID	PCT/Zone	TEC	Total Area (ha)	Area Impacted (ha)	Current vegetation Integrity Score	Future vegetation Integrity Score	Ecosystem Credits Required
1	1330_Derived Grassland	Nil	1.76	0.45	<b>29.6</b>	0	8
2	1330_Poor Condition	<i>White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland)</i>	4.16	0.69	<b>39</b>	0	17
3	1330_Moderate Condition	<i>White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland)</i>	22.59	1.26	<b>64.8</b>	0	51
4	266_Low Condition	<i>White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland)</i>	2.66	0.52	<b>12.3</b>	0	0
5	268_Derived Grassland	Nil	6.86	2.53	<b>4.9</b>	0	0

Zone ID	PCT/Zone	TEC	Total Area (ha)	Area Impacted (ha)	Current vegetation Integrity Score	Future vegetation Integrity Score	Ecosystem Credits Required
6	268_Moderate Condition	<i>White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland)</i>	20.98	1.90	58.8	0	49
7	277_Derived Grassland Good Condition	<i>White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland)</i>	0.39	0.10	42.6	0	3
8	277_Derived Grassland Low Condition	Nil	27.36	3.97	12.8	0	0
9	277_Moderate Condition	<i>White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland)</i>	82.43	18.82	28.5	0	335
10	277_Planted	Nil	0.27	0.04	47.2	0	1
11	277_Planted Roadside	Nil	0.93	0.04	5.7	0	0
12	278_Low Condition	<i>White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland)</i>	0.41	0.0 (No impact to this zone)	15.8	0	0
13	278_Moderate Condition	<i>White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box-gum Woodland)</i>	2.00	0.51	69.7	0	22
14	766_Moderate Condition	Nil	2.85	0.17	33.8	0	3
			<b>175.65</b>	<b>31.00</b>			<b>489</b>

### 6.1.2 Loss of species credit species habitat or individuals

An offset is required for the loss of habitat of credit species within the development footprint. Three threatened species would be impacted by the development. The loss of habitat and species credits required as a result of the development is shown in Table 6-2

Table 6-2 Loss of species credit habitat

Species Credit Species	Biodiversity weighting	risk	Area of habitat impacted	Species Required	Credits
Fauna					
<b>Squirrel Glider (<i>Petaurus norfolcensis</i>)</b>	2.0		11.15 ha (Woodland areas connected to sightings)	204	
<b>Superb Parrot (<i>Polytelis swainsonii</i>)</b>	2.0		23.00 ha (Woodland areas connected to sightings)	348	
<b>TOTAL:</b>				<b>552</b>	

### 6.1.3 Loss of Paddock Trees

53 native paddock trees would be removed by the development and require offsetting. Offsets are required for all Class 2 and Class 3 paddock trees. A summary of ecosystem credits generated by the BAM-C is shown in Appendix G.

Table 6-3 Summary of loss of paddock trees

PCT	Class Paddock Tree	of Hollows present	Number Paddock cleared	of Credits required per Tree	Ecosystem credits required
266	Class 2	No	1	0.5	1
<b>266</b>	Class 3	No	4	0.75	3
<b>266</b>	Class 3	Yes	2	1	2
<b>268</b>	Class 2	No	-	0.5	0
<b>268</b>	Class 3	No	3	0.75	3
<b>268</b>	Class 3	Yes	4	1	4
<b>277</b>	Class 2	No	5	0.5	3
<b>277</b>	Class 3	No	17	0.75	13
<b>277</b>	Class 3	Yes	17	1	17
<b>TOTAL:</b>					<b>46</b>

## 6.2 Summary of Biodiversity Offset Credits Required

A summary of the biodiversity offset credits generated by the BAM-C is shown in Table 6-4.

Table 6-4 Summary of Biodiversity Offset Credits required by the development

PCT ID	PCT name	Ecosystem credits required
1330	Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	76
266	White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.	0
266	White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion. - <b>Paddock Trees</b>	6
268	White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion.	49
268	White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion – <b>Paddock Trees</b>	7
277	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	339
277	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion – <b>Paddock Trees</b>	33
278	Riparian Blakely's Red Gum – box – shrub -sedge-grass tall open forest of the central NSW South Western Slopes Bioregion.	22
766	Carex Sedgeland of the slopes and tablelands	3
<b>TOTAL:</b>		<b>535</b>

Species Credit Species	Species Credits Required	
Squirrel Glider ( <i>Petaurus norfolcensis</i> )	194	
Superb Parrot ( <i>Polytelis swainsonii</i> )	348	
<b>TOTAL:</b>		<b>542</b>

### 6.3 Summary of Conditions of Consent

This report addresses the project approval conditions as defined in Section 1. The

Update the baseline mapping of the vegetation and key habitat within the final disturbance area, and	Vegetation mapping updated with spatial data shown in Figures 3-11 to Figure 3-22 and Figure 6-1 to Figure 6-6 and provided to BCD.
Calculate the biodiversity offset credit liability in accordance with the Biodiversity Assessment Methodology under the NSW Biodiversity Offsets Scheme, in consultation with OEH and to the satisfaction of the Secretary	Biodiversity Credit Liability calculated and summarised in Section 6.2. Credits finalised in the BAM-Calculator and submitted (Case number 0001690)

<p><i>Within two years of the commencement of construction, the proponent must retire the required biodiversity credits to the satisfaction of OEH. The retirement of the credits must be carried out in accordance with the NSW Biodiversity Offsets Policy for Major Projects.</i></p>	<p>Credits submitted as Case number 0001690 to BCD. Proponent to retire within two years of commencement of construction.</p>
<p><i>No more than 28.1 hectares of Critically Endangered Ecological Community may be cleared for the project</i></p>	<p>Based on the current construction disturbance corridor these limits will not be exceeded. This will be audited under the Flyers Creek Wind Farm Construction Flora and Fauna Management Plan.</p>

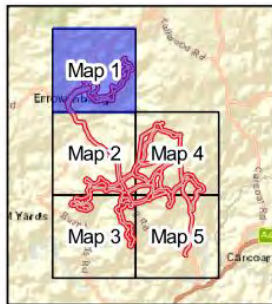




**18-558 Flyers Creek Wind Farm Offset Report - Impacts Requiring Offset Map 1**

- Legend**
- Development Site
  - Development Footprint
  - Native Vegetation Requiring Offset**
  - Paddock Tree
  - Class 2
  - Class 3
  - Box-Gum Woodland CEEC
  - PCT\_Zone (Requiring Offset)
  - 277\_moderate
  - 277\_planted
  - 788\_moderate
  - Superb Parrot Threatened Species Polygon
  - Native Vegetation Not Requiring Offset**
  - PCT\_Zone (Not Requiring Offset)
  - 277\_derived\_low

0 0.4 0.8 km



Ref: 18-558 Flyers Creek Wind Farm Offset Report Maps 1 Impacts Requiring Offset  
 Author: D. Bambrick  
 Date created: 20.09.2021  
 Datum: GDA94 / MGA zone 55



Figure 6-1 Impacts requiring Biodiversity Credits (map 1)



**18-558 Flyers Creek Wind Farm Offset Report - Impacts Requiring Offset Map 2**

**Legend**

Development Site	277_moderate
Development Footprint	277_planted
<b>Native Vegetation Requiring Offset</b>	766_moderate
Paddock Tree	Squirrel Glider Threatened Species Polygon
Class 2	Superb Parrot Threatened Species Polygon
Class 3	<b>Native Vegetation Not Requiring Offset</b>
Box-Gum Woodland CEEC	<b>PCT_Zone (Not Requiring Offset)</b>
PCT_Zone (Requiring Offset)	288_poor
1330_poor	277_derived_low
288_moderate	277_planted_roadside

0 0.4 0.8 km

Ref: 18-558 Flyers Creek Wind Farm Offset Report Maps 1 Impacts Requiring Offset  
 Author: D. Bambrick  
 Date created: 20.09.2021  
 Datum: GDA94 / MGA zone 55

**NGH**

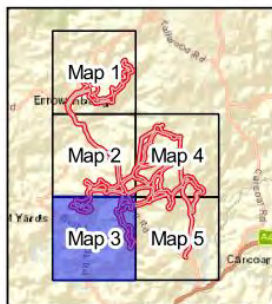
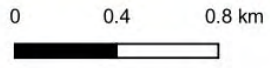
Figure 6-2 Impacts requiring Biodiversity Credits (map 2)



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**18-558 Flyers Creek Wind Farm Offset Report - Impacts Requiring Offset Map 3**

- Legend**
- Development Site
  - Development Footprint
  - Native Vegetation Requiring Offset**
  - Paddock Tree
  - Class 2
  - Class 3
  - Box-Gum Woodland CEEC
  - PCT\_Zone (Requiring Offset)
    - 277\_moderate
    - 766\_moderate
    - Squirrel Glider Threatened Species Polygon
    - Superb Parrot Threatened Species Polygon
  - Native Vegetation Not Requiring Offset**
  - PCT\_Zone (Not Requiring Offset)
    - 266\_poor
    - 277\_derived\_low



Ref: 18-558 Flyers Creek Wind Farm Offset Report Maps 1 Impacts Requiring Offset  
 Author: D. Bambrick  
 Date created: 20.09.2021  
 Datum: GDA94 / MGA zone 55



Figure 6-3 Impacts requiring Biodiversity Credits (map 3)



18-558 Flyers Creek Wind Farm Offset Report - Impacts Requiring Offset Map 4

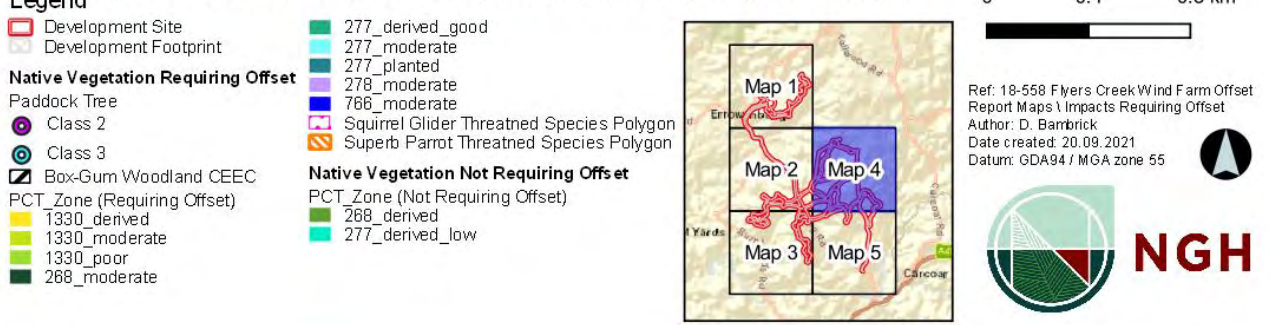


Figure 6-4 Impacts requiring Biodiversity Credits (map 4)



**18-558 Flyers Creek Wind Farm Offset Report - Impacts Requiring Offset Map 5**

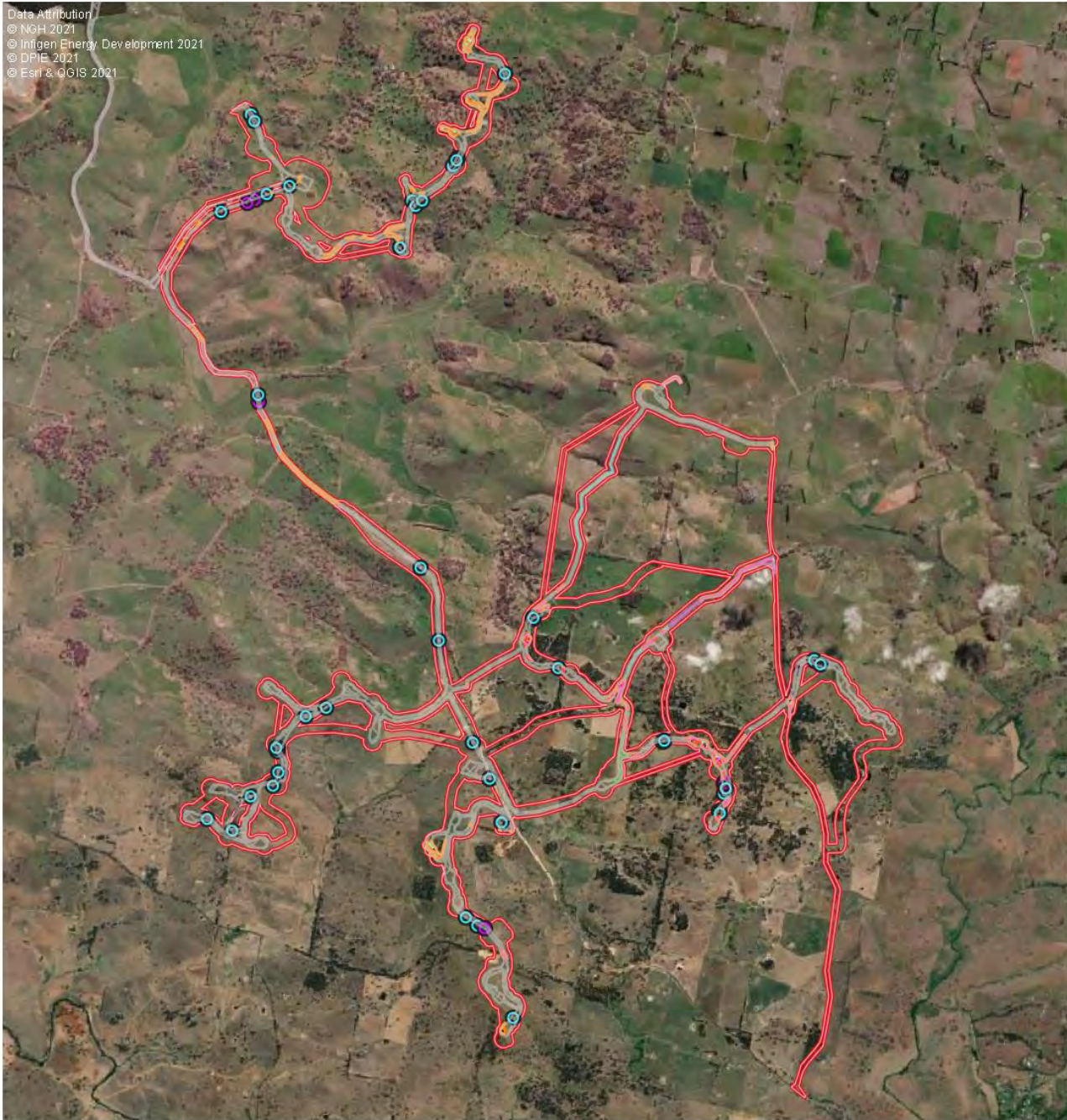
**Legend**

Development Site	PCT_Zone (Requiring Offset)
Development Footprint	288_moderate
Native Vegetation Requiring Offset	277_moderate
Paddock Tree	Squirrel Glider Threatened Species Polygon
Class 2	Superb Parrot Threatened Species Polygon
Class 3	Native Vegetation Not Requiring Offset
Box-Gum Woodland CEEC	PCT_Zone (Not Requiring Offset)
	288_derived

0 0.4 0.8 km

Ref: 18-558 Flyers Creek Wind Farm Offset Report Maps 1 Impacts Requiring Offset  
 Author: D. Bambrick  
 Date created: 20.09.2021  
 Datum: GDA94 / MGA zone 55

Figure 6-5 Impacts requiring Biodiversity Credits (map 5)



**18-558 Flyers Creek Wind Farm Offset Report - Impacts Requiring Offset Map 6**

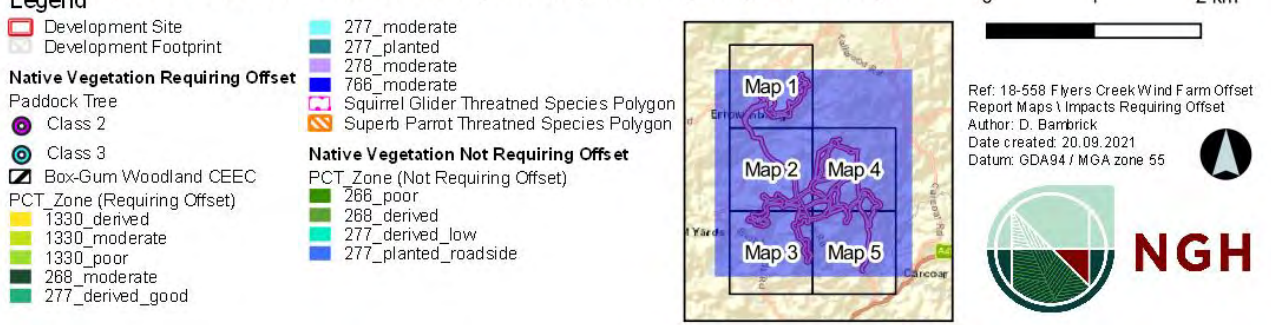


Figure 6-6 Impacts requiring Biodiversity Credits (map 6)

## 7. Conclusions

NGH has prepared this Biodiversity Offset Report on behalf of Flyers Creek Wind Farm Pty Ltd for the proposed Flyers Creek Wind Farm, NSW. The purpose of this report was to address Project Approval Conditions D5 and D6: Biodiversity Offset Package, which includes a sub condition to calculate the biodiversity offset credit liability in accordance with the Biodiversity Assessment Methodology and the NSW Biodiversity Offsets Scheme.

In this report, biodiversity offsets have been assessed through comprehensive mapping and assessment for Plant Community types, Planted Vegetation and Scattered paddock trees and threatened fauna habitat in the development site. Vegetation Integrity plots and targeted surveys have been undertaken to determine vegetation condition and threatened species habitat in accordance with the BAM.

Mitigation measures have been recommended for a Squirrel Glider Management Plan to address the prescribed impacts of loss of connectivity of movement for the Squirrel Glider.

The Biodiversity Credit requirement has been defined as:

- 49 Ecosystem credits for impacts to PCT 268 – *White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion.*
- 339 Ecosystem credits for impacts to PCT 277 – *Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion*
- 22 Ecosystem credits for impacts to PCT 278 – *Riparian Blakely's Red Gum – box – shrub - sedge-grass tall open forest of the central NSW South Western Slopes Bioregion*
- 3 Ecosystem credits for impacts to PCT 766 – *Carex Sedgeland of the slopes and tablelands of the semi-arid (warm) climate zone.*
- 76 Ecosystem credits for impacts to PCT 1330 – *Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion*
- 6 Ecosystem credits for impacts to scattered paddock trees associated of PCT 266- *White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.*
- 7 Ecosystem credits for impacts to scattered paddock trees associated of PCT 268- *White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion*
- 33 Ecosystem credits for impacts to scattered paddock trees associated of PCT 277- *Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion*
- 194 Species credits for impacts to Squirrel Glider
- 348 Species credits for impacts to Superb Parrot

As set out in Condition D6 of the Project Approval, the retirement of these credits must be carried out within two years of the commencement of construction in accordance with the NSW Biodiversity Offsets scheme and will be achieved by:

- (a) Retiring credits under the Biodiversity Offsets Scheme, or
- (b) Making payments into the Biodiversity Conservation Fund using the offset payments calculator, or
- (c) Funding a biodiversity action that benefits the threatened entity(ies) impacted by the development.

## 8. References

- Benson (2020) New South Wales vegetation Classification and Assessment: Part 2 Plant communities of the NSW South-western Slopes Bioregion and update of NSW Western Plains plant communities, version 2 of the NSWVCA database. *Cunninghamia* 10, 599–673.
- Bionet (2021) – Bionet: website for the Atlas of NSW Wildlife; accessed at [www.bionet.nsw.gov.au](http://www.bionet.nsw.gov.au)
- Brett Lane and Associates (BL &A) (2018a) Flyers Creek Wind Farm- Bird and Bat adaptive management plan DRAFT.
- Brett Lane and Associates (BL &A) (2018b) Flyers Creek Wind Farm - Targeted Superb Parrot Survey (Report No. 18090 2.1).
- Cartoscope. (2021). *Geological Sites of NSW*. Retrieved from <http://www.geomaps.com.au/scripts/centralwest.php>
- EAAFP. (2021). Retrieved from Flyway Site Network: <https://www.eaaflyway.net/the-flyway/flyway-site-network/>
- Geological Survey of NSW. (2021). *NSW Geology Plus*. Retrieved from [https://api.tiles.mapbox.com/v4/tybion.a0n6d2t9/page.html?access\\_token=pk.eyJ1IjoidHliaW9uIiwiaSI6IkJPWkFIRGMifQ.X8c8fyJg11-BDWz3KcOQBw#12/-33.5756/149.0508](https://api.tiles.mapbox.com/v4/tybion.a0n6d2t9/page.html?access_token=pk.eyJ1IjoidHliaW9uIiwiaSI6IkJPWkFIRGMifQ.X8c8fyJg11-BDWz3KcOQBw#12/-33.5756/149.0508)
- Kevin Mills & Associates (2011) Flyers Creek Wind Farm – Flora and Fauna Assessment
- Nature Advisory (2020) Flyers Creek Wind Farm – Bird Utilisation Survey (Report no. 18090 3.3), Nature Advisory (2019) Flyers Creek Wind Farm – Bird and Bat adaptive management program FINAL.
- NSW Department of Planning Industry and Environment (2019) Guidance to assist a decision-maker to determine a serious and irreversible impact (DPIE, 2019). Retrieved from <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/guidance-decision-makers-determine-serious-irreversible-impact-190511.pdf>
- Office of Environment and Heritage (OEH) (2016) NSW Guide to Surveying Threatened Plants. NSW Government
- Office of Environment and Heritage (OEH) (2017) Biodiversity Assessment Methodology (BAM). Office of Environment and Heritage for the NSW Government, Sydney, NSW.
- Threatened Species Scientific Committee (TSSC) (2016) – Conservation Advice: *Squirrel Glider*
- van der Ree R, Bennett AF (2003) Home range of the Squirrel Glider (*Petaurus norfolcensis*) in a network of remnant linear habitats. *Journal of Zoology*, London 259, 327-336.
- van der Ree R, Bennett AF, Gilmore DC (2003) Gap-crossing by gliding marsupials: thresholds for use of isolated woodland patches in an agricultural landscape. *Biological Conservation* 115, 241-249.