

# TECHNICAL MEMORANDUM

## Bird Utilisation Surveys 2023-2025

### Parron Wind Farm

PROJECT NUMBER	EP23-085(21)	DOC. NUMBER	EP23-085(21)—039B AJU
PROJECT NAME	Parron Wind Farm Development Support	CLIENT	Zephyr Energy Pty Ltd
AUTHOR	AJU	REVIEWER	RAW
VERSION	C	DATE	11/02/2025

## 1. INTRODUCTION

### 1.1. Background

Zephyr Energy Pty Ltd (the proponent) is planning on developing the Parron wind farm within lots 3738, 3739, 3742, 3743 and 3744 in Badgingarra, Western Australia (herein referred to as the 'site'). The location of the site is shown in **Figure 1**.

Emerge Associates (Emerge) has been engaged to undertake bird utilisation surveys (BUS) within and adjacent to the wind farm site to provide more detailed information on bird utilisation of the site and to support environmental impact assessment and approvals.

### 1.2. Scope of work

Emerge were engaged by the proponent to provide baseline ecological data on bird utilisation of the site consistent with a 'level one' risk assessment (Brett Lane & Associates Pty Ltd 2005) and with reference to the Commonwealth *Onshore Wind Farm Guidance – best practice approaches when seeking approval under Australia's national environmental law* (DCCEEW 2024).

Emerge completed a baseline BUS in September 2023 and have been engaged to undertake ongoing quarterly BUS, commencing October 2024. This technical memorandum documents the following:

- Desktop review of previous BUS at the site
- Methodology and results of Emerge BUS to date (an initial baseline BUS and two BUS field surveys)
- Analysis of survey data to date
- Discussion of results to determine bird utilisation of the site, with a particular focus on Carnaby's black cockatoo.

## 2. PREVIOUS SURVEYS

### 2.1. Badgingarra Wind Farm Targeted Bird Surveys (2008)

A fauna assessment including a BUS and targeted Carnaby's black cockatoo assessment was previously undertaken for the proposed Badgingarra wind farm, which included the site (Brett Lane & Associates Pty Ltd 2008). The location of the Badgingarra wind farm survey area in relation to the site is shown in **Figure 2**. As a part of this assessment, a fixed-point BUS was undertaken at 12 locations, six of which are within the site. Surveys were conducted between 17 and 23 March 2007 and consisted of an observer standing at a stationary point for 15 minutes and recording all birds and

their flight height, direction and distance from the survey point, within 200 m. Incidental observations were also recorded during the survey.

The survey recorded 61 species across the survey area, with habitat largely the same as the site.

Carnaby's black cockatoo was observed during the survey, with 19 flocks varying from one to 200 individuals recorded. One group of four individuals was seen at survey site 6 which lies within the Parron wind farm site (site 2 in the survey outlined in **Sections 4.1 and 4.2** and shown in **Figure 3**). The remaining individuals were not recorded during the BUS and so are expected to be incidental observations and may not have been recorded within the Parron wind farm site.

All Carnaby's black cockatoo flocks observed were flying below 10 m. Individuals throughout the survey area were observed exhibiting feeding, resting and movement behaviours across a variety of habitats.

## **2.2. Badgingarra Wind Farm Pre-Construction and Operational Monitoring (2019)**

A bird mortality monitoring program and an annual monitoring program for Carnaby's black cockatoo were previously undertaken for the Badgingarra Wind Farm, in accordance with conditions associated with the Shire of Dandaragan Planning Approval.

A baseline and pre-construction survey was undertaken in 2018 and operational monitoring surveys (BUS and mortality surveys) for Carnaby's Cockatoo and other birds were conducted between February and September 2019 (Ecoscape 2019). Operational surveys were undertaken four times in 2019: February, March, July and September. Each survey sampled eight impact and eight reference sites, with one reference site located within the western portion of Parron wind farm site along Cowalla Road (R34) and one reference site located directly adjacent to the south along Cadda Road (R12). All other sites are located to the west and south of the Parron wind farm site. Observations were classified into three flight height categories as described below:

- <20 m: below Badgingarra wind farm RSA
- 20-150 m: within Badgingarra wind farm RSA
- >150 m: above Badgingarra wind farm RSA.

A total of 3751 Carnaby's black cockatoo were recorded across each location in 2018 during baseline monitoring. Carnaby's black cockatoo was recorded in all survey months, with most individuals recorded during February and March. A total of 923 Carnaby's black cockatoo individuals were recorded in 2019, ranging from records of two individuals to a flock of 189 birds. Most (801) individuals were observed flying within the <20 m height category, with 19 individuals observed within the 20-150 m range and two flocks of 71 and 32 individuals respectively were recorded flying in both the <20 m and 20-150 m height categories.

No Carnaby's black cockatoo carcasses were recorded during the mortality surveys.

Ten opportunistic observations of Carnaby's black cockatoo were recorded during the February, March and April surveys, with flocks of between four and 200 birds. None of the opportunistic observations were located within the Parron wind farm site.

A summary of incidental Carnaby's black cockatoo observations from the wider Badgingarra Wind Farm during previous bird surveys are summarised in **Table 1**.

Table 1. Carnaby's Black Cockatoo Badgingarra Wind Farm Surveys incidental observations

Surveyor	Observation date	No. individuals	Observation type	Flight height	Survey notes	Location in relation to Parron wind farm site
Brett Lane and Associates Pty Ltd	16 March 2007	16	Sight	<10 m	Marri woodland	Small patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
	17 March 2007	80			Marri woodland	Small patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
		44			Exotic pasture	Extensive areas of this habitat occur within the Badgingarra Wind Farm survey area and the Parron wind farm site.
		88			Heathland	Patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
		16			Planted pine	Small patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
		48			Planted eucalypt	Small patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
		18 March 2007			26	Marri woodland
	34				Exotic pasture	Extensive areas of this habitat occur within the Badgingarra Wind Farm survey area and the Parron wind farm site.
	30				Banksia woodland	Habitat occurs only in the Badgingarra wind farm survey area and does not occur within the Parron wind farm site.
	36				Marri woodland	Small patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
	20 March 2007	7			Heathland	Patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
		18			Planted pine	Small patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
	21 March 2007	4			Planted eucalypt	Small patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.

Surveyor	Observation date	No. individuals	Observation type	Flight height	Survey notes	Location in relation to Parron wind farm site
	22 March 2007	20			Marri woodland	Small patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
	23 March 2007	15			Marri woodland	Small patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
	17 April 2007	88			Planted eucalypt	Small patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
	18 April 2007	200			Heathland	Patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
		6			Heathland	Patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
	19 April 2007	1			Planted eucalypt	Small patches of this habitat occur throughout Badgingarra Wind Farm survey area and within the Parron wind farm site.
Ecoscape	31 January 2019	4	Sight	0-20 m	Foraging along Cadda Road	May refer to portion of Cadda Road within Parron wind farm site or to the west.
	3 February 2019	5			Flying over Cadda Road west of the site	Refers to area of Cadda Road west of the Parron Wind Farm site.
		8			Flock in flight over Cadda Road	May refer to portion of Cadda Road within Parron wind farm site or to the west.
	4 February 2019	22			Flock in flight over planted pines	May refer to pines within the Parron wind farm site or elsewhere in the Badgingarra Wind Farm Survey Area.
		5			Flock in flight over Cadda Road	May refer to portion of Cadda Road within Parron wind farm site or to the west.
		12			Flying between planted pines at survey site T35 Near turbine southwest of the site	Refers to turbine survey site 35 southwest of the Parron Wind Farm site in Ecoscape monitoring survey

Surveyor	Observation date	No. individuals	Observation type	Flight height	Survey notes	Location in relation to Parron wind farm site
	5 February 2019	12			Flying over survey site T33	Refers to turbine survey site 33 west of the Parron Wind Farm site in Ecoscape monitoring survey.
	27 February 2019	24			Foraging in survey site T37	Refers to turbine survey site 27 west of the Parron Wind Farm site in Ecoscape Monitoring Survey.
	17 April 2019	200			Foraging in survey site T11	Refers to turbine survey site 11 west of the Parron Wind Farm site in Ecoscape Monitoring Survey.
	19 April 2019	88			Foraging along Cadda Road	May refer to portion of Cadda Road within Parron wind farm site or to the west.

### 3. METHODS

#### 3.1. INITIAL 2023-2024 SURVEYS

Two zoologists undertook a BUS within the site from 18 September to 22 September 2023 as a part of a *Basic Fauna and Targeted Black Cockatoo Assessment* (Emerge Associates 2023). The survey was undertaken using six fixed-point samples. Survey locations were selected based on areas where wind turbines were most likely to be situated and areas with the highest ground elevation (to maximise visibility), and in alignment with the Brett Lane & Associates Pty Ltd (2008) survey locations.

A BUS was also undertaken from 26-28 March 2024 at three survey locations in lot 3740 Cantabilling Road, directly adjacent to the northern border of the site (Emerge Associates 2024). One of the survey locations is identical to site 10 within the 2024-2025 surveys (refer **Section 3.2**).

Each survey was 15 minutes in duration and consisted of a count of all birds identified within positive identification range (approximately 200-300 m radius) from the sample location. Birds were identified to species level by sight or call. Each site was sampled for four consecutive days and at a different time of the day to account for variation in movements of species over the course of the day. Each bird species recorded was classified into one of the following three broad height categories according to the height at which the species was frequently observed:

- Height Category 1 (HC1) – Predominantly observed flying above canopy height.
- Height Category 2 (HC2) – Predominantly observed flying at canopy height.
- Height Category 3 (HC3) – Predominantly observed flying below canopy (in shrubs or crop/grasses)

Notes on the weather and survey time were also taken for each site. The locations of bird utilisation survey sampling sites are shown in **Figure 3** (see sites 1 to 6).

#### 3.2. 2024 – 2025 SURVEYS

Following the initial survey, ongoing quarterly BUS were implemented to align with the *Commonwealth Onshore Wind Farm Guidance – best practice approaches when seeking approval under Australia’s national environmental law* (DCCEEW 2024). Surveys have been undertaken so far in spring (29 October to 1 November 2024) and summer (14 to 17 January 2025).

To improve survey effort minor changes to methodology for the ongoing BUS were implemented, compared to the initial surveys. This involved the inclusion of two extra survey locations in the site (sites 7 and 8) to increase survey spatial and habitat coverage. Two reference locations outside the site were also added which were placed in habitats which reflect those within the site (see locations 9 and 10).

Each survey was carried out by two zoologists for four consecutive days. Two rangers from the Yued Aboriginal Corporation also attended the summer survey. Each location was surveyed once per day for 20 minutes each, at a different time of the day on each occasion. The following data was recorded:

- Bird species

- Number of individuals
- Flight distance (to a maximum of 800 m) and flight height (to the nearest 20 m) recorded using a Nikon Forestry Pro II Laser Rangefinder <sup>1</sup>

Incidental bird observations were noted as the zoologists traversed the site, particularly focussed on threatened species, raptors and waterbirds.

## 4. RESULTS

### 4.1. INITIAL 2023-2024 SURVEYS

A total of 630 individuals were recorded from the BUS undertaken as a part of the initial *Basic Fauna and Targeted Black Cockatoo Assessment* representing 51 species. are presented in **Table 2**.

No threatened or priority species were recorded directly during the surveys, however *Zanda latirostris* (Carnaby's black cockatoo)<sup>2</sup> was indirectly recorded in the form of historic foraging evidence on Banksia fruits. The location of the foraging evidence is shown in **Figure 3**.

A total of 227 individuals were recorded from BUS undertaken as a part of the *Basic Fauna and Targeted Black Cockatoo Assessment* within Lot 3740 Cantabilling Road representing 23 species.

No Carnaby's black cockatoos were recorded in Lot 3740 Cantabilling Road during the March 2024 BUS.

### 4.2. 2024-2025 SURVEYS

Overall, 1202 birds were recorded from 42 species during the two survey periods across 400 observations as individuals or groups. Of these observations seven (representing 5 species and 16 individuals, none of which were threatened and no Carnaby's black cockatoo) were recorded flying at RSA height (70-228 m).

One threatened species was recorded during the January 2025 survey, Carnaby's black cockatoo. A flock of approximately 90 individuals were observed on 14 January 2025 in the centre-west of the site foraging on a stand of non-native pines along Cowalla Road, within BUS site 8. During the fixed-point survey 54 of these individuals flew east along Cowalla Road at 20-25 m height.

On 17 January 2025, 14 Carnaby's black cockatoo individuals were observed foraging in the same location and flew directly south when startled, also flying at 20-25 m high. The location of these observations is shown in **Figure 3**.

## 5. SUMMARY AND CONCLUSIONS

Two zoologists undertook bird utilisation surveys within the site in different seasons in 2023, 2024 and 2025. The initial site baseline survey in September 2023, baseline BUS to the north of the site in March 2024 and the BUS in October/November 2024 surveys did not record Carnaby's black cockatoo at the fixed-point locations. The January 2025 survey recorded Carnaby's black cockatoo on

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<sup>1</sup> Where flight height data could not be obtained from birds in flight, heights were estimated to the nearest 20 m using nearby objects such as trees/powerlines etc. as references.

<sup>2</sup> Listed as endangered (EN) under the EPBC Act and BC Act.

two of the four days, with flocks of 90 and 14 birds observed foraging on non-native pines in the central-western portion of the site, near BUS site 8.

A summary of Carnaby’s black cockatoo BUS results to date are presented in **Table 4**.

*Table 2: Summary of Carnaby’s black cockatoo observations within the site and surrounds during BUS to date*

Surveyor	Survey Date	No. individuals	Observation type	Flight height	Comments
<b>Within the site</b>					
Brett Lane and Associates Pty Ltd	March-April 2007	4	Sight	<10 m	Observed at site 2 in <b>Figure 3</b> .
Ecoscape	3 February 2019	17	Sight	0-20 m	Western portion of site along Cowalla Road (Ecoscape site R34 in <b>Figure 3</b> .)
	5 February 2019	14			
	6 February 2019	126			
	7 February 2019	10			
	8 February 2019	4			
	24 March 2019	144			
	July 2019	0	N/A	N/A	N/A
	September 2019	0			
Emerge Associates	September 2023	0	N/A	N/A	N/A
	October-November 2024	0			
	January 2025	90	Sight	25 m	Foraging on pines near site 8. 54 individuals flew east along Cowalla Road. 36 individuals remained in the pines.
14		25 m		Foraging on pines in site 8. All individuals flew directly south when startled.	
<b>Within the Badgingarra Wind Farm development approval area</b>					
Ecoscape	3 February 2019	189	Sight	0-20 m	Ecoscape BUS site R01
	4 February 2019	89			
	5 February 2019	90			
	5 February 2019	9			Ecoscape BUS site R09
	3 February 2019	71			Ecoscape BUS site R15

Surveyor	Survey Date	No. individuals	Observation type	Flight height	Comments
	6 February 2019	4		20-150 m	
	18 February 2019	3		0-20 m	Ecoscape BUS site T32
	19 February 2019	32		0-20 m, 20-150 m	Ecoscape BUS site T36
	21 February 2019	44		0-20 m	
	22 February 2019	4			
	19 February 2019	12		20-150 m	Ecoscape BUS site R01
	20 February 2019	2			
	20 February 2019	8		0-20 m	Ecoscape BUS site R09
	22 February 2019	-			
	22 February 2019	16			Ecoscape BUS site R15
	23 February 2019	11			
	21 March 2019	-			Ecoscape BUS site 36
	2 August 2019	2			Ecoscape BUS site R22
	17 September 2019	22			Ecoscape BUS site R15
Emerge Associates	March 2024	0	N/A	N/A	Only BUS sites 9 and 10 (and an additional BUS site between the two) was surveyed.

Other BUS and opportunistic observations within the local area recorded Carnaby's black cockatoo in January, February, March, April, July and September (Brett Lane & Associates Pty Ltd 2008; Ecoscape 2019). Records ranged from a single individual to a flock of 200 Carnaby's black cockatoos, with most flying at less than 20 m high.

In summary:

- Carnaby's black cockatoo occur in the site and immediate surrounds in higher numbers during the non-breeding season (January – June) compared to the breeding season (July – December) according to both BUS (97.7% of observations) and incidental recordings (100% of observations).
- There have been no confirmed records of Carnaby's black cockatoo within the site or surrounding area flying within RSA height<sup>3</sup>. While records from Ecoscape refer to individuals flying in the 20-150 m range, this is reflective of a height categorisation as per the RSA height from the Badgingarra Wind Farm (refer to **Section 2.2**). Given the majority of observations summarised from previous assessments indicate Carnaby's black cockatoos flying well below the Parron Wind Farm RSA height, it is likely these Ecoscape observations were recorded within the Badgingarra Wind Farm RSA height, but below the Parron Wind Farm RSA height.
- Flock sizes during non-breeding season vary from 2 to 200 individuals, with a median flock size of 15. There is limited data for flock size during breeding season within the local area due to the infrequency of sightings, nevertheless, flocks vary from 2-22 individuals with a median of 12.

## 6. REFERENCES

### 6.1. General references

- Brett Lane & Associates Pty Ltd 2005, *Wind Farms and Birds: Interim Standards For Risk Assessment - Australian Wind Energy Association Report*, 2003.35(2.2).
- Brett Lane & Associates Pty Ltd 2008, *Proposed Badgingarra Wind Farm Flora and Fauna Assessment*, No. 7044 Version 1.9.
- Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2024, *Onshore Wind Farm Guidance - best practice approaches when seeking approval under Australia's national environment law*, <https://consult.dcceew.gov.au/onshore-wind-farm-guidance>.
- Ecoscape 2019, *Carnaby's Cockatoo and Other Birds Year One Operational Monitoring*, 4309-19R, Ver 0.
- Emerge Associates 2023, *Parron Wind Farm Development Support - Basic Fauna and Targeted Bird and Bat Assessment*, EP23-085(02)--004 AJU, Version 1.
- Emerge Associates 2024, *Parron Wind Farm Northern Portion Development Support - Reconnaissance Flora and Vegetation Assessment*, EP23-085(07)--015 MS, Version 1.

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<sup>3</sup> Parron Wind Farm RSA height = 70-228 m

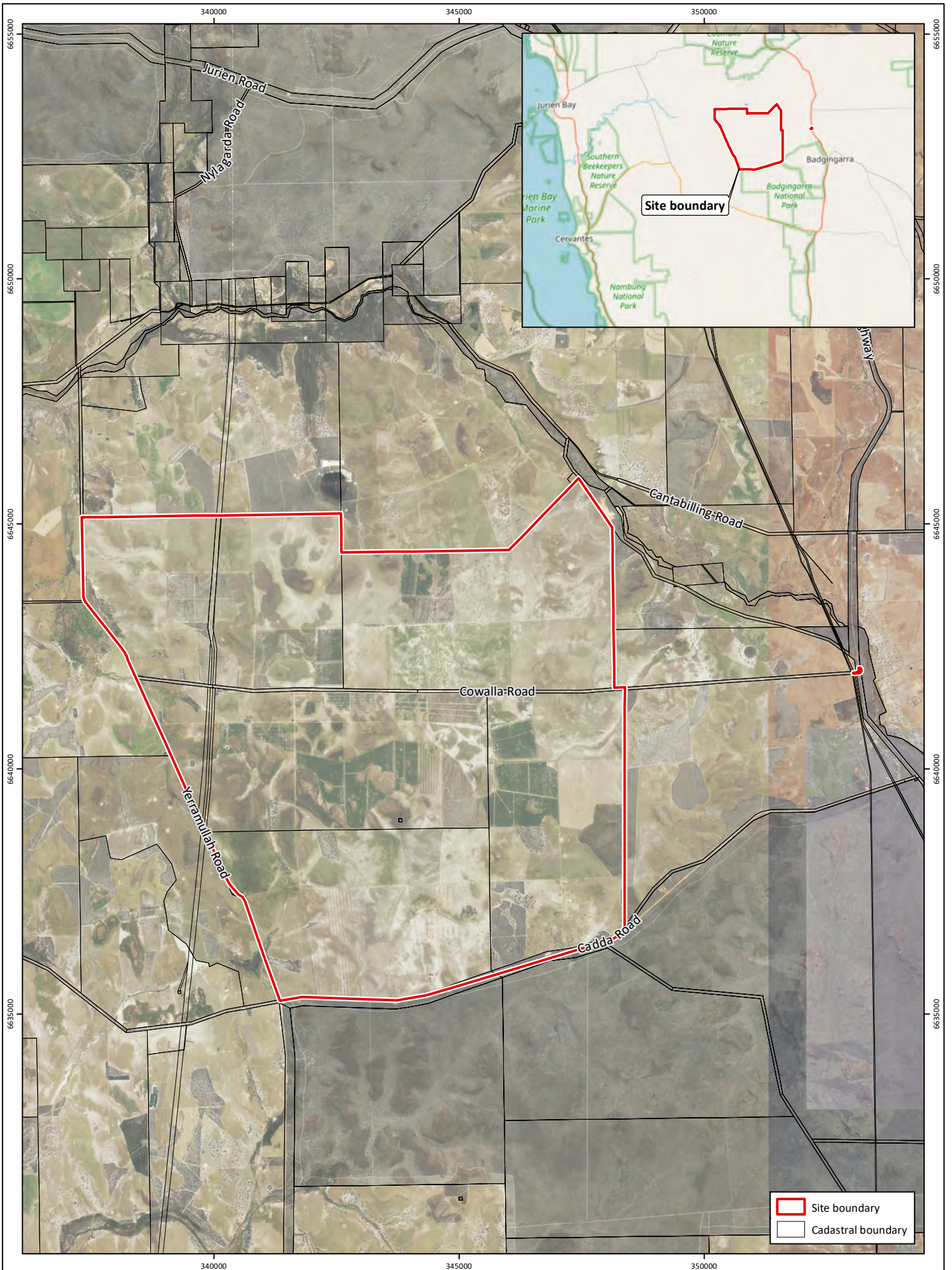
# Figures



*Figure 1: Site Location*

*Figure 2: Badgingarra Wind Farm Survey Area*

*Figure 3: Fixed-Point Bird Utilisation Survey Sites*

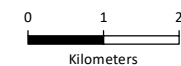


**Figure 1: Site Location**

**Project:** Bird Utilisation Survey  
Parron Wind Farm Development Support

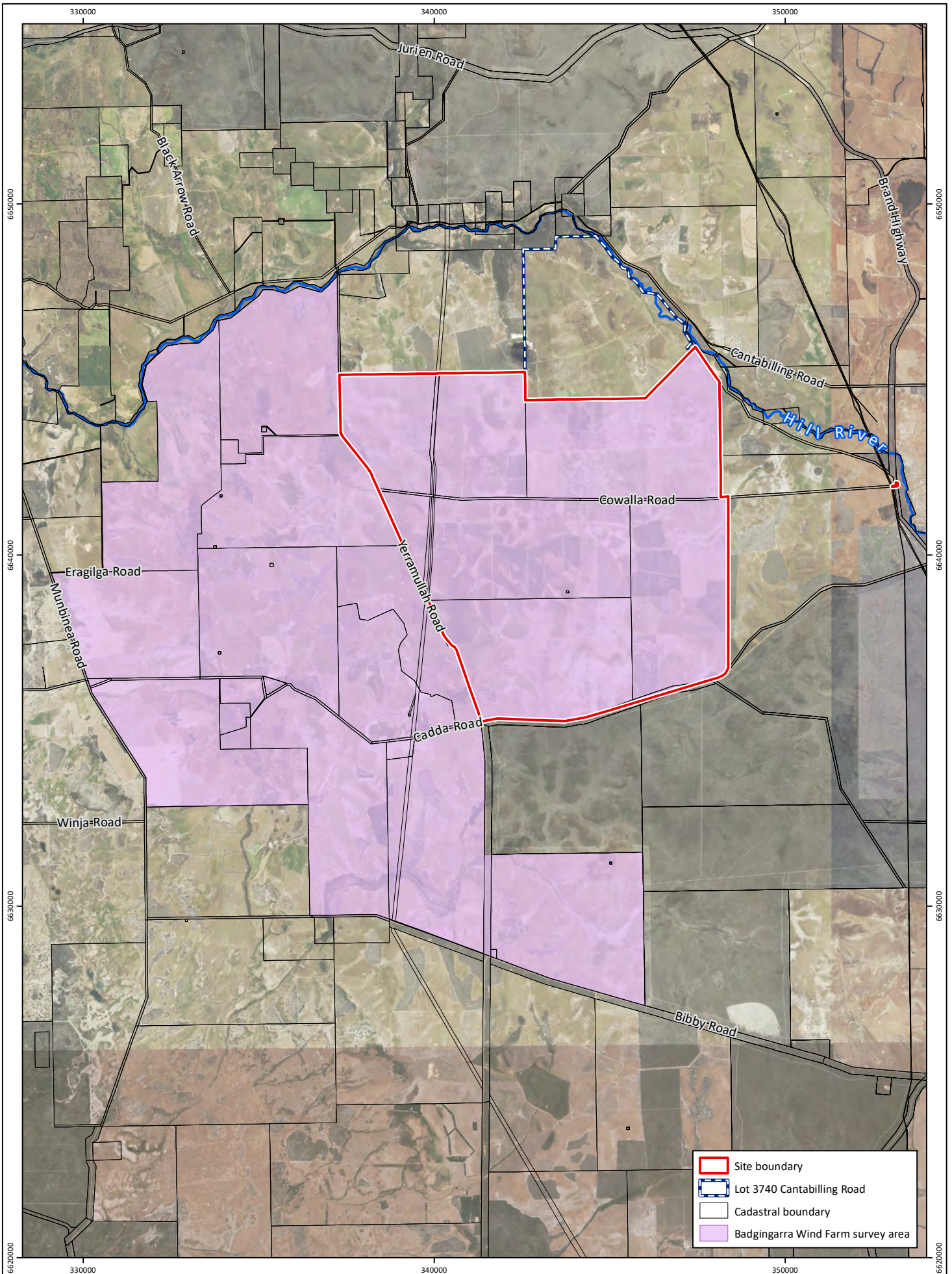
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**Plan Number:** EP23-085(21)--F146a  
**Drawn:** GAR  
**Date:** 11/02/2025  
**Checked:** AJU  
**Approved:** RAW  
**Date:** 11/02/2025



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GDA2020 MGA Zone 50

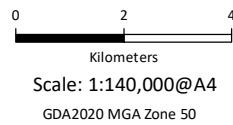




**Figure 2: Badgingarra Wind Farm Survey Extent**

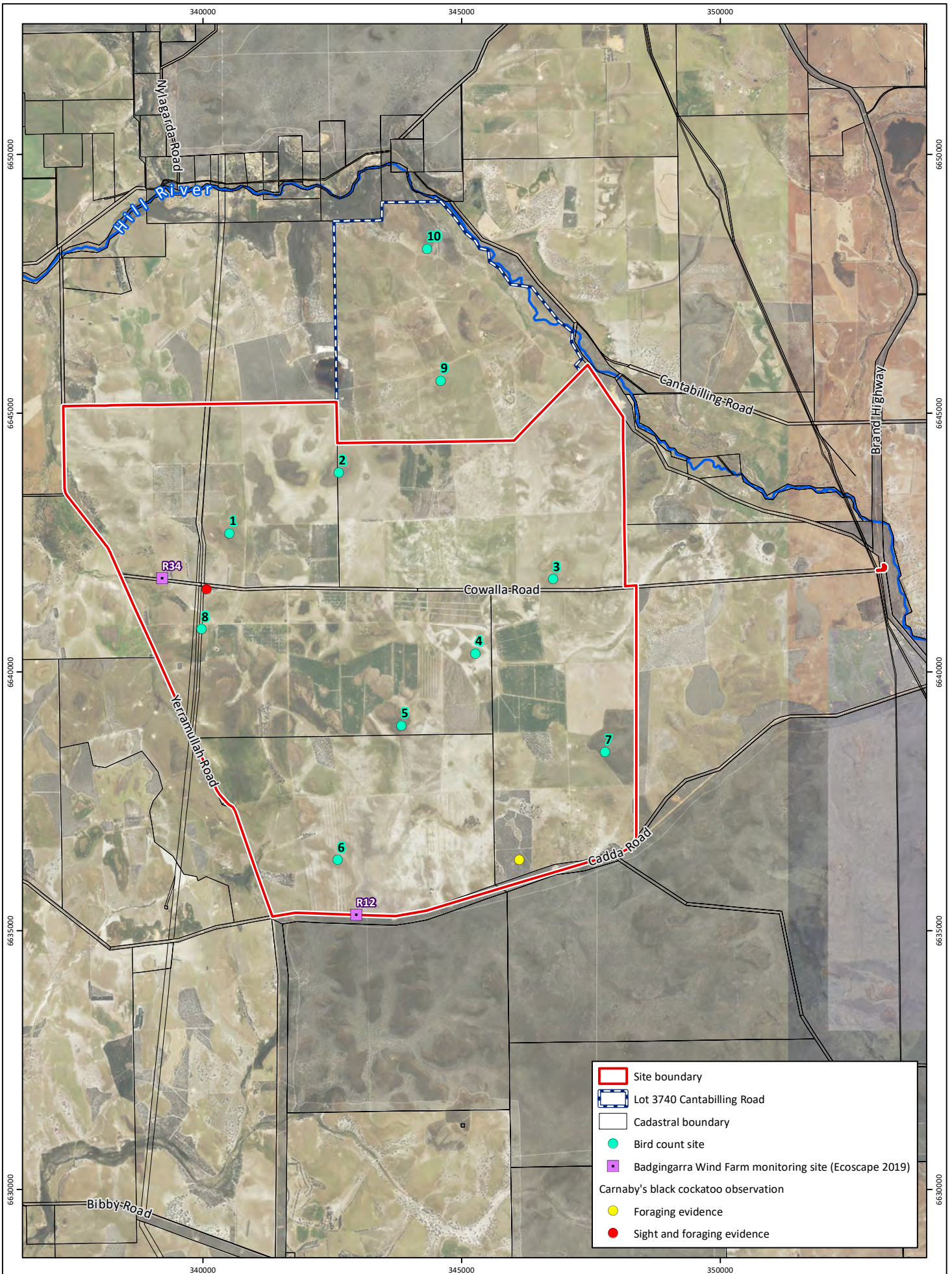
**Project:** Bird Utilisation Survey  
Parron Wind Farm Development Support  
**Client:** Zephyr Energy Pty Ltd

**Plan Number:** EP23-085(21)--F148  
**Drawn:** GAR  
**Date:** 18/02/2025  
**Checked:** AJU  
**Approved:** RAW  
**Date:** 18/02/2025



- Site boundary
- Lot 3740 Cantabilling Road
- Cadastral boundary
- Badgingarra Wind Farm survey area





**Figure 3: Bird Utilisation Survey Sites**

Plan Number:  
EP23-085(21)--F147a  
Drawn: GAR  
Date: 11/02/2025  
Checked: AJU  
Approved: RAW  
Date: 11/02/2025



Scale: 1:95,000@A4  
GDA2020 MGA Zone 50

**Project:** Bird Utilisation Survey  
Parron Wind Farm Development Support  
**Client:** Zephyr Energy Pty Ltd

