Cattle Hill Wind Farm

EPBC 2009/4839

13 August 2023 to 13 August 2024

Annual Compliance Report 2024

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For:	Wild Cattle Hill Pty Ltd

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Draft	*1 November 2024*	*Renae Gifford (GWA)*	*Jeff Bembrick (GWA)*
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Distribution

Name	Organisation	Project Role
Wild Cattle Hill Pty Ltd (WCHPL)		
Xiaolin Wang	*Powerchina Australia*	*Managing Director*
Wilson Yuan	*Powerchina Australia*	*Senior Consultant*
Simon Williams	*Powerchina Australia*	*Owners Representative - Operations Manager*
Ning Chen	*GWA*	*Chief Executive Officer GWA*
Goldwind Australia Pty Ltd (GWA)		
Vincent Qiao	*GWA*	*CHWF Asset manager*
Kylie Hampel	*GWA*	*HSEQ Manager*
Brad Fernie	*GWA*	*HSEQ Manager Service*
Paul Collins	*GWA*	*CHWF Site Managers*
Philip Bowyer-Bower	*GWA*	

Delivery Address for Annual Compliance Report	
Post	Audit and Assurance Section Compliance and Enforcement Branch Environment Assessment and Compliance Division Department of Climate Change, Energy, Environment and Water GPO Box 787, Canberra ACT 2601
Email	Attn: Katie Tangney *post.approval@dcceew.gov.au; epbcmonitoring@dcceew.gov.au*

ABBREVIATIONS

ASL	Above Sea Level
Cattle Hill Wind Farm	Comprising 48 wind turbines and up to 150 MW capacity
CEMP	Construction Environmental Management Plan (approved by EPA under Condition CN2 of EPN 10105/1)
Central Highlands Region	Area north of Bothwell, East of Bronte Park and surrounds, South of Liawenee, West of the Great Western Tiers
CHC	Central Highlands Council
CHWF	Cattle Hill Wind Farm
Commission(ed/ing) (EPBC)	the date the wind farm commences the generation of electricity for sale
Commissioning (EPN)	EPN 10105/1 defines commissioning as the testing of turbines and is taken to be completed when 90% of the turbines are being operated in the course of normal commercial operations.
DCCEEW or Department	Department of Climate Change, Energy, Environment and Water *(previously DCCEEW, Department of Agriculture, Water, and Environment)*
Director	Director, Tasmanian Environment Protection Authority, holding office under Section 18 of EMPCA. Includes a person authorised in writing by the Director to exercise a power or function on the Director's behalf.
DPEMP	Development Proposal and Environmental Management Plan
DPIPWE	Tasmanian Department of Primary Industry, Parks, Water and Environment
EMOP	Eagle Mortality Offset Plan
EMPCA	*Environmental Management and Pollution Control Act 1994*
EPA	Tasmanian Environment Protection Authority
EPBC	*Environment Protection and Biodiversity Conservation Act 1999*
EPBC 2009/4839	EPBC Approval No. 2009/4839
EPC	Engineer, Procure and Construct
EPN	Environment Protection Notice (10105/1 issued 13 Mar 2019, then EPN 10105/2 from 12 June 2024
ERP	Emergency Response Plan
First Full Operations	First time when all turbines allowed to simultaneously operate and generate up to maximum output
FOMP	Flora Offset Management Plan
HB	Hazell Brothers
GWA	Goldwind Australia Pty Ltd (ACN 140 108 390)
Ha	Hectare
IDF	IdentiFlight System
kV	Kilovolt
MW	Megawatt
NVA	Natural Values Atlas
O&M	Operations and Maintenance
OEMP	Operations Environmental Management Plan (approved by EPA under Condition G11 of EPN 10105/1)
PCA	Powerchina Australia Development Pty Ltd
SCADA	Supervisory Control and Data Acquisition
TasNetworks	Own, operate and maintain the electricity transmission and distribution network in Tasmania.
TFS	Tasmanian Fire Services
The Land	Project land, Central Tasmania, east of Lake Echo and off Bashan Rd, approximately 3km southwest of Waddamana, including part or all of titles 135246/1; 29897/1; 29897/3; 29897/5; 248810/1; 135247/1; 135247/2; 29888/4; and 29897/6
The Proponent	Wild Cattle Hill Pty Ltd (WCHPL) ACN 610 777 369
VDC	Van Diemen Consulting
WTE	Tasmanian Wedge-tailed Eagle (*Aquila audax fleayi*)
WBSE	White-bellied Sea-eagle (*Haliaeetus leucogaster*)
WCHPL	Wild Cattle Hill Pty Ltd ACN 610 777 369, L25, 100 Barangaroo Avenue, Barangaroo NSW 2000

TABLE OF CONTENTS

Figures

Tables

Plates

Declaration of Accuracy

This Annual Compliance Report relates to the Cattle Hill Wind Farm located in Central Highlands of Tasmania.

The Annual Compliance Report has been prepared in accordance with the requirements of Condition 27 of the Approval issued under the Environment Protection Biodiversity and Conservation Act 1999,

Cattle Hill Wind Farm, Tasmania - EPBC 2009/4839

This Report:

- *has been prepared for submission to the Department of Climate Change, Energy, Environment and Water in accordance with the submission date specified in the Department's email of 17 May 2019.*
- *addresses each of the Conditions of the Approval and management plans to describe the status of compliance with the respective requirements*
- *provides an accurate account of the respective matters for the Approval and does not intentionally misrepresent circumstances*
- *Is made publicly available through publication on the Cattle Hill Wind Farm website (www.cattlehillwindfarm.com).*

Jeff Bembrick

Head of Planning Compliance, Goldwind Australia, on behalf of Wild Cattle Hill Pty Ltd.

8 November 2024

1 INTRODUCTION

1.1 Purpose of this document

This Annual Compliance Report describes the activities undertaken and relevant performance in respect of:

- **Project:** Cattle Hill Wind Farm
- **Proponent:** Wild Cattle Hill Pty Ltd (ACN 610 777 369)
- **EPBC Approval:** EPBC 2009/4839
- **Condition no. 27:** – Fourth report under requirements of Condition 27
- **Report period:** 12 months from 13 August 2023 to 13 August 2024
- **Project phase:** Operations phase for all of reporting period (4th report for a full year of operations)

The report has been prepared by Goldwind Australia (GWA) on behalf of Wild Cattle Hill Pty Ltd (WCHPL). The report has also been subject to review by PowerChina Australia Development Pty Ltd as the majority shareholder in WCHPL.

The report has been prepared in accordance with Condition 27 of EPBC Approval, EPBC 2009/4839, to fulfil the requirements of Condition 27. **Table 1.1** lists the requirements of Condition 27 and the sections of this report where each requirement is addressed.

Table 1.1: EPBC Condition 27 - Annual Compliance Reporting Requirements

EPBC Approval Condition 27 Reporting Requirements	Response details
Within 90 days of each anniversary of the commencement of the action, the person taking the action must:	Submission due by 11 November
• publish a report on its website addressing: ○ compliance with each of the conditions of this approval, including ○ implementation of any management plans as specified in the conditions.	This report with details as described in Section 4 and Appendix A
• Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published.	Submission of this report to DCCEEW and accessibility on CHWF Website
• Unless otherwise directed in writing by the Minister the report must include a chapter that outlines how each injured or sick wedge-tailed eagle was rehabilitated in accordance with the requirements of Condition 19. This must include: a. how the injured or sick wedge-tailed eagle was identified for rehabilitation b. the nature of injuries and/or sickness at the commencement of rehabilitation c. the actions taken to rehabilitate the wedge-tailed eagle including the location and costs of rehabilitation and qualification and experience of persons involved in rehabilitation; and d. potential survival in the wild.	Not required this report period. No sick or injured WTE during the report period.

A summary of compliance status for the Approval Conditions is shown in **Table 1.2**.

Table 1.2 – Summary of Compliance for Conditions of Approval

Condition	Compliance Status	Management Plan	Date Approved	Comment
1	Complies	Layout complies	Report Period	Complete
2	Complies	Construction works complied	Report Period	Complete
3	Complies	Records are maintained	Addressed	Ongoing
4	Complies	Operational full period	Report Period	Complies
5	Complies	Operational full period	Report Period	Complies
6	*Revoked*			
6A	Complies	CAD Plan approved	28 May 2018	Approved
6B	Complies	Commissioning from 19/11/19	Achieved	Complete
6C	Complies	18-month CADP-IDF Trial Assessment Report	Submitted March 2022	Complete
7	*Revoked*			
8	*Revoked*			
9	*Revoked*			
10	Complies	Zero WTE mortalities	Annual review	Ongoing
11	Complies	Revised CADP submitted on time – updates required and will incorporate details for IDF 17	Update to be re-submitted in next reporting period	Updated document to be re-submitted.
12	Complies	Physical search records kept	Records kept	Ongoing
13	Complies	Roads signposted for 40 kmph	Signs installed	Ongoing
14	Complies	Site staff conduct reviews	Addressed	Ongoing
15	Complies	Searches done since 19/11/19	Addressed	Ongoing
16	Complies	DCCEEW approved plans 8/01/2019	8 Jan 2019	Ongoing
17	Complies	First payment 24 October 2019	Annual payment made as required	Annual (as required)
18	Not due yet	Due after 5 years of funding, i.e. 29/10/24	NA	Future
19	Complies	>2 WTE mortality or injury – Applicable at end of 2022.	Not Triggered	Ongoing
20	Not due yet	After ten years, i.e. 5 Aug 2030	NA	Future
21	*Revoked*			
22	Complies	Weed Management Plan	14 Dec 2017	Ongoing
23	Complies, FOMP approval	Flora Offset Strategy Flora Offset Management Plan	15 Mar 2018 10 Aug 2019	Approved Approved
	FOMP implementation	FOMP implementation in progress – Covenants registered on title	Ongoing	Ongoing
24	Complies	No new threatened species	Report Period	Ongoing
25	Complies	Notifications complete	Report Period	Complete
26	Complies	All required records are kept	Report Period	Ongoing
27	Complies	5th Annual Compliance Report	By 11 Nov 2024	Complies

28	Not applicable	No direction from Minister	Report Period	Ongoing
29	Not applicable	No revisions	Report Period	Ongoing
30	Not applicable	No requests from Minister	Report Period	Ongoing
31	Not applicable	Action commenced within 5yrs	Closed	Complete
32	Complies	Website is maintained	Report period	Ongoing
33	Not applicable	No public requests	Report Period	Ongoing

2 SUMMARY DETAILS OF CHWF PROJECT, LOCATION AND CONTEXT

2.1 Project Context

Cattle Hill Wind Farm (CHWF) has been developed in the Central Highlands of Tasmania to the east of Lake Echo and to the southwest of the Village of Waddamana. Construction commenced in 2018 and is now complete, with all wind turbines installed, commissioning of turbines occurring from November 2019 to end of April 2020 and, the wind farm's first full operations was achieved by 04 August 2020.

The wind farm comprises 48 Goldwind wind turbines that can collectively produce 148.5 MW of electricity sourced from the wind energy resources available at the site (144 MW maximum allowed output to Grid).

CHWF can power approximately 63,500 Tasmanian homes, which increased Tasmania's renewable energy generation capacity by approximately 5% providing a significant contribution to Tasmania's achievement of becoming fully self-sufficient with renewable energy in 2022.

2.2 Project Locality and Setting

CHWF is located in Tasmania's Central Highlands, approximately 93 kilometres (kms) north-west of Hobart and 110 kms south of Launceston. The site is within a sparsely populated and relatively isolated part of the Central Highlands Council municipal area, on land which ranges in height of the wind turbine sites from approximately 764 to 915 metres (m) above sea level (**Figure 2.1**).

The site is approximately 35 kms south of the township of Miena and is bordered geographically by Lake Echo to the West, and the Ouse River Valley to the east, where the former Waddamana Power Station remains as a heritage site and museum. Waddamana village is about 3 kms to the northeast and contains a collection of semi-vacant residences which now provide short term accommodation. The Waddamana Power Station and associated infrastructure, penstocks, canals, pipelines and access network are part of the local area heritage and receive low level of visitation by tourists to the region.

The CHWF site is accessible by unsealed roads from the northeast, east and south, normally associated with very low traffic levels.

The wind farm occupies an area of approximately 4,121 hectares of privately-owned land (**Section 2.4**).

Lake Echo to the west of the project area, is a Hydro Tasmania asset and together with Ouse River to the east of CHWF, provides recreational fishing opportunities for the community and sporting groups.

Grazing and forestry land are located to the north, east and south and are associated with sparse rural housing. The project area itself comprises ten lots, owned by two landowners, and has been historically used for cattle grazing, forestry and hunting.

The FOMP comprises three areas to offset the project's unavoidable impacts on orchid species at the CHWF Site. The three areas are shown in **Figure 4.5** and comprise:

- one offset area on the CHWF site, referred to as '*Bashan Ledge*', and
- two offset areas external to the CHWF site, referred to as '*Wihareja*' and '*Stone Hut*'.

The Bashan Ledge covenant is designed to protect known habitat or occurrence of the following conservation significant species, in perpetuity:

- Highland Poa grassland - a State threatened vegetation community.
- Liawenee greenhood (*Pterostylis pratensis*), an EPBC listed orchid.
- Ptunarra brown butterfly (*Oreixenica ptunarra*) a State and EPBC listed invertebrate.
- Clover glycine (*Glycine latrobeana*) a State and EPBC listed herb.

These covenant areas have been excluded from staff or visitor access since 2020, with ecologists carrying out monitoring for the Bashan ledge offset since 2020 in accordance with the Flora Offset Management

Plan, and protective fencing established in 2022.

During the reporting period a protracted process of registering these three offsets as protected covenants was completed, with Covenant Dealings for Dungrove Land Co P/L (Stone Hut) and Tasberry Holdings (Womans Creek and Bashan Ledge) being registered on the 8th April 2024.

An existing TasNetworks high voltage electricity transmission easement crosses the site allowing the wind farm to connect to the transmission network, with the addition of only minor new overhead line infrastructure required between the wind farm substation and the existing 220 kV line easement. Operation and maintenance of the TasNetworks transmission lines require occasional visitation by TasNetworks and its contractors to the project locality.

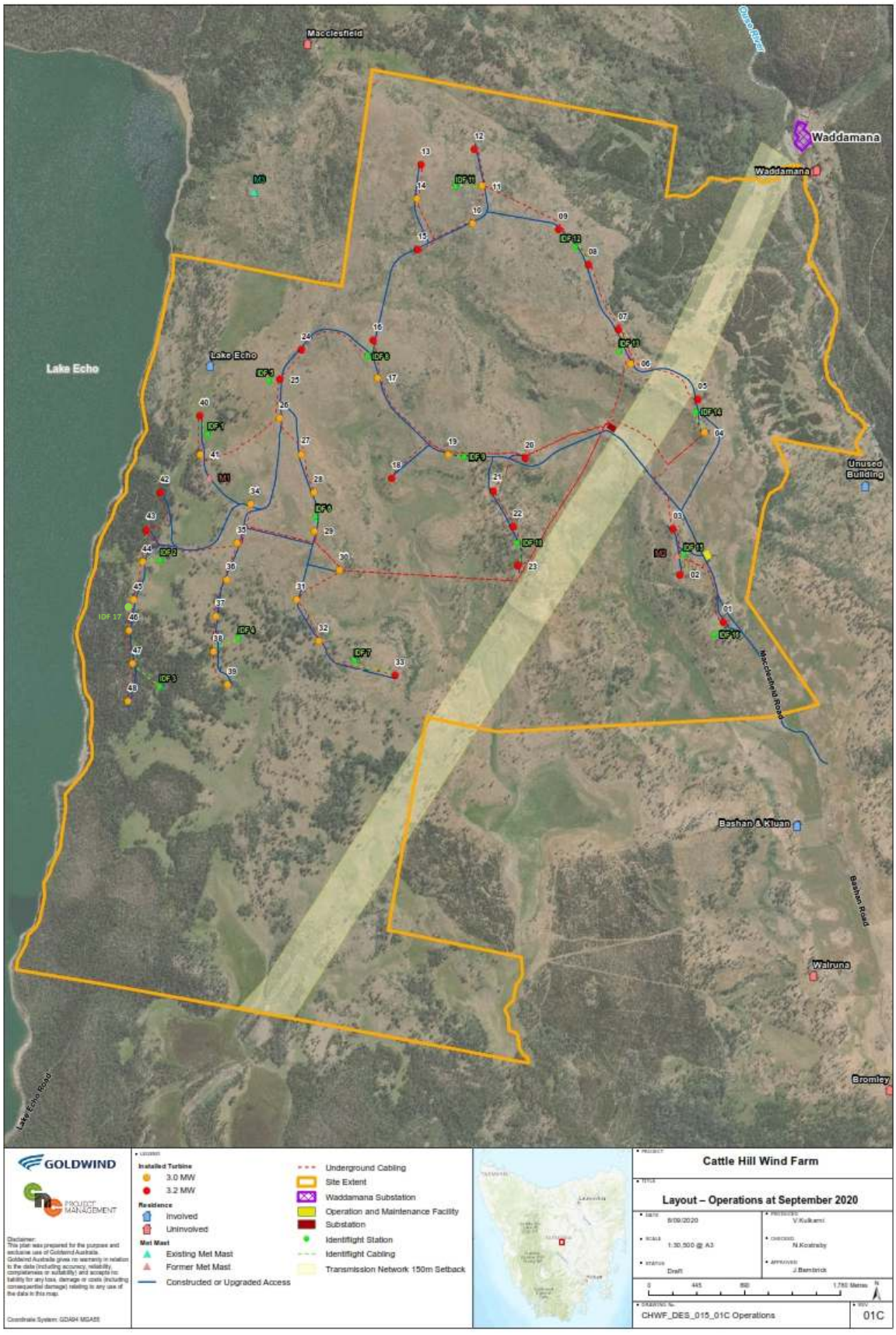


Figure 2.1 – Cattle Hill Wind Farm Project Layout of Operating Wind Farm at September 2020

2.3 Associated Planning Approvals

In addition to the EPBC approval for the CHWF Project, the development has required approvals from Tasmanian State and Local regulators as detailed in **Table 2.1**.

Table 2.1 – Details of planning and environmental approvals for CHWF

Jurisdiction	Regulator	Approval No.	Infrastructure
Commonwealth	Department of Agriculture, Water and Environment (DCCEW)	EPBC 2009/4839	CHWF
State	Environment Protection Authority	EPN 10105/1	CHWF
Local	Central Highlands Council - Permit	DA 2010/19, as amended	CHWF
Local	Central Highlands Council - Permit	DA 2017/56	Identiflight System (amended in March 2023 for additional Identiflight unit (IDF17))
Local	Central Highlands Council - Permit	DA 2017/57	Met Masts
Local	Central Highlands Council - Permit	DA 2018/09	Roadworks permit
Local	Central Highlands Council - Permit	DA 2018/31	Off Site Road Upgrades
State	DPIPWE – Covenant Authorisations for construction works within Lake Echo Covenant	By letter from DPIPWE	Allows specified activities and impacts within Covenant area
State	DPIPWE – Permits to Take (PTT) in relation to Threatened Species or Products of Wildlife.	Various	Allows specific impacts under the Terms and Conditions of the PTT.

The planning permit for CHWF, DA 2010/19, was obtained from Central Highlands Council (CHC) under the Tasmanian *Land Use and Planning Approvals Act 1993* and as amended by the Resource Management and Planning Appeal Tribunal (RMPAT). The Permit comprised two parts, that issued by CHC, and Part B issued by EPA. Current form of Part B is EPN 10105/2.

13 March 2019 under the Tasmanian *Environmental Management and Pollution Control Act 1994 (EMPCA)*. Environment Protection Notice (EPN) 10105/2 was issued by EPA on 12 June 2024. The EPN varies or supplements the environmental conditions of Permit No. DA 2010/19.

2.4 CHWF Project Land

The land on which the CHWF is located is situated immediately to the east of Lake Echo and accessed from Bashan Rd, approximately 3 km southwest of Waddamana, and includes part or all the following land titles (defined in approvals DA2010/19, EPN 10105/2, and EPBC 2009/4839). These titles are held by two landowners (Landowner 1 and Landowner 2), as follows:

- Landowner 1 - 135246/1; 29897/1; 29897/3; 29897/5; 135247/1; 135247/2; 29888/4, 29897/6.
- Landowner 2 - 248810/1.

3 DETAILS OF CHWF PROJECT AND DEVELOPMENT STATUS

3.1 Approved Action

The EPBC Approval allows the following Approved Action:

> *To develop a wind farm consisting of up to 100 wind turbine generators and associated infrastructure east of Lake Echo in Tasmania's Central Highlands as described in the referral received on 7 April 2009 and request for variation to proposal received 30 August 2010.*

Appendix A of the EPBC Approval (EPBC 2009/4839) shows, the project layout based on the Design Report Layout December 2017 and, exclusion zones from Eagle Nests known at that time.

Appendix B of the EPBC Approval (EPBC 2009/4839) shows the extent of the CHWF project area.

The installed CHWF layout is consistent with the Tasmanian planning approvals and the Design Report December 2017 approved by EPA 01 March 2018 and the EPBC Approval. The layout for the Design Report addressed all the relevant Commonwealth, State and Local planning matters.

The CHWF project comprises a lesser number of wind turbines, 48 instead of the 100 originally considered by the EPBC referral. The CHWF project has a reduced footprint, however the installed turbines are larger than originally proposed. This enabled the project to take advantage of advances in technology which provide greater wind turbine efficiency and improved performance with a reduced environmental impact.

The details of the CHWF project as implemented are outlined below. The proponent has kept the Department aware of the EPA approved Final Design for the project and subsequent minor variations required for the project that have been approved by the EPA.

3.2 Details of Wind Turbines

The project comprises 48 wind turbines. These are Goldwind's Permanent Magnet Direct Drive design with either 3 MW or 3.2 MW rating (26 by GW140/3000 and 22 by GW140/3200) with a total wind farm generating capacity of 148.4 MW (maximum output to Grid is capped at 144 MW).

The wind turbines (Plates 3.1, 3.2 and 3.4) have approximate dimensions as follows:

- A maximum height (to highest point of rotor swept area) of 170 m above ground level;
- A hub height of approximately 100 m;
- The three bladed rotors are approximately 140 m in diameter.

Near the base of each wind turbine tower are:

- An external kiosk-style 33kV transformer and switch gear;
- Two banks of cooling fans. Cooling fluid circulates between the cooling fan units and the internal areas of the tower and turbine;
- A compacted hardstand area formed during construction at each wind turbine site, for use by large cranes and for component laydown. These hardstands are retained for the operations phase in case large cranes are required for future maintenance activities.

No aviation safety lighting is required on the wind turbines. Lighting is provided at the entry to each wind turbine tower. The wind turbines are off-white/grey with non-reflective finish as approved by CHC.

3.2.1.1 Substation details

A substation is located near to the pre-existing TasNetworks transmission easement that crosses the project area. The Substation includes:

- A 33-kV switch room receives 33 kV cables from each of the wind farm's five collector groups;
- A 33kV/220 kV transformer in concrete bund;
- Landing gantry for conductors from substation to cut-in poles for the 220-kV transmission line;
- Various electrical protection and power quality equipment;
- Security fencing around the substation and surrounding site drainage;
- Earthing grid below gravel cover for substation compound.

3.3 Other permanent infrastructure

The wind farm design also includes:

- An access track network from the site entry to all turbine sites and the substation site (**Figure 2.1**);
- Five 33kV collection circuits comprising 33kV underground cables between groups of turbines and the substation. Communications and control cables are co-located with the 33kV cables;
- An Operations and Maintenance (O&M) facility near the site entry and adjacent Macclesfield Road comprising:
    - a compound surrounded by security fencing;
    - a building providing office desks, computer and communications facilities and amenities;
    - a workshop, refuelling area, generator and storeroom;
- 17 IdentiFlight units located throughout the wind turbine layout in locations that provide optical coverage of all turbine sites and their surrounding areas.

Amendment of Central Highlands Council (CHC) Planning Permit DA 2017/56 was gained for the instalment of an additional 30m IdentiFlight unit (IDF 17). This unit has been installed to provide complete coverage of Turbine 46 and improved coverage of Turbines 44 to 47 located within the forested area. Further details are provided in Section 4.7.2.

3.4 Status of CHWF Works

For the full reporting period, the project has been in the fourth year of operations phase. Maintenance of rehabilitated previously disturbed areas remains ongoing including weed control, drainage work maintenance and revegetation if needed.

Plate 3.1 – CHWF September 2023

Plate 3.2 – Site visit from representatives of EPA and DCCEEW to inspect IDF 17 – September 23

Plate 3.3 – View to Operations and Maintenance Facility, Wombat crossing track. September 2023

Plate 3.4 – View south at IDF 8 in proximity to surrounding turbines, Turbine 17 on left

4 EPBC Approval Conditions and Proponent Responses

4.1 Overview of the EPBC Approval requirements

Since issue of EPBC Approval 2009/4839, the conditions of approval have been subject to several variations including:

- The revocation of Conditions 6 to 9 and 21;
- In the case of Condition 6, three Conditions 6A, 6B and 6C were added in place of the revoked Condition 6;
- Further variations occurred on 3 July 2020 to define first full operations in relation to commencement of the IDF trial under Condition 6C and requiring associated minor variation of Conditions 11 and 25;
- A further variation was advised by DCCEEW on 12 October 2020 to vary requirement for publishing of Incident Reports required by Condition 10 on the Website to either reporting details required by Condition 10 for the incidents, on the CHWF Website or, by including these details within the Annual Compliance Reports that are required to be placed on the CHWF Website;
- On 4 November 2022 Condition 10 was varied to amend the reporting timeframe in the event of a collision of either a Wedge-tailed Eagle or a White-bellied Sea Eagle from "*within one week* "to "*within fifteen business days*".

Provided in the following sections is a response to requirements of conditions that are applicable for this reporting period and describe the status of compliance requirements. Where relevant, implementation of management plans is also described. Details of the Compliance Status for each condition is also summarised in **Appendix A.**

4.2 Condition 1 – Wind Turbines no closer than 1,000m to a known eagle nest

Condition 1 requires that wind turbine generators are not constructed closer than 1,000 metres of an eagle nest. All 48 wind turbines have now been installed in compliance with Condition 1.

The CHWF Final Design is described in the CHWF Design Report, dated December 2017 and approved by the EPA on 01 March 2018. The design incorporated setbacks of more than 1,000 metres from eagle nests '*Known Nests*' that were known at the time the of the final Design Report. The setbacks satisfied the requirement of Condition 1 of the EPBC Approval (see **Figure 4.1**).

During 2018 it became evident that new eagle nests had been established. Subsequently after consultation with DCCEEW and EPA, both the EPBC Approval and EPN were varied to distinguish 'existing (*Known*) nests' that were considered by the final design in 2017. New nests identified after the Final Design have been subject to further consideration by regulators, separate from the Condition requirements for 'Known Nests'.

4.3 Condition 2 – Construction activities within 500m or 1,000m of an active nest

As indicated above, all construction works were completed by February 2020, well before the current 2024 Review Period, therefore Condition 2 is no longer applicable for operations.

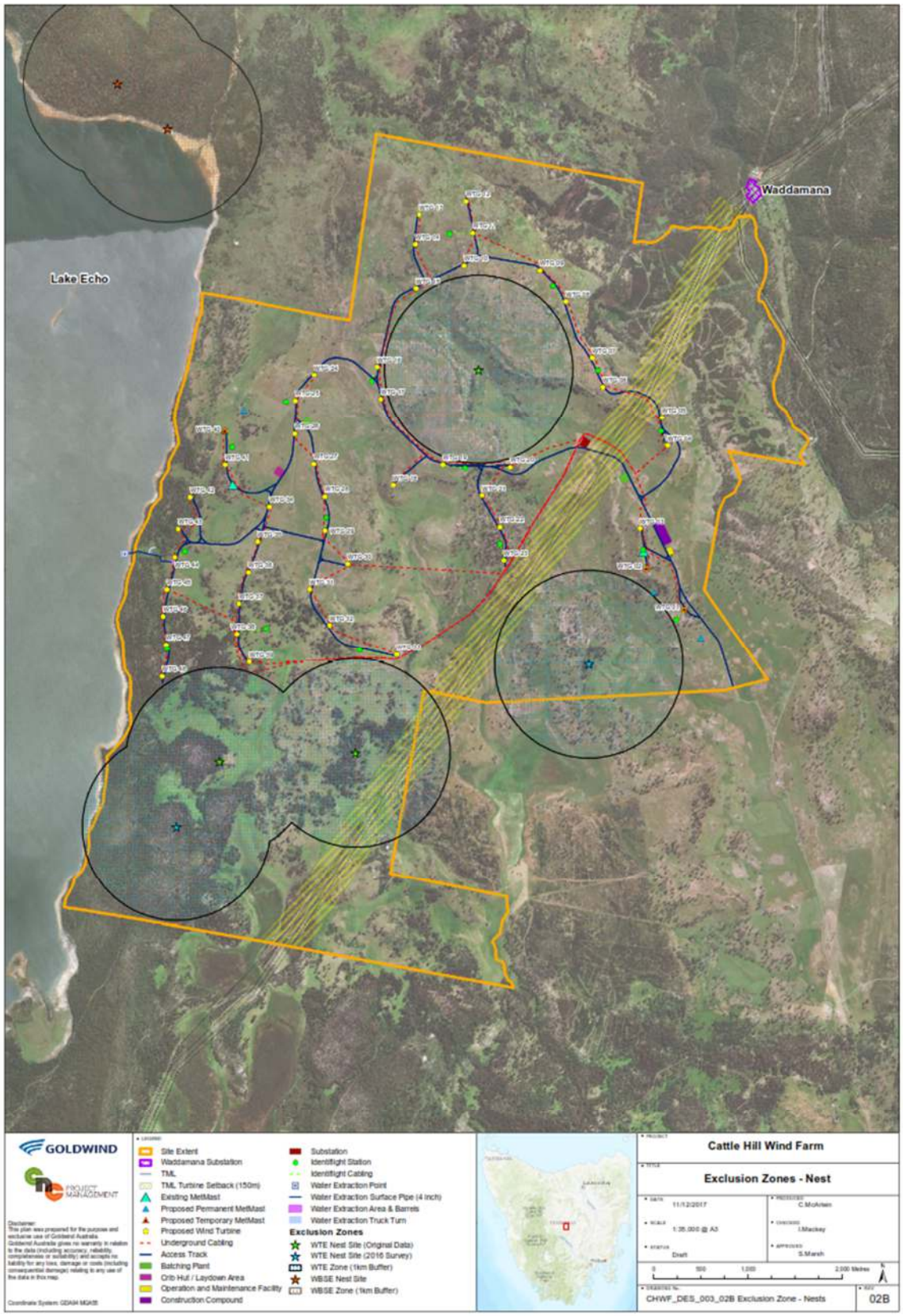


Figure 4.1 – Wind Farm Layout, Design Report December 2017 and Exclusion Zones - Known Nests

4.4 Condition 3 – Removal of carcasses from hunting and culling

Condition 3 requires, immediate removal of all animal carcasses from hunting and culling activities from within 500 metres of wind turbine generator locations from 12 months prior to commissioning and for the life of the wind farm.

Hunting and culling have been occurring on the two properties where CHWF is located well before the development commenced. It continues in similar form, with arrangements in place to ensure safe conduct in the vicinity of the development activities, with defined processes for record keeping in respect of numbers and types of carcasses together with details of their removal or disposal onsite.

Records of animals shot are prepared by shooters (species and number shot, location shot, location disposed and person removing the animal or carcass) and periodically forwarded to WCHPL. Records are available from the Echo Lake Shooters group since 2 June 2017. These records are available for analysis and are reviewed during preparation of this report.

Lake Echo property recorded 5,958 carcasses from culling for the report period, across a range of species on Lake Echo property through activities of hunters engaged by the property owner. Carcasses from Lake Echo are disposed of either on site in one of the four approved Carcass Disposal Areas or removed whole from site. Of the total 5,958 records, 16.5% were removed from site and 83.5% were disposed on site.

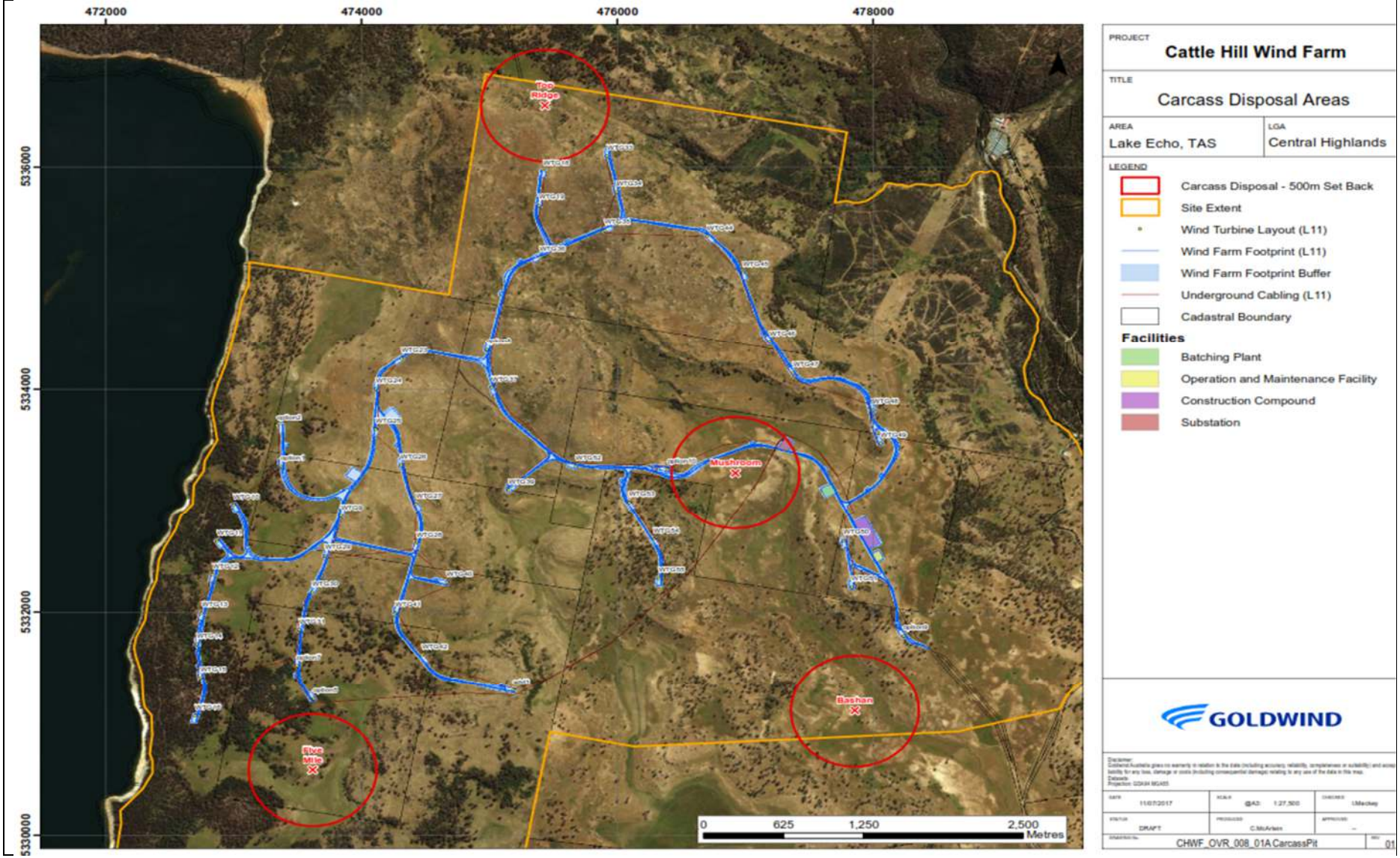
Records obtained for Bashan property reported a total of 477 carcasses which are removed from site.

Four Carcass Disposal Areas (refer **Figure 4.3**) listed below were approved by the Federal Minister that administers the EPBC Act. They are required to be used, where activities are relevant to EPBC Conditions 3, 4 and 5. Only landowner 1 (refer **Section 2.4**), disposes carcasses at site. For those carcasses that are subject to Conditions 3 to 5, the following disposal was undertaken for the reporting period:

- Bottom Ridge – 227 carcasses disposed in covered pits
- Bottom Mushroom –Placed in covered carcass pits (total 2,479 disposed)
- Five Mile – Carcass material placed in covered pits (total 2,266 disposed)
- Bashan – Not used as hunters on that property have historically removed the whole animals.

The disposal areas are covered pit disposal facilities to comply with the Tasmanian *Animal Health Act 1995* which requires all carcasses are covered within 48 hours. The form of covering has previously been inspected by EPA and DCCEEW.

Figure 4.2 – Location of the four carcass disposal areas approved by the Minister



4.5 Condition 4 – Operations – Removal of carcasses from collisions with wind turbines

Condition 4 requires that during wind farm operations, animal carcasses resulting from collisions with wind turbines generators, vehicles and/or other regular farming activities within the wind farm site are removed on the day they are discovered and are placed in locations, approved in writing by the Minister, no closer than 500 metres from the wind turbine generator locations.

As described in Section 4.4, hunters have continued to undertake hunting and culling and maintained established disposal procedures and record-keeping, including use of approved carcass pits. The CHWF Site Manager also undertakes routine inspections of all IDF and Turbine locations to locate any carcasses.

Road kills on site are rare, due to reduced vehicle speeds on-site. There has also been a low number of avian collisions with turbines. Some of the carcasses from avian collisions are collected and stored for identification by ecologists and, in some cases, are placed in a freezer and retained for use in future scavenger trials associated with the intensive bird and bat mortality monitoring program under EPN 10105/2.

For the 2024 reporting period there were no Wedge-tailed Eagle mortalities.

4.6 Condition 5 – Operations - Searches for Dead Calves during September each year

Condition 5 requires that daily searches are conducted for dead calves during September each year and any carcasses are removed from within 500 m of any wind turbines. Additionally, unless otherwise agreed to in writing by the Department, wind turbine generators must not operate during day light hours within 1000 metres of paddocks where lambing is occurring. In the Department's letter of 14 February 2018, the Director agreed to operation of turbines no closer than 500 metres from any lambing activities but that does not yet appear to have been changed in wording of Condition 5.

The wind farm operated during September 2023, within the report period, and no lambing occurred in the vicinity of the wind turbines that are being operated and therefore turbines continued to operate during daylight hours where wind conditions were suitable. The landowners and site personnel undertake regular inspections of their properties and will respond to any stock carcasses on-site. Ongoing carcass monitoring has been arranged by WCHPL for the areas around wind turbines and any carcasses found are collected and disposed at on-site pits or, stored in a freezer on-site if required for the BBMP purposes. Two dead calves were recorded within 500 metres of turbines during the reporting period. They were removed and disposed at the carcass pits on site.

4.7 Conditions 6A, 6B and 6C – Collision Avoidance and Detection Plan (CADP)

4.7.1 Compliance with Conditions 6A, 6B, 6C

Condition 6A requires the preparation and submission of a Collision Avoidance and Detection Plan (CADP) to the Minister for approval. The CADP was submitted to the Department and approval obtained on 29 May 2018. Requirements for Condition 6A have been completed. The CADP describes use of the IdentiFlight system on a trial basis. One of the 17 IdentiFlight units installed on site is shown in Plate 4.1. The CADP is currently being updated to include the recently installed IDF 17.

Condition 6B requires that the wind farm not be commissioned until the CADP has been approved by the Minister. The CADP was approved on 29 May 2018, prior to the wind farm commissioning that commenced from 19 November 2019. Requirements are complete.

Condition 6C requires a detailed assessment of the effectiveness of the CADP system to be submitted to the Minister within 18 months of the earlier of first full operation or 1 September 2020. First full operation was notified on 5 August 2020 and this requirement applies from that time. The CADP assessment report was submitted initially in February 2022 and a revised final version in March 2022.

The project is compliant with all requirements of Conditions 6A, 6B and 6C.

4.7.2 Overview of IdentiFlight system and performance

The IdentiFlight (IDF) system was trialled in accordance with the CADP. IdentiFlight commenced initial operation on 19 November 2019 and the initial 16 IdentiFlight stations were progressively implemented with all 16 IdentiFlight units available for full operations.

The report of the 18-month trial (Condition 6c) indicated that the IDF system performance has been effective in limiting the number of Eagle collisions with the wind turbines but is not able to prevent all collisions. Incident investigations undertaken for previously deceased eagles found near Turbine 46, revealed that Turbine 46 had a significant blind spot extending from 110m ASL to ground level. Significant occlusions were also identified for Turbines 42 and 45.

To address these blind spots identified from the previous investigations, a 30m IDF tower (IDF 17) was installed (between T45 and T46) in October 2023. Pleasingly, since the installation and operation of IDF 17 there have been no Eagle mortalities reported. This mitigation measure has achieved the intended outcome, which was to achieve 'fully covered' protection status from IDF for T46 so the turbine could safely operate during daylight hours. As a secondary outcome, IDF-17 has also improved visibility of T43, T44, T45, T47, and T38.

Plate 4.1 – View of IDF 17 30 m tower

4.7.3 Avian Mortality Monitoring Overview

Mortality monitoring required by the project approvals commenced from November 2019 (Phase 1 Surveys) and scaled up with commencement of full operations from 4 August 2020 (Both Phase 1 and Phase 2 Surveys). Phase 1 surveys (weekly) were ceased on 12 July 2022 with Phase 2 surveys ongoing for the reporting period.

The Phase 2 surveys commenced in August 2020 and involves intensive monitoring for half of the turbines (24) being surveyed every second month and the other 24 surveyed on alternate months. The Phase 2 surveys involve two teams (one human, one with a detection dog) walking 6 metre transects out to 60 metres from the centre of the turbine, and 12 metres transects out to 120 metres (main surveys).

Results of the Phase 2 monitoring for the reporting period is provided in Table 4-2 and Table 4-3. Of the 139 species reported, only one is an EPBC listed species (9%).

Table 4.1 – Bird species found for Phase 2 Mortality Monitoring for Report Period

	EPBC	Count	Percent
Australian magpie		5	4%
Australian pipit		1	1%
Australian wood duck		3	2%
Black currawong		16	12%
Black-faced cuckoo shrike		1	1%
Black-headed honeyeater		1	1%
Blue-winged parrot	Yes	12	9%
Bronze cuckoo		1	1%
Brown falcon		4	3%
Brown quail		1	1%
Crescent honeyeater		1	1%
Eastern rosella		6	4%
Eurasian skylark		7	5%
European goldfinch		2	1%
European starling		24	17%
Flame robin		2	1%
Forest raven		2	1%
Green rosella		6	4%
Grey currawong		1	1%
Horsfield's bronze cuckoo		1	1%
New holland honeyeater		2	1%
Noisy miner		2	1%
Peregrine falcon		1	1%
Pied cormorant		1	1%
Pink robin		3	2%
Robin		1	1%
Silvereye		5	4%
Spotted pardalote		2	1%
Striated pardalote		4	3%
Tasmanian native hen		1	1%
Tawny frogmouth		1	1%
Tree martin		5	4%
Unidentified		3	2%
Welcome swallow		1	1%
White-throated needletail		8	6%
Yellow wattlebird		2	1%
			100%

Table 4.2 – Bat species found for Phase 2 Mortality Monitoring for Report Period

Species	Count	Percent
Chocolate wattled bat	3	8%
Eastern false pipistrelle	2	5%
Gould's Wattled Bat	16	43%
Large Forest Bat	11	30%
Lesser long-eared bat	2	5%
Southern forest bat	3	8%

EPBC Approval, Conditions 7, 8 and 9 have been revoked.

4.8 Condition 10 – Notification and Reporting of an Eagle collision with a Turbine

Condition 10 requires notification to: "*the Department by email within 24 hours of any collision between a wedge-tailed eagle or white bellied sea eagle and a wind turbine. Within fifteen business days of the initial notification, the person taking the action must submit to the Department a detailed collision report, that as a minimum includes:" (items (a) to (e) of Condition10).*

WCHPL has complied with all aspects of Condition 10 for notifications and Incident Reporting in previous reporting periods.

The installation and commissioning of IDF 17 has been successful in providing full coverage Turbine 46 and improved visibility of T43, T44, T45, T47, and T38. This has resulted in no Eagle mortalities during the reporting period.

Phase 2 avian mortality monitoring as described in Section 4.7.3 has been undertaken throughout the reporting period.

4.9 Condition 11 – Revised CADP within two years following commissioning

Condition 11 requires that: *"Within 2 years following the earlier of first full operation or 1 September 2020, submit for the Minister's written approval a revised CADP containing details of the collision avoidance and detection system proposed to be subsequently implemented (including technologies installed and practices undertaken) for monitoring WTE movements, preventing WTE collisions with turbines and recording collisions."*

Notification that the wind farm had reached first full operation was provided to the Department on 5 August 2020, approximately 4 years and one week, prior to this reporting period. Based on the timing of the commencement of operations, Condition 11 required submission of a revised CADP by 5 August 2022. A revised CADP was initially submitted to the Department by 03 August 2022, with a further revised CADP provided in March 2023.

The revised CADP highlighted some areas for improvement to reduce eagle risk at turbines only partially covered. The revised CADP outlined WCHPL's intention to continue operating IDF as the best technology, approach or method of reducing risk to eagles, based on the effectiveness of the system to date.

Following the eagle mortalities during the 2023 annual compliance review period, which further highlighted the significance of vegetation screening occluding IDF viewfields, a further revision to the CADP is being prepared, to incorporate the 30m IDF Station as the primary mitigation measure to address this issue. This will be submitted for approval during the next reporting period.

4.10 Condition 12 – Maintain records of searches required by Condition 11

Condition 12 requires: "*Keep and maintain accurate records of each physical search conducted as required by Condition 11, including date, time, turbine number and research findings"* and that: *"These records must be provided to the Department on request."*

Condition 11 is not definitive on the specific monitoring requirements but requires a revised CADP that *"must include a collision monitoring programme for eagles based on a statistically valid sampling regime which applies current best practice and satisfies the requirements of EPA permit condition FF10."*

Elements of monitoring (physical searches) that are considered relevant are:

- Mortality Monitoring under EPN 10105/1 Condition FF10 and applicable to the EPBC Approval as outlined in **Section 4.7.3**, occurred for Phase 1 (weekly) and for Phase 2 (monthly) monitoring. Summaries of results, for the report period, are shown in **Tables 4.1** and **4.2**, that are derived from the more detailed records of the mortality monitoring undertaken under for Phase 2;
- IdentiFlight Eagle Tracking Records and Curtailment Details. A substantial amount of detail has been accumulated on WTE movements and other birds present with the vicinity of the CHWF wind turbines. This includes tracks of Eagle movements and behaviour. The system has the advantage of being designed to trigger turbine shut-downs where Eagles are at risk.
- Nest checking within 2km of CHWF and 2km to 10km outside CHWF site and associated records.

The 2024 reporting period aligns approximately with the fourth year of CHWF operations, for which extensive Phase 2 mortality monitoring has been continued. The monitoring has been in accordance with the BBMMP approved by Tasmanian EPA under EPN 10105/1 Condition FF10. Records of all monitoring are kept and stored in a dedicated database and can be readily retrieved and analysed as required. Summaries are provided in **Tables 4.1** and **4.2**.

The previous reporting periods have accumulated information on species present within the site, the training of the CHWF IdentiFlight Neural Network and, supported adjustment of the systems turbine curtailment criteria to optimise WTE protection and CHWF renewable energy generation.

At the end of the 2024 reporting period, the IDF system has generated approximately 58 months of data prior to (10 months) and during full operations.

Cumulative Eagle mortalities stand at eight which have occurred in previous years of operation, with zero in this reporting period. The Collision Risk Modelling (CRM) undertaken by Biosis and included in the EPN indicated an expected cumulative mortality of 13 in Year 4 of operations. Without IdentiFlight being in operation and its optimisation with the addition of IDF 17, it is anticipated that the mortalities due to collision would have been greater.

4.11 Condition 13 – All wind farm roads signposted with max 40kph speed limit

Condition 13 requires:

> *"Ensure that all roads within the wind farm site are clearly signposted requiring all vehicles to travel at no more than 40 kph and ensure that this is a requirement for all drivers within the site except in an emergency."*

The Site Service Team (Operations) has responded to the Condition 13 requirement by:

- Including the requirement for 40 kph speed limit in site induction material that all site personnel are required to undertake so that they are aware of requirements;
- Placing signage around the site clearly showing the 40kph speed limit (**Plate 4.2**);
- Reminders for speed restrictions is regularly provided as part of pre-start meetings; and

- Requiring 30km per hour limit from Dusk to Dawn with signage as per **Plate 4.3.**

Plate 4.2 – 40 kmph site speed limit sign at entry

40km sign around site.

Regular checking and if required maintenance of the speed signs is undertaken by Site Service Team.

Plate 4.3 - 30kmph Signage Dusk to Dawn

4.12 Condition 14 – Daily checks on all wind farm roads for road-kills

Condition 14 requires that: "*Prior to construction commencing each day, ensure all roads proposed to be used that day are free of road-kill and any animal carcasses are placed in locations approved in writing by the Minister no closer than 500 metres from wind turbine generator locations.*"

The construction phase of the CHWF development is complete and was associated with a very low incidence of road-kills. That was likely due to the reduced speed limit for on-site roads. While Condition 14 is not applicable for operations, records of any incidental carcasses are kept as part of the overall site management and monitoring. The service team on site regularly report any occurrences of road-kills or incidental finds (separate to the scheduled mortality monitoring). For any such finds, they initiate collection and appropriate disposal of the carcasses or, if relevant, investigation of causes of mortality or injury.

4.13 Condition 15 – WTE monitoring as required by Permit Conditions FF4 and FF 5

EPBC Approval 2009/4839 Condition 15 requires the completion of:

"The Wedge-tailed Eagle monitoring arrangements required by the amended Tasmanian planning permit DA 2019/19, Conditions FF4 and FF5 (EPN 10105/1)."

4.13.1 Tasmanian EPN, Condition FF4 – Requirements are complete

Condition FF4 requires that:

> *"Prior to commissioning the wind farm an eagle nest search of the Central Highlands Region must be conducted by a suitably qualified and experienced person and the results submitted for inclusion in the Natural Values Atlas."*

SFM was engaged to undertake the required WTE monitoring for the Central Highlands and completed the survey and report in February/March 2018. The report was submitted to EPA on 9 April 2018 and was subsequently approved by EPA on 8 June 2018. Requirements of Condition FF 4 are complete.

4.13.2 Tasmanian EPN, Condition FF5 – Monitoring in Progress

Condition FF5(1) required that:

> *"Unless otherwise approved in writing by the Director, an Eagle Nest Productivity (in and around the wind farm site) Monitoring Plan must be submitted to the Director for approval 6 weeks prior to construction."*

The CHWF Eagle Nest Productivity Plan (under Condition FF5) was submitted to the EPA on 2 October 2017 and approved by the EPA on 30 October 2017.

While the ENPMP defines 'on-site' nests as those within 2 kilometers of turbines, a broader scope of nest checks is undertaken each year. **Figure 4.3** shows the seventeen nests recorded on the Natural Value Atlas within 4 kilometers of the CHWF, fourteen of which are checked by VDC every year. Nests which are not checked include RND 872 on the western bank of Lake Echo, RND 490, a recorded nest which does not exist, and RND 1320, which is 3.5 kilometers outside the wind farm's northern boundary, and 4.3 kilometers from the nearest turbine. The activity status of these nests is drawn from searches undertaken by others.

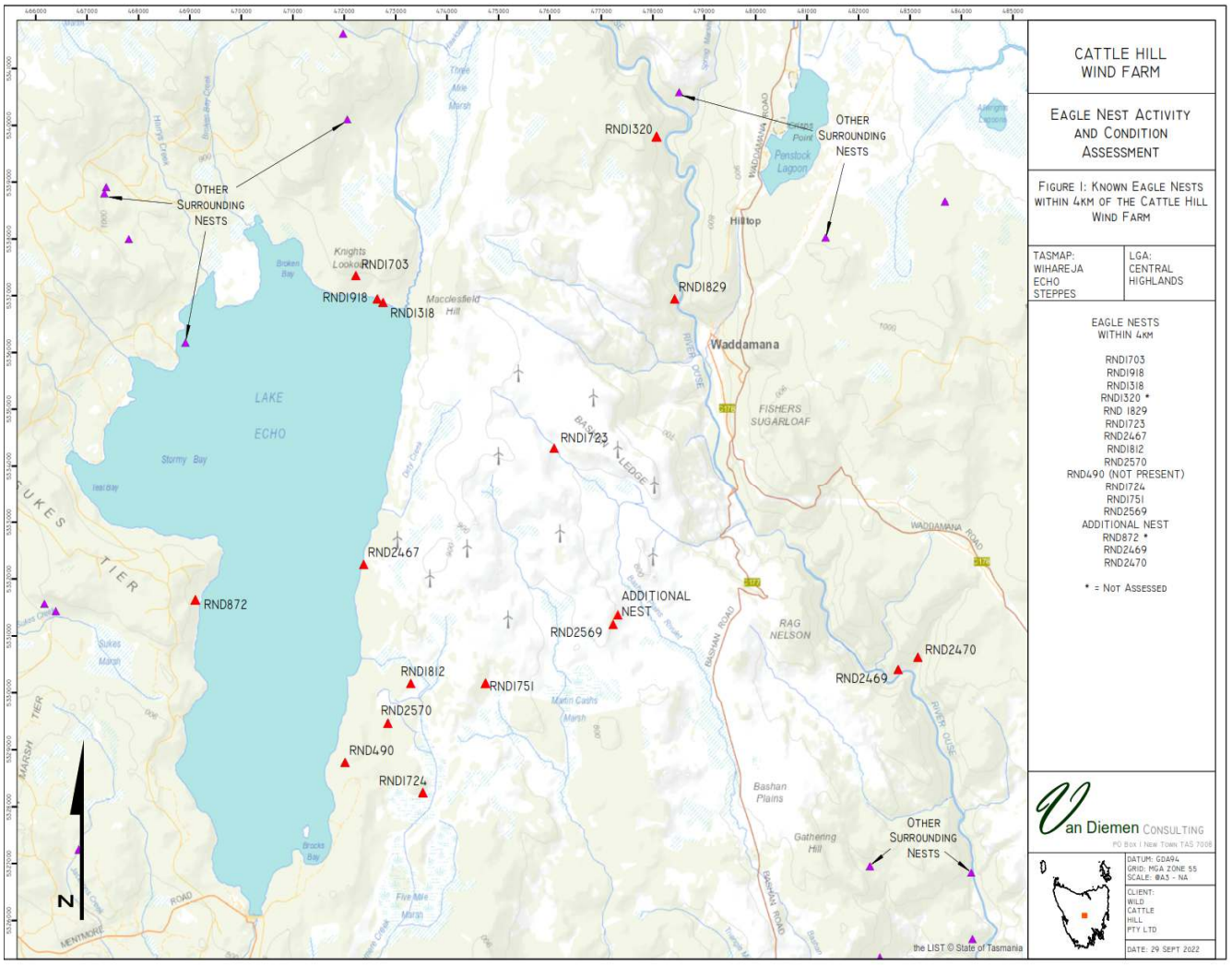


Figure 4.3 – CHWF Locality – Known nests within 4km of CHWF

Figure 4.4 shows the activity status of nests from checks undertaken in 2024. Three nests outside the boundary of the CHWF were active in 2024, including RND 1724, just outside the southern boundary of the CHWF, regularly active white bellied sea eagle nest RND1318 on the north shore of Lake Echo, and a possible new nest location near RND2470 on the eastern side of the Ouse River catchment. All three nest locations are approximately three kilometers from CHWF turbines.

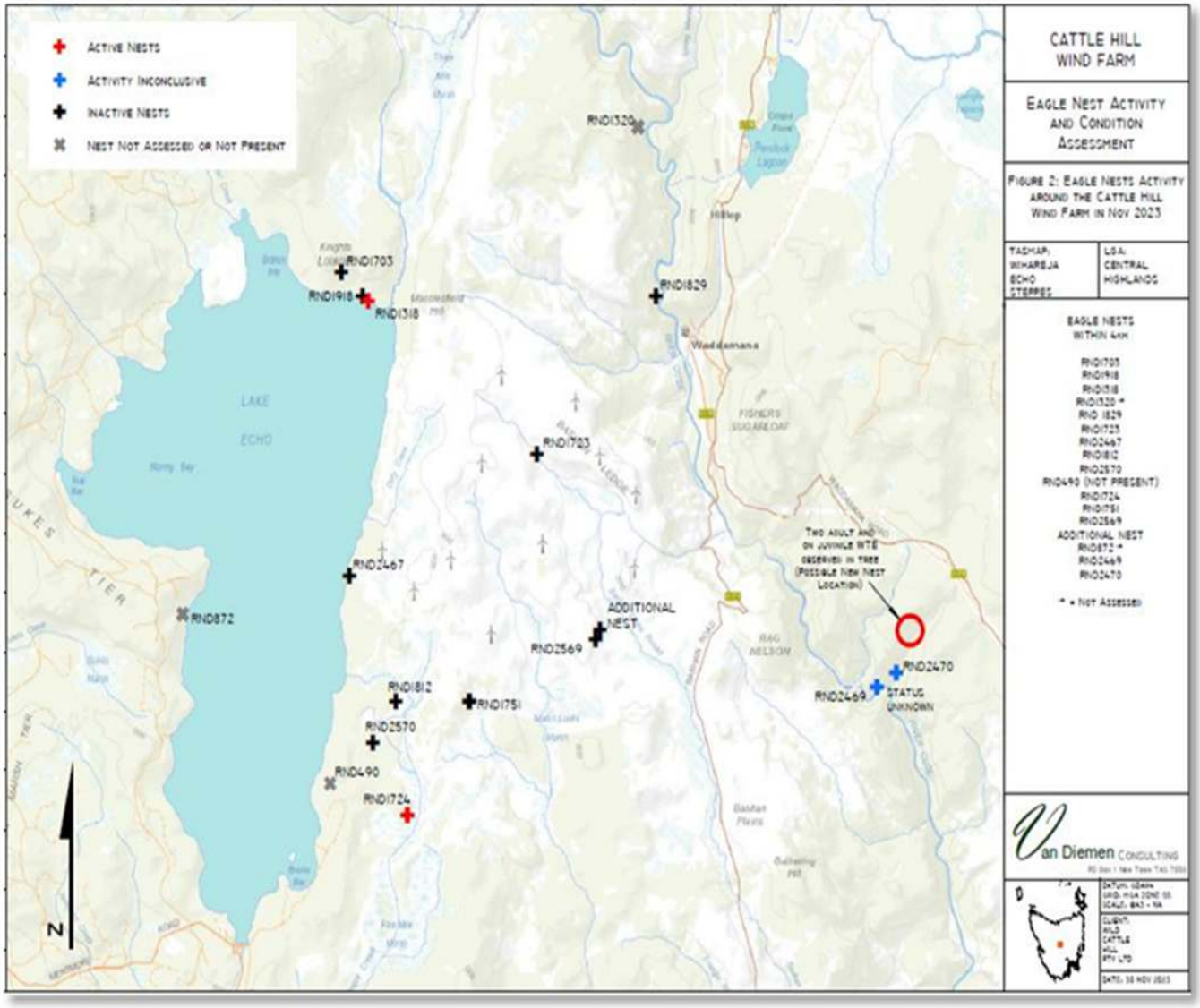


Figure 4.4 – CHWF Locality – Activity status of known nests from checks undertaken during 2023

4.14 Conditions 16 and 17 – Funding of Research for long term conservation of WTE

Conditions 16 and 17 relates to arrangements for funding a research plan to inform the long-term conservation of WTE and commencement of funding for the research plan. Condition 16 requires the submission of the plan to the Minister for approval and the wind farm must not be commissioned until the plan is approved and implemented. Condition 17 requires commencement of implementation of the approved research plan.

Note 1 appended to Condition 16 states that:

"The Minister may determine that a plan, strategy or program approved by the Tasmanian Government in accordance with EPA conditions FF5, FF6, FF13, FF14 and FF15 satisfies the requirements for the Plan required under conditions 16 and 17."

EPN Condition FF15 and the EPA approved Eagle Mortality Offset Plan (EMOP) included provision for Eagle Research funding and was accepted by DCCEEW, as satisfying requirements of EPBC Conditions 16 and 17.

WCHPL appointed NRM South to implement and manage a Wedge-tailed Eagle Research Fund to offset the impact of mortalities due to collisions with wind turbines at CHWF. Details of the research undertaken can be found at https://nrmsouth.org.au/project/wedge-tailed-eagle-research-fund/. The Fund aims to support critical studies into the Tasmanian sub-species and is designed to allow other proponents or organisations to contribute to it.

The first annual payment made to NRM South was provided in 2019 which administers the fund. Payments comprise CPI adjustments to the annual payment amount and, will be made on an ongoing basis for at least 10 years, or longer subject to EPBC Condition 20 review.

Table 4.8 provides the detail of WCHPL payment amounts to the Eagle Research Fund, with contributions of $714,595.71 over the first five years of the NRM South Wedge-tailed Eagle Fund.

Table 4.3 – CHWF – WCHPL Payments for Eagle Research Funding

Date	CHWF - Project Phase	Amount paid to NRM South (incl. GST)	Cumulative amount (incl. GST)
2019	Pre-commissioning, 1st payment	$ 90,078.95	$ 90,078.95
2020	Operations (1st year)	$ 90,703.40	$ 180,782.35
2021	Operations (2nd year)	$ 94,578.94	$ 275,360.29
2022	Operations (3rd year)	$ 100,732.50	$ 376,092.79
2023	Operations (4th year)	$232,242.92	$608,335.71
2024	Operations (5th year)	$106,260.00	$714,595.71

WCHPL continues to comply with the requirements of Conditions 16 and 17 in respect of Eagle Research Funding, through the funding arrangements described in the EPA approved EMOP.

Appendix B provides a copy of the September 2023 NRM South Report on Eagle Research Fund activities.

4.15 Condition 18 – Review effectiveness of Research Plan five years after its approval

Condition 18 requires that:

"On each fifth anniversary of the approval of the research plan, or at the direction of the Minister, the person taking the action must engage a suitably qualified expert to review the effectiveness and relevance of the research plan required by condition 16. Within 90 days of each five year anniversary, the person taking the action must provide a report to the Minister outlining any recommendations and alternative measures to

offset impacts to the wedge-tailed eagle. The Minister may require the person taking the action to implement the recommendations and alternative offsetting arrangements."

A five-year time frame from the Research Plan approval (under EPN 10105/1 FF15, the EMOP) would be 21 December 2023. However, if based on commencement of Research funding, which may be more relevant, the timing would be 29 October 2024. A qualified expert has been selected to undertake the required review of the research plan in accordance with this condition. The result of the review will be reported in the next Annual Compliance Report.

A link to the NRM South website, which provides further details about the fund, is provided below:

https://www.nrmsouth.org.au/wedge-tailed-eagle-research-fund/

At the time of writing, the NRM South Eagle Research fund is entering its sixth year since it was commenced (see **Section 4.14** and **Appendix B**).

4.16 Condition 19 – Further funding in relation to WTE mortality or injury

Condition 19 requires that:

"*For each actual wedge-tailed eagle mortality or injured wedge-tailed eagle that cannot be released into the wild, occurring above 2 actual mortalities or injured wedge-tailed eagles that cannot be released in to the wild in any calendar year, fund a raptor or wildlife centre to rehabilitate an injured or sick wedge-tailed eagle and release that wedge-tailed eagle into the wild at an ecologically suitable location to the satisfaction of a suitably qualified expert"*

There were no wedge-tailed eagle mortalities during the 2023/24 reporting period therefore this condition has not been triggered for the report period.

Provided in Appendix B is NRM annual report for 2023.

4.17 Condition 20 – Review of requirements after 10 years of operations (August 2030)

Condition 20 allows for the person taking the action, after 10 years of operation, if it can be demonstrated that the wind farm is not impacting the Wedge-tailed Eagle, *"to request approval from the Minister to cease implementing conditions 11 (if required) and 17."*

This is a future requirement and based on first full operations having been notified on 5 August 2020, will not be applicable until 5 August 2030.

Condition 21 has been revoked.

4.18 Condition 22 – Weed Management Strategy

Condition 22 requires that three months prior to commencement of construction, the approval holder must submit a Weed Management Strategy to the Minister for Approval and once approved, the Weed Management Strategy must be implemented. The CHWF Weed Management Plan was approved by the Minister's delegate on 14 December 2017 as satisfying the requirements of Condition 22 of the EPBC approval covering both construction and operations.

In respect of implementation, the following elements have been applied for the project:

- Weed mapping and identification of relevant weeds for the site. Ecological mapping and reporting have noted and recorded weed presence.
- Employee site inductions include requirements for weed management;
- Training in Weed identification and management was provided by VDC in Oct/Nov 2018;
- Vehicle and Plant Inductions including weed free/cleanliness checks;
- Weed identification posters on Construction site notice boards;

- Periodic Weed Control Treatments by experienced contractors;
- Wash Down Trailer (Tank, Pump and Hose) at O&M Compound **Plate 4.4**;
- Rehabilitation works following construction and extending into operations has included weed control either by experienced contractors or, for formed operating areas is managed by the Service Team;
- With the transition to operations, the Service Team has taken on the requirement to monitor for weeds and control them. Service Team inductions have included information on weeds and this aspect is reinforced as part of ongoing site environmental management activities; and
- Periodic weed control treatment is implemented, as required.

The following measures were implemented during the review period in accordance with the CHWF Weed Management Strategy:

- Annual and targeted weed treatment following approved methodologies.
- Implementation of site requirements to ensure all machinery was brought onto site in a clean condition, free of weed propagules, dirt, or vegetative matter.
- Site monitoring and reporting in accordance with the OEMP.

During the period, Whispering Landscapes, CHWF's provider for treatment of weeds continued to treat weeds on roads and hardstand areas using approved methods.

Plate 4.4

Wash Down equipment on trailer maintained at O&M Compound

4.19 Condition 23 –Flora Offset Strategy and Flora Offset Management Plan

Condition 23 requires that, prior to construction, the approval holder must submit a Flora Offset Strategy to the Department for Approval. The Flora Offset Strategy was approved on 15 March 2018 prior to construction commencing. The Flora Offset is to compensate for unavoidable impacts to the Liawenee Greenhood and Crowded Leek Orchids.

Condition 23(c) required the approval holder to submit a Flora Offset Management Plan (FOMP) to the Department within 10 months of the Department having approved the Flora Offset Strategy. The FOMP was

submitted to the Department after an extension to the timeframe was approved and was approved by the Department on 10 August 2019.

The FOMP comprises three areas to offset the project's unavoidable impacts on orchid species at the CHWF Site. The three areas are shown in **Figure 4.5** and comprise:

- one offset area on the CHWF site, referred to as '*Bashan Ledge*', and
- two offset areas external to the CHWF site, referred to as '*Wihareja*' and '*Stone Hut*'.

Two of the three protective covenants are located outside the CHWF, and one is within the CHWF in an elevated area dominated by Highland Poa grasslands to the west of Turbine 7 (Bashan Ledge Covenant, refer Figure 4.8).

The Bashan Ledge covenant is designed to protect known habitat or occurrence of the following conservation significant species, in perpetuity:

- Highland Poa grassland - a State threatened vegetation community.
- Liawenee greenhood (*Pterostylis pratensis*), an EPBC listed orchid.
- Ptunarra brown butterfly (*Oreixenica ptunarra*) a State and EPBC listed invertebrate.
- Clover glycine (*Glycine latrobeana*) a State and EPBC listed herb.

During the review period the long process of formal registration of the three protective covenants was finalized on 8 April 2024 and implementation of their management is required.

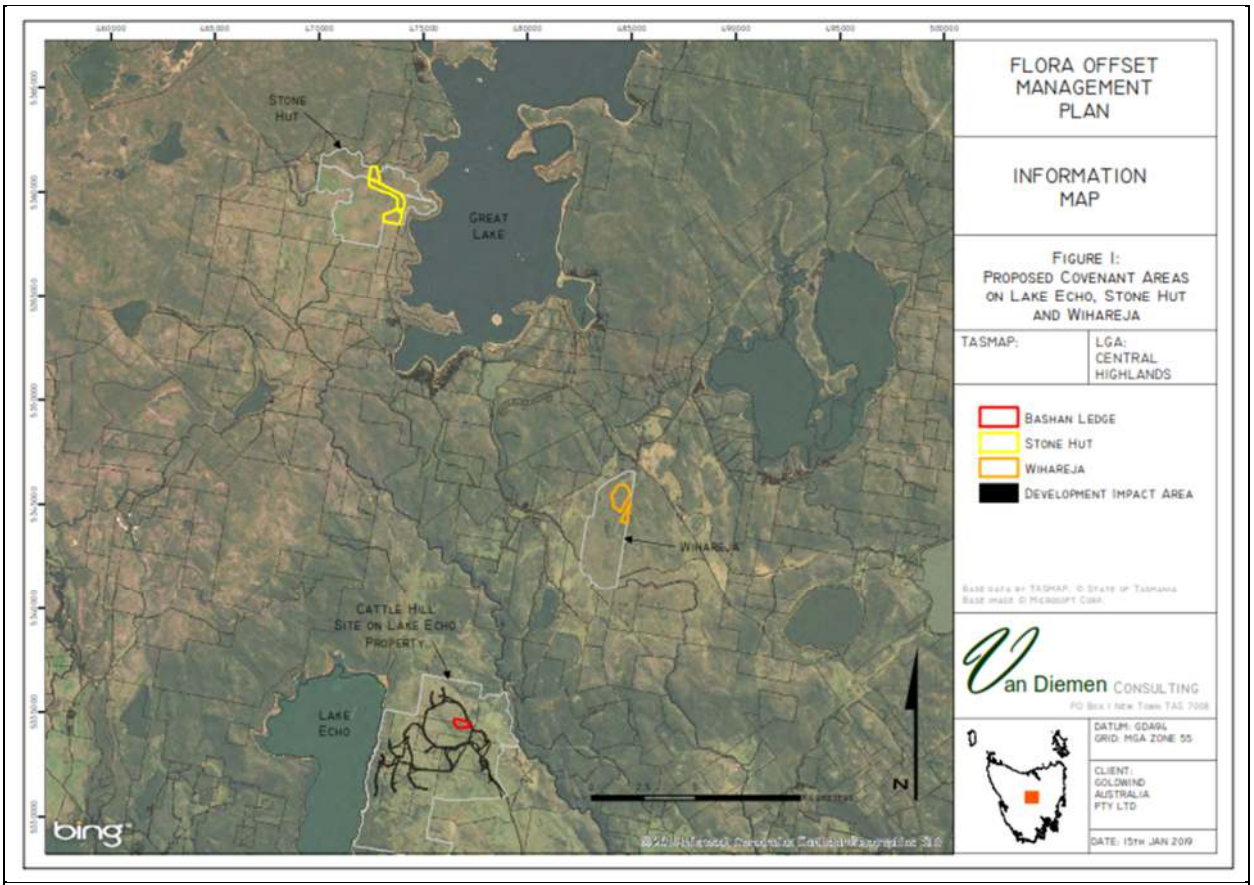


Figure 4.5 – Drawing from FOMP showing the 3 designated areas for establishing flora offsets.

4.20 Condition 24 – Requirement if previously unrecorded species is found

Condition 24 requires that if, during pre-construction or construction activities, a previously unrecorded threatened species is encountered, the person taking the action must immediately cease activities at the affected area. No previously unrecorded species were found during pre-construction or construction activities despite substantial additional survey work and hence there were no requirements for cessation of works and reporting in relation to Condition 24.

The requirements of Condition 24 were not triggered for the reporting period.

4.21 Condition 25 – Notifications required to be submitted to DCCEEW– All complete

Condition 25 requires that: "*The person taking the action must advise the Department in writing of the actual date of:*

- *commencement within three business days of commencement of the action;*
- *commissioning within 24 hours of commissioning, and*
- *first full operation within three business days of first full operation."*

All requirements of Condition 25 have been met in full for the 2023 review period. No further requirements of Condition 25 are applicable for any further annual compliance reports.

The Department has been periodically kept aware of the project activities at key stages of the development including updates on the project's progress. Incident reports have been submitted to DCCEEW as required and a range of other communications have occurred such that WCHPL believes that DCCEEW is well aware of CHWF site activities and their status.

4.22 Condition 26 – Records for activities in relation to EPBC Approval Conditions

Condition 26 requires that the person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement all management plans, report and strategies required by this approval, and make them available upon request to the Department.

Records are maintained for all required activities and status is subject to periodic review. A compliance tracker is maintained for the project and updated on a regular basis.

4.23 Condition 27 – Annual Compliance Report

Condition 27 requires that within 90 days of the anniversary of commencement of the action the approval holder must:

- Publish a report on website as per link here: https://cattlehillwindfarm.com/
- Provide evidence to the Department of proof of publication (email direct to Department).

Advice obtained from the Department in email 17 May 2019 was "that the first annual compliance report required under Condition 27 should be on or before 11 November 2019.

Reporting under Condition 27 includes:

- The first annual compliance report (2019) required by Condition 27 was submitted to DCCEEW on 11 November 2019 and is on the CHWF website.
- The second report (2020) was submitted on 9 November 2020 and is on the CHWF website.
- The third report (2021) was submitted on 10th November 2021 and is on the CHWF website
- The fourth report (2022) was submitted on 10th November 2022 and is also on the CHWF website.
- The fifth report (2023) was submitted on 9th November and is on the CHWF website.

This report represents the CHWF Annual Compliance Report 2024 and is the sixth in the series of reports. A request to post the report on the CHWF website is made when the report is finalised and is submitted to DCCEEW.

Condition 27 requires that the Annual Compliance Report requires a Chapter relating to Eagle rehabilitation in response to Condition 19. As the requirement of Condition 19 was not triggered, this report does not have a chapter addressing that issue.

4.24 Condition 28 – Independent audit of compliance with EPBC Approval Conditions

Condition 28 requires that, the person taking the action must ensure that an independent audit of compliance with the conditions of the approval is conducted and a report submitted to the Minister, if that is required by the Minister.

No such request has been received from the Minister and requirements of Condition 28 are not applicable for the current reporting period.

4.25 Condition 29 – Activities other than in accordance with EPBC Approval Conditions

Condition 29 requires that, if the person taking the action wishes to carry out the activity otherwise than in accordance with the management plans, reports and strategies required by this approval, as specified in the conditions, the person taking the action must submit to the Department for the Minister's written approval a revised version of that management plan, report or strategy required by the approval. The varied activity must not commence until the Minister has given written approval for the varied management plan, report or strategy.

There has been no such instance for the reporting period and Condition 29 is not applicable for the 2024 report period.

4.26 Condition 30 – Request by Minister for revised Plan, Report or strategy

Condition 30 requires that the person taking the action must comply with any request by the Minister to make specified revisions to the management plan, report or strategy specified in the conditions (if the Minister believes it necessary or convenient for the better protection of listed threatened species) and that revised document(s) are submitted for the Minister's approval.

No such requests have been received and Condition 30 is not applicable for the 2024 reporting period.

4.27 Condition 31 – Commencement of Action within 5 years of approval (Complete)

Condition 31 requires that, if the person taking the action has not substantially commenced the action within 5 years of the date of the EPBC approval, then the person must not substantially commence the action without the written agreement of the Minister.

The project commencement occurred within 5 years of the EPBC Approval and there are no further requirements of Condition 31 that are applicable to the project.

4.28 Condition 32 – Publish Records of approved Plans for the EPBC Approval Conditions

Condition 32 requires that, unless agreed to in writing by the Minister, the person taking the action must publish all management plans, reports and strategies referred to in these conditions of approval on its website, except as otherwise specified in Condition 32. An exception relates to Collision Reports required by Condition 10 (that are supplied to the Department). In the case of Collision Reports, the Department has provided advice in Letter of 12 October 2020, to the effect that the information required by Condition 10 can form part of the applicable Annual Compliance Report (for the period within which the collision occurred), and that is required to be published on the project website. Section 4.8 provides the relevant Condition 10 information for the report period.

In response to Condition 32, the person taking the action has published the following documents on the project website (https://cattlehillwindfarm.com/).

- Condition 6A – Collision Avoidance and Detection Plan
- Condition 6C - Assessment of effectiveness of the IdentiFlight® avian detection system
- Condition 10 – Collision Report Details (a) to (e) within this ACR, as per DCCEEW letter 12/10/20
- Condition 11 – The Revised CADP is currently being updated to incorporate IDF 17 and will be added to CHWF Website once approved by the Minister
- Condition 22 – Weed Management Plan
- Condition 23 - Flora Offset Strategy and Flora Offset Management Plan
- Conditions 16 and 17 (Plans approved by Tasmanian EPA and accepted by DCCEEW as satisfying requirements of Conditions 16 and 17)
    - FF 5 - Eagle Nest Productivity Plan
    - FF 6 - Post Commissioning Eagle Utilisation Monitoring Plan
    - FF15 - Eagle Mortality Offset Plan
- Condition 27 – CHWF Annual Compliance Reports, including:
    - Annual Compliance Report, 2019
    - Annual Compliance Report, 2020
    - Annual Compliance Report, 2021
    - Annual Compliance Report, 2022
    - Annual Compliance Report 2023.
- This report will be published in parallel with submission to the Department.

4.29 Condition 33 –Availability of Plans, Reports and Strategies

Condition 33 requires that, the person taking the action, unless otherwise agreed in writing by the Minister, must provide a copy of each approved management plan, report or strategy referred to in the conditions of approval, to members of the public on request, except as for the exceptions described in Condition 33.

Copies of each approved management plan, report or strategy, including Annual Reports, as referred to in the conditions of approval are available on the website.

No requests were received during the reporting period and the requirements of Condition 33 were not applicable for the reporting period.

5 CONCLUSIONS

This report provides the relevant details required for satisfying requirements of Condition 27 of the EPBC Approval 2009/4839 for the period 12 August 2023 to 13 August 2024.

The report shows the details of compliance with the relevant condition of EPBC Approval 2009/4839 for the annual reporting period to 13 August 2024. Compliance for each of the Conditions is summarised in Table 1.2, further described in Section 4 and also shown in Table form in Appendix A that shows the Condition of Approval, Compliance Status and summarises evidence.

IDF 17 was installed to provide full coverage for Turbine 46 WTE protection zones and improved visibility of T43, T44, T45, T47, and T38. Since installation of IDF17 there were no Eagle mortalities during the reporting period. Cumulative eagle mortalities are reported as 8 at the end of this reporting period which is five less than predicted in the pre-construction Collision Risk Model (as summarized in EPN 10105/2).

6 REFERENCES

CHC Permit DA 2010/19 as amended 25 October 2017

DCCEEW EPBC Approval 2009/4839 as varied on 12 October 2020.

EPA Environment Protection Notice - EPN 10105/2, Issued on 12 June 2024

Other references are referred to in the text in relation to specific aspects addressed by this report.

7 APPENDIX A - COMPLIANCE TABLE - CONDITIONS OF EPBC APPROVAL

Appendix A – Table setting out compliance status for each of the Conditions of EPBC Approval for the period 13 August 2023 to 13 August 2024.

Appendix A – Table setting out compliance status for each of the Conditions of EPBC Approval for the period 13 August 2023 to 13 August 2024

Cond No.	Condition Description	Compliance with condition	Evidence / Comments
	For the protection of the wedge-tailed eagle, the person taking the action must (:		
1	Ensure wind turbine generators are not constructed closer than 1000 metres of an eagle nest. *Note: The Approval definitions refer to a nest, constructed or used by a WTE or WBSE, known at the time of submission of the final layout (CHWF Design Report, December 2017) as shown at Appendix A (of the Approval).*	**Compliant** (complete)	Design complies - see Figure 3.1, Design Report Drawing *CHWF_DES_003_02B Exclusion Zone - Nests*. No infrastructure is located within 1,000m of a (Known) Nest. New nests found post Design Report and within 1,000m of turbine sites are not relevant to this Condition. (Section 4.2)
2	Ensure construction activities do not occur within 500 metres of an active eagle nest during the breeding season or within 1000 metres line of sight of an active eagle nest during the breeding season. *(As indicated above, definition of Nest refers to those known at time of final layout December 2017.)*	**Compliant** (Complete)	Design complies - see Figure 3.1, Design Report Drawing *CHWF_DES_003_02B Exclusion Zone - Nests*. No infrastructure within 1,000m of (Known) Nest. New nests found post Design Report within 1,000m of turbine sites are not relevant to this Condition. Construction was undertaken in accordance with ANCEMP and ENUMP and completed prior to the current report period which involved operations from 04 August 2020 (Section 4.3 of this report)
3	Commencing twelve months prior to the commissioning of wind turbine generators at the wind farm site and for the life of wind farm operations, immediately remove all animal carcasses resulting from hunting or culling activities from within 500 metres of wind turbine generator locations and ensure they are placed in locations approved in writing by the Minister.	**Compliant** (ongoing)	The two landowners for the CHWF project area arrange for shooters to undertake hunting and culling on their properties. A system was established for the shooters to keep records of the animals shot and disposal locations. These records are periodically forwarded to WCHPL. Disposal locations were also identified and approved by the Minister. These are now covered (Section 4.4).
4	During wind farm **operations** ensure animal carcasses resulting from collisions with wind turbine generators, vehicles and/or other regular farming activities within the wind farm site are removed on the day they are discovered and are placed in locations approved in writing by the	**Compliant** (ongoing)	Operations commenced 5 August 2020. Animal carcasses found on access tracks or hardstands are removed promptly and as relevant recorded in project recording forms. If involving a threatened species, then investigation and reporting undertaken. **Phase 1** weekly monitoring commenced around operating turbines from 19 November 2019 and was discontinued on 12 July 2022.

Cond No.	Condition Description	Compliance with condition	Evidence / Comments
	Minister no closer than 500 metres from wind turbine generator locations.		**Phase 2** intensive monitoring including pulse surveys has been undertaken monthly from the start of operations. Both phases involve collection of carcasses. Carcasses collected are sometimes stored for identification or use in future scavenger trials. Those not retained are disposed in the established pits (now required to be covered) (Section 4.5).
5	Conduct daily searches for dead calves during September each year and remove any carcasses from within 500 m of any wind turbine generator and ensure they are placed in locations approved in writing by the Minister. Unless otherwise agreed to in writing by the Department wind turbine generators may operate during day light hours within 1,000 metres of paddocks where lambing is occurring.	**Compliant** (ongoing)	All Turbines have been able to operate since early August 2020 except when out for maintenance or repair. The landowners are regularly active on the land managing stock. In addition, CHWF operators are regularly active around the site and are aware of the requirements for removal of carcasses. Additional regular surveys are undertaken for avifauna carcasses around turbines and collectively these activities provide a regular review of the site for identifying and removing any carcasses. (Section 4.6)
6A	Within three months following the commencement of construction, submit to the Minister for approval a Collision Avoidance and Detection Plan (CADP) containing details of the collision avoidance and detection system to be implemented (including technologies installed and practices undertaken) for monitoring WTE movements, preventing WTE collisions with turbines and recording collisions. The CADP must conform with Guidelines for its preparation which the Department must confirm at least three months prior to the commencement of construction. The CADP must include information about and comparison of relevant available technologies and practices.	**Compliant** (complete)	The CADP was first submitted to DCCEEW on 01 February 2018 and approved by DCCEEW on 29 May 2018. It has been placed on the project website. Identiflight was set up July-August 2019 and with the first units operational since 19 November 2019. Identiflight was subject to an 18-month Trial that commenced with operations from 5 August 2020. A report on effectiveness of the Identiflight system (based on the Trial) was submitted to the Department in March 2022. (Section 4.7) The CADP is being updated to include the new Identiflight 17 that utilizes a 30m tower, providing better coverage above woodland.
6B	Not commission until the CADP has been approved by the Minister. The Minister will not unreasonably withhold or delay approval of the CADP.	**Compliant** (complete)	CADP Approval on 29 May 2018 well before commissioning. The proponent has ensured that operation of individual turbines was preceded by initiation of Identiflight operations described in CADP.

Cond No.	Condition Description	Compliance with condition	Evidence / Comments
6C	Within 18 months of the earlier of first full operation or 1 September 2020, submit to the Minister a detailed assessment of the effectiveness of the collision avoidance and detection system, including complete records of detected Wedge-tailed Eagle collisions at the wind farm site and information about and comparison of relevant technologies and practices available at the time of preparing the report.	**Complied** Submitted 4 Feb 2022 (Complete)	First full operations commenced from 05 August 2020 and represented the commencement of the 18 months period for trial and reporting of the effectiveness of the Identiflight System. Reporting for the CADP Trial was submitted on 4 February 2022 (Section 4.7). Section 4.7.2 provides an overview of the Identiflight system and performance. A revised version of the report was submitted to DCCEEW on 8 March 2022. The report is posted on the CHWF website titled '*Assessment of effectiveness of the Identiflight avian detection system*'
7	Revoked on 10 May 2017	**Not applicable**	
8	Revoked on 10 May 2017	**Not applicable**	
9	Revoked on 10 May 2017	**Not applicable**	
10	Notify the Department by email within 24 hours of any collision between a wedge-tailed eagle or white-bellied sea eagle and a wind turbine. Within one week of the initial notification, the person taking the action must submit to the Department a detailed collision report, that at a minimum includes: a. the species of eagle, the sex and estimated age; b. the nature of injuries or mortality and cause as reported by a veterinarian; c. the nearest turbine to where the injured eagle or carcass was found (if detected by physical search); d. details of how the injury or mortality was caused and proposed response to prevent further mortalities occurring; and e. if the eagle was injured, information about its condition, including if and how the eagle will be rehabilitated and re-released.	**Complied** No Eagle mortalities, from collision with a wind turbine and no reports required (Ongoing)	There were no Wedge-tailed Eagle Mortalities recorded during the 2024 reporting period. Requirements for eagle collision notification and reporting have been completed for the report period. (Section 4.8)

Cond No.	Condition Description	Compliance with condition	Evidence / Comments
11	Within 2 years following the earlier of **first full operation** or 1 September 2020, submit for the Minister's written approval a **revised CADP** containing details of the collision avoidance and detection system proposed to be subsequently implemented (including technologies installed and practices undertaken) for monitoring WTE movements, preventing WTE collisions with turbines and recording collisions. The CADP must include the results of scavenger trials required under Commitment 70 of the Tasmanian EPA Permit and information about and comparison of relevant available technologies and practices. The revised CADP must include a collision monitoring programme for eagles based on a statistically valid sampling regime which applies current best practice and satisfies the requirements of EPA permit condition FF10. The Minister will not unreasonably withhold or delay approval of the revised CADP. The person taking the action must implement the approved revised CADP.	**Complied** Report being updated.	First Full Operation on 05 August 2020 and a revised CADP was due by 05 August 2022. The revised CADP was submitted on 03 August 2022. The CADP is currently being updated to address Department comments and include details of currently proposed mitigation measures including IDF 17 and will be submitted for approval. (Section 4.9)
12	Keep and maintain accurate records of each physical search conducted as required by condition 11, including date, time, turbine number and search findings. These records must be provided to the Department on request.	**Compliant** (Ongoing)	Reporting of scavenger trials has occurred previously as part of monitoring management plan development. Phase 1 Mortality monitoring surveys, around operating turbines, are undertaken on a weekly basis and records kept. Additional Phase 2 monitoring has been integrated since the first operations were achieved on 05 August 2020 and similar to Phase 1, records are maintained. (Section 4.10)
13	Ensure that all roads within the wind farm site are clearly signposted requiring all vehicles to travel at no more than 40 kph and ensure that this is a requirement for all drivers within the site except in an emergency.	**Compliant** (ongoing)	Site rules require max 40 kph speed limit and signs are placed accordingly. Separate signage also requires a max 30 kph speed limit from dusk to dawn to minimise risks to nocturnal species. (Section 4.11)
14	Prior to construction activities commencing each day, ensure that all roads proposed to be used that day are free of roadkill and any animal carcasses are placed in locations	**Compliant** (Complete)	Construction complete. Operations for full report period. Very few instances of on-site roadkill or carcasses on access tracks (Section 4.12)

Cond No.	Condition Description	Compliance with condition	Evidence / Comments
	approved in writing by the Minister no closer than 500 metres from wind turbine generator locations.		
15	Complete the wedge-tailed eagle monitoring arrangements required by the amended Tasmanian planning permit DA 2010/19 conditions FF 4 and FF 5.	**Compliant** (FF4 Complete FF5 Ongoing)	FF4 and FF5 re conditions under Tasmanian EPN 10105/1. The new EPN 10105/2 has a reduced set of conditions and renumbered the conditions. Condition FF2 of the new EPN 10105/2 has requirements to discover evidence of native bird or bat collisions with wind turbines throughout the wind farm as soon as they occur. FF4 requirements are complete and have been reported to EPA - EPA approval letter dated 8 June 2018. FF5 monitoring commenced in November 2020, based on a schedule and methodology agreed with Tasmanian EPA and is ongoing for up to 3yrs. FF5 Plan provided to DCCEEW for information on 23 Nov 2017. (Refer Section 4.13)
16	No less than 6 months prior to the expected commissioning of the wind farm, provide to the Minister for approval, a plan to conduct or fund research to inform the long-term conservation of the wedge-tailed eagle for example, funding research, nest productivity monitoring and mortality rates. The wind farm must not be commissioned until the plan is approved and implemented. The research plan must include but not be limited to: a. a detailed outline of proposed research activities to be undertaken or funded including, aims, methods, effort, milestones, key deliverables, reporting style, publication format and location and public accessibility of completed research; b. a demonstration that proposed research is consistent with published recovery objectives and will inform the long term management and conservation of the species;	**Compliant** (Complete)	The Department has advised that Condition 17 is satisfied (and by implication Condition 16) by Management Plans approved by EPA under the EPN 10105/1 specifically the Eagle Mortality Offset Plan (EMOP) under EPN Condition FF15 that includes provision for Eagle research funding. Letter from the Department on 8 Jan 2019 (greater than 6 months prior to commissioning) advises that Condition 17 is satisfied. Funding (Condition 17) has established through NRM South (under EPN FF15 EMOP). Payments have been made for 2019, 2020, 2021, 2022, 2023. No payments were required in the 2024 report period due to no WTE mortalities for the period. (Total payments by WCHPL over five years is approximately $608335.71K, Payments are CPI adjusted annually.) (Section 4.14 and Appendix B – NRM 2021 Research Report)

Cond No.	Condition Description	Compliance with condition	Evidence / Comments
	c. an outline of how research will be conducted in a manner which compliments or is collaborative with other research being undertaken by species experts, government, research and educational bodies; d. a breakdown of research components to be funded in annual $75 000 equivalent increments; e. funding arrangements and responsibilities; f. the qualifications and experience of persons undertaking the research or minimum qualifications and experiences required of persons proposed to undertake research; g. how research will be published and made publicly available within the life of the plan; and h. a peer review conducted by a suitably qualified expert demonstrating that the proposed research plan is consistent with the objectives at condition 16(b) and (c) and is achievable within identified timeframes and resources. Note 1: The Minister may determine that a plan, strategy or program approved by the Tasmanian Government in accordance with EPA conditions FF5, FF6, FF13, FF14 and FF15 satisfies the requirements for the Plan required under conditions 16 and 17.		
17	Commence the implementation of the approved research plan prior to the commissioning of the wind farm. The person taking the action must ensure that no less than $75 000 equivalent in funding is expended annually on implementing the research plan, with the first $75 000 equivalent committed prior to commissioning of the wind farm.	**Compliant** (Ongoing, annual payments as required)	EMOP was prepared under previous EPN Condition FF15 to address this requirement as agreed with DCCEEW (EPN 10105/2 now has Condition FF5 (1.1) which references EMOP). EMOP endorsed by EPA. Letter dated 8 Jan 2019 from DCCEEW advises that Condition 17 satisfied, Funding arrangements commenced. Total payments by WCHPL over five years is approximately $608K Appendix B, NRM South Research Report September 2023 describes Research projects to date (Section 4.14)

Cond No.	Condition Description	Compliance with condition	Evidence / Comments
18	On each fifth anniversary of the approval of the research plan, or at the direction of the Minister, the person taking the action must engage a suitably qualified expert to review the effectiveness and relevance of the research plan required by condition 16. Within 90 days of each five-year anniversary, the person taking the action must provide a report to the Minister outlining any recommendations and alternative measures to offset impacts to the wedge-tailed eagle. The Minister may require the person taking the action to implement the recommendations and alternative offsetting arrangements.	**Not due yet**	Review not required yet, due after 5 years (Refer to (Section 4.15)
19	For each actual wedge-tailed eagle mortality or injured wedge-tailed eagle that cannot be re-released into the wild, occurring above 2 actual mortalities or injured wedge-tailed eagles that cannot be re-released in to the wild in any calendar year, fund a raptor or wildlife centre to rehabilitate an injured or sick wedge-tailed eagle and re-release that wedge-tailed eagle into the wild at an ecologically suitable location to the satisfaction of a suitably qualified expert. If no wedge-tailed eagle can be rehabilitated for re-release into the wild, an extra $25 000 equivalent per mortality or injury must be expended towards the implementation of the research required by conditions 16 and 17 in that calendar year. *Note 2: The Minister may determine that satisfaction of Tasmanian EPA condition FF15 – 3.3 satisfies the requirements of this condition.*	**Compliant**	There were zero WTE fatalities in the reporting period. Therefore no-payments were required.

Cond No.	Condition Description	Compliance with condition	Evidence / Comments
20	The person taking the Action: May, if it can be demonstrated that after 10 years of operation, that the wind farm is not impacting the wedge-tailed eagle, request approval from the Minister to cease implementing conditions 11 (if required) and 17.	**Not due yet**	Not due until August 2030 (10 years after 4 August 2020) (Section 4.17)
21	Revoked on 10 May 2017		
22	For the protection of other nationally protected matters, specifically the **Liawenee Greenhood, Crowded Leek Orchid and Clover Glycine** the person taking the action must:	See below	
22	Three months prior to the commencement of construction, submit a **weed management strategy** to the Minister for approval. The strategy must include but not be limited to: a. details on how construction activities will be managed to minimise and prevent the establishment of new or spread of existing weed species, specifically where construction is to occur within or near habitat for the Liawenee Greenhood, Crowded Leek Orchid and Clover Glycine; b. weed management activities to be undertaken with reference to weed species that are known from and likely to occur at the wind farm site; c. vehicle and machine wash down protocols for all vehicles entering the site; d. weed identification programs and staff inductions; and e. measures to monitor, control and eradicate weed outbreaks that may occur on site. The approved weed management strategy must be implemented.	**Compliant** (Focused on construction)	Weed Management Strategy - dated 4 December 2017. DCCEEW approval letter dated 14 December 2017 Training by VDC in weed management issues for site staff was arranged in Nov 2018 A range of measures were applied through construction including employee awareness of key invasive weed species, vehicle induction checks and on-site wash down facility. These measures appear to have generally been effective, but ongoing treatments are necessary. Weed control was undertaken in the reporting period around the turbine and IDF hardstand areas in accordance with the Weed Management Strategy. (Section 4.18)
23	The approved **flora offset strategy** must be implemented. If offsets additional to those in the approved flora offset	**Compliant**	Progressed beyond Flora Offset Strategy (FOS) – No additional impacts identified and no need for revised FOS. (Section 4.19)

Cond No.	Condition Description	Compliance with condition	Evidence / Comments
	strategy are required as a result of previously unrecorded threatened species encountered during construction and/or pre• construction activities {as required by condition 24), a revised version of the flora offset strategy must be submitted for the written approval of the Minister within 3 months of the completion of all ground-breaking construction activities.	Complete	
23	The approval holder must submit the **offset management plan** to the Department within ten (10) months of the Department having approved the flora offset strategy. The offset management plan must include: i. details of short, and long term, management measures to maintain and improve the condition of the offset(s), including timeframes, proposed for each offset site; and ii. the short, and longer term, arrangements and responsibilities of parties involved in the management of each offset site.	**Compliant** FOMP approved Implementation ongoing	FOMP approved by the Department on 10 August 2019. Implementation arrangements for the Offset areas have required an extended timeframe with finalization of covenants on titles being complete in April 2024. (Section 4.19)
24	If during **construction and /or pre-construction activities** a previously unrecorded threatened species is encountered, the person taking the action must immediately **cease activities at the affected area**. A report must be submitted to the Department that includes population characteristics, proposed avoidance and mitigation measures and, where applicable, proposed offsets to compensate for unavoidable impacts. Activities in that area can only recommence when directed to in writing by the Department.	**Not applicable** (Construction complete)	No new species found - No reporting required (Section 4.20)
Administrative Conditions			
25	The person taking the action must advise the Department in writing of the actual date of:	**Compliant** (Complete)	The required notifications have been provided to the Department. Letters to the Department advised status of:

Cond No.	Condition Description	Compliance with condition	Evidence / Comments
	• commencement within three business days of the commencement of the action; • commissioning within 24 hours of commissioning, and • first full operation within three business days of first full operation.		- Commencement of construction and updates on progress. - Notification of commissioning and progress updates - Notification of First Full Operations from 05 August 2020. All requirements of Condition 25 have now been completed (Section 4.21)
26	The person taking the action **must maintain accurate records substantiating all activities** associated with or relevant to the conditions of approval, including measures taken to implement all management plans, reports and strategies required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	**Compliant** (Ongoing)	WCHPL has established a comprehensive record keeping system for the project compliance matters. (Section 4.22) No audits required to date. Representatives of the Department have visited and inspected the site.
27	Within 90 days of each anniversary of the commencement of the action, the person taking the action must publish a report on its website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published. Unless otherwise directed in writing by the Minister the report must include a chapter that outlines how each injured or sick wedge-tailed eagle was rehabilitated in accordance with the	**Compliant** (Ongoing)	This report provides the sixth of the annual compliance reports required by Condition 27 for anniversary date of 13 August. A request to place the report on the project website will be submitted to the website coordinator, on the same day that the report is submitted to the Department. (Section 4.23)

Cond No.	Condition Description	Compliance with condition	Evidence / Comments
	requirements of condition 19. This must include a. how the injured or sick wedge-tailed eagle was identified for rehabilitation b. the nature of injuries and/or sickness at the commencement of rehabilitation c. the actions taken to rehabilitate the wedge-tailed eagle including the location and costs of rehabilitation and qualification and experience of persons involved in rehabilitation; and d. potential survival in the wild.		
28	Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	**Not triggered**	Audit as required by Minister - None required as yet (Section 4.24)
29	If the person taking the action wishes to carry out any activity otherwise than in accordance with any management plans, reports and strategies required by this approval as specified in the conditions, the person taking the action must submit to the Department for the Minister's written approval a revised version of that management plan, report or strategy required by this approval. The varied activity shall not commence until the Minister has approved the varied management plan, report or strategy required by this approval in writing. The Minister will not approve a varied management plan, report or strategy, unless the revised management plan, report or strategy, would result in an equivalent or improved	**Not applicable** No revision of the approved management plans	The project is being implemented in accordance with the requirements of the conditions and the management plans, reports and strategies required by the conditions of approval. The Conditions of Approval have been varied on several occasions and the project complies with the most recent issue of the Project Approval. (Section 4.25)

Cond No.	Condition Description	Compliance with condition	Evidence / Comments
	environmental outcome over time. If the Minister approves the revised management plan, report or strategy, that management plan, report or strategy must be implemented in place of the management plan, report or strategy originally approved.		
30	If the Minister believes that it is necessary or convenient for the better protection of listed threatened species to do so, the Minister may request that the person taking the action make specified revisions to the management plan, report or strategy specified in the conditions and submit the revised management plan, report or strategy, for the Minister's written approval. The person taking the action must comply with any such request. The revised approved management plan, report or strategy must be implemented. Unless the Minister has approved the revised management plan, report or strategy, then the person taking the action must continue to implement the management plan, report or strategy originally approved, as specified in the conditions.	**Not triggered**	Minister has not required revisions to plans or strategies (Section 4.26)
31	If, at any time after 5 years from the date of this approval, the person taking the action has not substantially commenced the action, then the person taking the action must not substantially commence the action without the written agreement of the Minister.	**Compliant** (Complete)	Approved 15 December 2014 - Commencement from 23 March 2018 - complies - no further requirement. (Section 4.27)
32	Unless otherwise agreed to in writing by the Minister, the person taking the action must publish all management plans, reports and strategies referred to in these conditions of approval on its website, except, for the period that the Minister agrees, those parts of these documents that the Minister agrees should not be published for commercial-in-confidence reasons. Each management plan or strategy must be published on the website within 1 month of being	**Compliant** (Ongoing)	The following plans have been published on the project website • Cond 6A – Collision Avoidance and Detection Plan • Condition 6C – CADP Trial Report – "*Assessment of the Identiflight Avian Detection System*" • Condition 11 - Revised CADP (posting pending approval) • Cond 22 – Weed Management Plan

Cond No.	Condition Description	Compliance with condition	Evidence / Comments

	approved. Each report must be published on the website within 1 month of being submitted to the Minister. *(Exception - DCCEEW Letter of 12 Oct 2020 – Eagle Collision Reports required under Condition 10 do not need to be published as otherwise required under Condition 32. Information required under Condition does need to form part of the Annual Compliance Report (ACR) (under Condition 27) for the 12 month period during which the collision was detected. The ACR needs to be published on the project Website (as per Condition 27).*		• Condition 23 - Flora Offset Strategy and Flora Offset Management Plan
			• Conditions 16, 17 and 19
			  ○ FF 5 - Eagle Nest Productivity Plan
			  ○ FF 6 - Post Commissioning Eagle Utilisation Monitoring Plan
			  ○ FF15 - Eagle Mortality Offset Plan
			• Annual Compliance Report, 2019
			• Annual Compliance Report, 2020
			• Annual Compliance Report, 2021
			• Annual Compliance Report, 2022
			• Annual Compliance Report, 2023
			• Annual Compliance Report 2024 - (*at same time as this report is submitted to the Department*)
			
			(Section 4.28)

33	Unless otherwise agreed to in writing by the Minister, the person taking the action must provide a copy of each approved management plan, report or strategy referred to in these conditions of approval to members of the public upon request, except, for the period that the Minister agrees, those parts of these documents that the Minister agrees should not be published for commercial-in-confidence reasons. Copies must be provided within a reasonable time of the request.	**Not triggered** (Ongoing)	No requests received as yet. As per Condition 32, specific reports have been made available on the project website. (Section 4.29)

8 APPENDIX B - WEDGE-TAILED EAGLE RESEARCH FUND 2024 REPORT

Prepared by NRM South

September 2024

Wedge-tailed Eagle Research Fund 2024 Annual Report

Photo: Dr Adam Cisterne (wedge-tailed eagle nest taken during the fieldwork for the ecotoxins project)

Prepared for Wild Cattle Hill Pty Ltd

Date: 15th August 2024

Contents

Glossary

ANU	Australian National University
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
EMOP	Eagle Mortality Offset Plan
FPA	Forest Practices Authority
NRET	State Department of Natural Resources and Environment Tasmania
TAC	Technical Advisory Committee
UTas	University of Tasmania
WTE	Wedge-tailed Eagle, *Aquila audax fleayi*

Introduction

This is the fifth Annual Report for the Wedge-tailed Eagle (WTE) Research Fund ('The Fund'). It covers the achievements since the last Annual Report in September 2023.

The Fund has been operating in accordance with requirements and is enabling the support of high-quality research on Tasmanian Wedge-tailed Eagles. It is unlikely this research would have been supported without The Fund. The projects being supported will provide valuable advances in the understanding of the WTE population in Tasmania, which will assist with achieving the conservation outcomes for the subspecies.

Background

The Cattle Hill Wind Farm was approved by Tasmanian State Regulator in 2012 and by the Commonwealth Department of Environment and Energy (now the Department of Climate Change, Energy, the Environment and Water, DCCEEW) in December 2014. A requirement of the approval of the Cattle Hill Wind Farm (as described in the relevant permit conditions) was to develop an offset plan for wedge-tailed eagles (*Aquila audax fleayi,* WTE).

An Eagle Mortality Offset Management Plan (EMOP) was developed and subsequently approved to satisfy these requirements. The EMOP comprises two components, with the second component describing the Tasmanian WTE Research Fund. The EMOP required that The Fund needed to be established and administered by an independent organisation. NRM South was selected as the administering body for The Fund and a Services Agreement was signed between NRM South and Wild Cattle Hill Pty Ltd on 23rd August 2019.

Objective of The Fund

The Fund is designed to offset the impact of WTE mortalities (or injured WTE that cannot be released into the wild) due to collisions with wind turbines at the Cattle Hill Wind Farm. The Fund will only support research relating to the Tasmanian sub-species of WTE and projects based in Tasmania.

The primary purpose of The Fund is to support high quality ecological or other relevant scientific research on Tasmanian WTE, the results of which will assist with the management and protection of the sub-species. The intention is that The Fund continues for the medium term (at least 10 years), hence not all funds will be expended each year. Research will be supported that is scientifically rigorous, conducted by high quality scientists, and which is in accordance with the objectives of the Threatened Tasmanian Eagles Recovery Plan 2006-2010 or any subsequent eagle Recovery Plan.

Priorities for The Fund

Research supported by The Fund will be consistent with the published recovery objectives of the "Threatened Tasmanian Eagles Recovery Plan 2006-2010" or a subsequently approved version of the Recovery Plan. The EMOP notes that DoEE (now DCCEEW) have indicated they require The Fund to support key scientific research on the sub-species and not other activities, although the State component of The Fund may support education activities.

Suitably qualified researchers[1] will be eligible to apply for funds to support relevant research on WTE consistent with the below priorities. Critical research that can demonstrate a sound experimental design and statistical rigour will be viewed most favourably.

The initial priorities for funding support are:

- Demography of the WTE. This could include studies into the size of the state population (such as an evidence-based population census), fecundity, survival of different age classes, and immigration and emigration intra- and inter-state. Such ecological data could be used to update a Population Viability Analysis.
- The collection of data that will allow an evaluation of the sub-species conservation status against IUCN criteria.
- Quantification of anthropogenic impacts to WTE, such as collisions with vehicles, powerlines, shooting or poisoning, and the development of mitigation measures to reduce these impacts. Disturbance to nesting WTE. This includes studies into determining the anthropogenic factors that impact on breeding, and quantification of these such as the distance, duration and types of factors that result in impacts to breeding success.
- Strategies to monitor nesting behaviour of WTE. Nests are currently very difficult to monitor due to the need to limit disturbance to breeding birds, hence automated strategies to monitor nests without disturbing eagles will be supported.
- Studies into why WTE collide with wind turbines and strategies to reduce collision rates. Published studies indicate WTE actively respond to and avoid wind turbines, but occasionally collide. Any insights into why they occasionally collide may assist with strategies to minimise collisions.
- Other scientific studies where it can be demonstrated that the research will provide a demonstrable benefit to the sub-species.

The priorities for funding support may be revised by the panel following any reviews of the EMOP.

Studies on WTEs required for commercial developments (i.e. conditions of a permit, outside offsets) or studies that are the responsibility of Local, State (including Government Business Enterprises) or Commonwealth Government will not be supported.

Administration of The Fund

NRM South's role is ensure that The Fund is established and administered as described in the Eagle Mortality Offset Plan (EMOP).

Specifically, NRM South's role is to:

- Be responsible for receipt, management and audit of WTE Research Fund.

[1] Must hold a postgraduate degree in science and evidence of the successful publication of relevant, high quality research in peer-reviewed scientific journals or experience and qualifications deemed by the panel to be evidence of equivalent merit. However, proposals to support high quality Honours research will also be considered.

- Assist with the identification and selection of panel members. The Panel members selected will be agreed by the Tasmanian EPA and delegate of the Commonwealth DCCEEW.
- Host, recruit and administer/support a panel, as prescribed by the EMOP, to prioritise, assess and distribute research funds – approximately two meetings per year.
- Administer reimbursement of panel members reasonable travel costs and hourly payment for attendance at annual meetings.
- Advertise, administer and coordinate research applications, and in conjunction with the panel develop and maintain the assessment process.
- Contract and administer the research funds on behalf of the research panel, including coordination of progress and final reports.
- Provide panel advice and reports to Wild Cattle Hill Pty Ltd and any other contributors to The Fund for preparation and submission to the Regulator (if required).

Governance of The Fund

The Fund is overseen by an independent Technical Advisory Committee (TAC, referred to in the EMOP as a "Panel").

As described in the EMOP, the TAC comprises:

- A representative of the Department of NRET (currently Saint Rooks, Manager, Threatened Species and Conservation Programs, who replaced Dr Davina Gregory-Dunsmuir, who has moved to another section in NRET).
- a representative from the administering body, NRM South (Dr Cindy Hull).
- a representative of the DCCEEW (as an observer, Dr Ivan Lawler), and
- at least two scientists experienced in wildlife ecology, with a strong background in research and publishing (Dr Phil Bell and Dr Sarah Munks, both independent consultants with extensive experience working on eagles). These roles were filled following advertising and a competitive selection process. Both of these independent scientists had completed their first term on the TAC and were offered a second term, which they both accepted.

The role of the Technical Advisory Committee (TAC) is to:

- Review funding applications and select those to be supported.
- Monitor the progress of grant recipients, and
- Determine whether to accept research reports (i.e. whether they fulfill the requirements of support).

Individual members of the Technical Advisory Committee are expected to:

- Actively participate in the review, monitoring and reporting of the Research Fund.
- Attend, either in person or by teleconference, twice annual meetings, and additional meetings, if required.
- Provide reliable, relevant, technical and contemporary advice.
- Comply with relevant NRM South Policies and Procedures, including the Code of Conduct, and any specific requirements of The Fund including Confidentiality; and
- Be an advocate for the research Fund's outcomes.

NRM South has also now established a Project Governance Steering Committee (PGSC) to oversee externally funded projects. The PGSC serves a crucial function in overseeing projects and providing guidance on best practice project management and governance processes, with recognition of the parameters and processes required by some funding entities. It is responsible for reviewing project progress and providing advice and recommendations on:

- Project performance (e.g. delivery against milestones and budget),
- Project risk (e.g. WHS and compliance) and
- Project management processes (including change, quality and stakeholders)

The Committee is an advisory committee to the NRM South Board (does not have delegated authority) and includes Board representation (through the Committee's Chair). The WTE Research Fund is included in the remit of the PGSC.

Achievements during 2024

The fifth year of The Fund built on the achievements of previous years.

Details of the achievements:

1. The fifth deposit (including the set-up contribution) to The Fund was received from Wild Cattle Hill Pty Ltd On the 11th October 2023.
2. The project "Investigating the spatial ecology and habitat use of Tasmanian wedge-tailed eagles in the Tasmanian Midlands using high-frequency GPS telemetry (Pay, Koch, Cameron, Wiersma, Katzner)" continued. The project will be completed and the final report submitted at the end of August 2024. The final payment will then be made.
3. The project "Comprehensive analysis of the ecotoxin threat to Tasmanian Wedge-tailed Eagles (*Aquila audax fleayi*)" was completed. The TAC reviewed the report and had some questions of the grant recipients. At the request of the TAC, the grant recipients presented the findings of their study and addressed questions from the TAC. The final report was submitted in August 2024. The final payment was made. The findings are detailed below.
4. As discussed in the September 2023 annual report, it was recognised that only some of the objectives of the Fund were not being addressed by grant applicants and that a PhD project would be developed that focussed on some of the other key objectives. In addition, as there had been an additional deposit to the Fund by the Cattle Hill Wind farm due to the triggering of a mortality threshold hold exceeding a morality threshold, it was proposed that this additional payment be used for a PhD stipend. Approval was granted by the TAC (including the State and Commonwealth regulators) that it was appropriate to use the Fund's money in this manner. The project has been budgeted and a Funding Agreement negotiated with UTas. It is hoped a student will commence in September 2024.
5. Due to the negotiations over the PhD scholarship and due to the cost of the 3.5 year stipend, a top up bursary, mandatory payments and field work costs, it will be necessary to use some of the annual grant funds to support the scholarship. For this reason, a grant round was not advertised in the first part of 2024. It is intended that grants will be advertised in later 2024.

Projects supported in 2024

The following projects were completed or due to be completed in 2024:

Midlands GPS tracking

"*Investigation the spatial ecology and habitat use of Tasmania wedge-tail eagles in the Tasmanian Midlands using high-frequency GPS telemetry*" for full funding from:

- Dr James Pay (UTas) Project Lead.
- Dr Amelia Koch (FPA)
- Prof Elissa Cameron (University of Canterbury)
- Jason Wiersma (FPA) and
- Dr Todd Katzner (USGS).

Summary of findings

As mentioned above, the final report is due at the end of August 2024. The findings below represent the results to date.

Project aims:

The aim of this research is to GPS-track five adult eagles in the Tasmanian Midlands to investigate how they use this region of Tasmania. We will consider the spatial ecology of the birds at two scales. First, we will investigate habitat use at the home-range scale, considering the size and characteristics of areas used. Second, we will model how Tasmanian wedge-tailed eagles select for different habitats depending on the behaviour they are exhibiting.

Field work:

We captured adult Tasmanian wedge-tailed eagles using established techniques (e.g. bow net, net launcher; Bloom et al., 2007) and attached GPS-GSM solar-powered telemetry units (CTT ES-400 transmitters; Cellular Tracking Technologies, Rio Grande, NJ, USA) to each eagle using a Teflon ribbon harness.

We identified potential study areas during Q4 2022 and carried out field work to capture the eagles during April and May 2023. We caught an adult female, "Daisy", from a site near Conara at 12pm on April 18th. We next caught an adult male, "Winton", from a site just northwest of Brighton on April 25th. We caught another adult male, "Bow", from a site at Jericho on April 27th. On May 10th we caught a third adult male, "Julian", at a site south of Ross, and on May 11th we caught a final adult female, "Emily", at a site along the western edge of the Midlands study area.

Data summary:

The summaries presented here are based on data collected from the date the GPS-transmitters were attached until August 12th, 2024. During this period, we have collected 900,698 location fixes from the five GPS-tracked eagles.

Two of the GPS-tracked eagles have not transmitted any recent data. This lack of communication could be attributed to one of four potential scenarios:

1. **Signal disruption**: The eagle may have ventured into a region where 3G/4G network coverage is unavailable, preventing data transmission.

2. **Mortality in a no-signal zone**: The eagle may have perished in an area devoid of 3G/4G connectivity, resulting in a cessation of data updates.
3. **Transmitter failure**: There could be a technical issue with the transmitter, leading to a malfunction that stops data relay.
4. **Insufficient power**: The transmitter's battery may not be receiving adequate solar energy to maintain its charge, thus hindering its operation.

Utilisation distributions:
Analysis of the utilisation distributions (UDs) showed some variation in the size of the overall areas used by the eagles. Under the UD model, we consider that the animal's use of space can be described by a bivariate probability density function, which gives the probability to relocate the animal in specific areas (Benhamou, 2011). We can then use this information to infer the home-range size of each bird. For example, the 95% UD corresponds to the smallest area in which the probability to relocate the animal is equal to 0.95 (i.e., there is a 95% chance that the bird is within this area at any given time). We can also use tighter UD thresholds to identify areas of concentrated use within the 95% UD (i.e., the 50% UD can be interpreted as the core home range of the eagle).

The 50% UD (core home range) size was similar across all the eagles (3.05 – 6.29 km2), except for Winton who had the smallest core area (1.61 km2). The mean 50% UD was 3.94 km2, which is smaller than the 5.1 km2 mean for resident birds we are tracking in other areas of Tasmania. The mean 30% UD was also smaller than the mean recorded for the five birds we are tracking on conservation land (6.7 km2). There was greater variation in the 95% UDs. Emily recorded a small 90% UD of 13.18 km2, which is smaller than the areas used by most of the other eagles being tracked across Tasmania. Winton and Julian recorded 95% UDs similar to the mean we have recorded for resident birds we are tracking across the state (21.8 km2). Daisy recorded a very large 95% UD (92.32 km2), which was driven by the large area she explored during spring 2023. The mean 95% UD for the four eagles in this project that were resident in a territory for the entire tracking period was 21.19 km2, which is very close to the 21.8 km2 mean for resident birds we are tracking in other areas of Tasmania.

Habitat selection:
We are currently working on combining the data from all the adult eagles we are GPS-tracking into an analysis that will investigate fine-scale behaviour-specific habitat selection using state-space modelling and incorporating a number of habitat variables in a multivariate framework. For this report we have explored how the birds have used different land cover categories using a habitat selection ratio (Manly et al., 2002). This approach compares the proportion of available habitat types to the proportion of time spent in each habitat. We identified the available habitat area for each eagle using the 95% UDs described previously and buffering that area by an additional band that added 5% to the total area. The proportion of time spent in each habitat type was measured as the proportion of GPS fixes that fell within each habitat (to reduce spatial autocorrelation, the six second flight mode data was subsampled to 15 minutes). The resulting selection ratios identify which habitats are being selected. As such, selection ratio values < 1 indicate a habitat used proportionally less than its availability, and ratio values > 1 indicate a habitat used proportionally more than its availability (i.e., a selection ratio of 2 indicates a habitat type used twice as much as expected). The

habitat features we considered in this analysis were landcover categories derived from TasVeg (DPIPWE, 2020).

The eagles used habitats non-randomly ($p < 0.001$) in relation to land cover categories. There was a lot of variation in how the eagles selected for different land cover categories, particularly non-native vegetation (Julian and Daisy selected strongly for this habitat type, whereas Bow strongly avoided it). Native grassland, cleared land, and dry eucalypt and non-eucalypt forests were generally used by the eagles proportional to their availability.

Extra-urban areas, including residential and commercial buildings, were strongly avoided by all eagles. There was also a slight avoidance of agricultural areas, although Daisy was an exception, using agricultural land more than would be expected based on its availability. Notably, plantations were the only land cover category with a significantly positive selection ratio, as both the upper and lower confidence intervals were above zero. However, this positive selection result is likely due to the scarcity of plantation habitats in the available areas, with data from only two eagles (Daisy and Emily) used to calculate this odds ratio.

There are some differences in how Tasmanian wedge-tailed eagles tracked in the Midlands selected habitats compared to those tracked on conservation land. All conservation eagles avoided non-native vegetation, whereas the Midlands eagles exhibited more variability in their use of this land cover type. Additionally, the conservation eagles demonstrated a stronger preference for non-eucalypt forests.

Flight behaviour:
To carry out some preliminary exploration of the flying behaviour of the birds, we subset all the GPS-fixes recorded whilst the birds were flying. We then segmented this data by individual flight. In total the birds have completed 9,759 flights, flying for a total duration of 105,678 minutes. The mean duration of a flight was 12.04 minutes, which is almost twice the mean flight duration (6.86 minutes) recorded for five birds GPS tracked on reserved land. The mean flight duration was also longer than the mean (9.94 minutes) recorded for birds in other areas of Tasmania, suggesting that wedge-tailed eagles in the Midlands spend longer in flight when compared to other areas of the state. Most GPS fixes recorded during flights were <250 m altitude over ground level.

Ecotoxins

"Comprehensive analysis of the ecotoxin threat to Tasmanian Wedge-Tail Eagles" from*:*

- Dr De Stojanovic (ANU)
- Dr James Pay (UTas)
- Dr Catherine Young (ANU), and
- Adam Cistern (ANU).

Findings

Project aims:

1. Determine how prevalent eco-toxin exposure is across the Tasmanian Wedge-tailed Eagle population.

2. Estimate how severe eco-toxin accumulation is relative to background levels in areas frequented by eagles.
3. Investigate whether eco-toxin exposure is attributable to environmental features (e.g. proximity to anthropogenic disturbance).
4. Investigate the demographic impact of ecotoxins.

Ecotoxin results:

- None of the eight anticoagulant rodenticides tested were detected within the material collected below wedge-tailed eagle nests.
- Lead concentrations were low overall but were highest in soil below wedge-tailed eagle nests.
- Zinc concentrations were lower in soil collected directly under wedge-tailed eagle nests compared to background concentrations.
- The results suggest that the method described within may be useful for detecting high lead exposure in wedge-tailed eagles.
- Given the very small differences between nest and background concentrations of lead, a larger sample size should be analysed to validate the current results.

Demographic results:

- Sensitivity analyses demonstrated that final population sizes were driven by reproductive output (brood size), juvenile and adult survival rates. Population growth, however, was driven by the survival of adults and older pre-adult birds.
- In simulations of ecotoxin exposure scenarios, Tasmanian wedge-tailed eagle population sizes were significantly decreased when both mortality of adults and sub-adults was impacted.

Conclusions and recommendations

1. Our preliminary results that lead levels under Tasmanian wedge-tailed eagle nests are higher than background levels – these indicative results supported our expectations, but the small sample size of accessible nests necessitates cautious interpretation.
2. Confirmatory research to support our findings should be implemented, with an aim to increasing spatial coverage and the overall sample size of eagle nests.
3. Our sensitivity analysis shows that mortality rates are highly influential on population viability of Tasmanian wedge-tailed eagles, but the relationship between ecotoxin exposure and mortality remains unclear and should be a priority for further research.
4. We found no evidence of elevated zinc levels under eagle nests.
5. The source of lead under eagle nests remains unknown and should be a priority for further research.

6. Quantifying the extent to which hunting with lead bullets occurs in the vicinity of nest sites may help explain variation in lead levels among nests, but there remain serious logistical challenges of quantifying hunting rates within eagle territories.

PhD project

"How is TWTE habitat selection affected by human activities and land-use intensity?"

The project will be housed in the School of Natural Sciences at Utas, and supervised by:

- Dr James Pay, University of Tasmania (Supervisor)
- Professor Chris Johnson, University of Tasmania (Supervisor)
- Associate Professor Chris Burridge, University of Tasmania (Supervisor)
- Dr Catherine Young, NRM South (Advisor) – to ensure the project remains focussed on the WTE Research Fund objectives.

The funding covers a 3.5 year stipend, plus top up bursary, mandatory paid leave, relocation allowance and fieldwork costs.

This project has not yet commenced. A student had been offered the scholarship and support but decided not to take up the offer. A new student will be identified by advertising the position and selecting from the pool of applicants. The funding agreement with Utas will be signed once a student is identified. The scholarship will be paid in 4 stages, commencing upon the enrolment of the student.

Brief project outline

This PhD project will investigate how TWTEs respond to a range of human activities. The project will have a particular focus on using existing datasets (including GPS-tracking data from 41 adult and 25 pre-adult TWTEs) as well as carrying out field experiments to assess effects of disturbance on behaviour and breeding success of eagles.

The project will aim for a broad understanding of the ways in which eagles respond to human activities and a variety of land uses. In doing so it will answer several questions relating to specific disturbances that are most likely to be influential. The list of questions the project could address includes:

1. **How is TWTE habitat selection affected by human activities and land-use intensity? Including:**
    - **How does operation of helicopters affect the behaviour of TWTEs?**
    - **How is the behaviour of TWTEs, including time spent at the nest during breeding, affected by vehicle traffic?**
2. **What is the relationship between nest attendance, revealed by GPS tracking, and nest success?**

A summary of the context for each question, along with potential strategies for addressing them, is included below. Outputs from each of these project components can be synthesised using a vulnerability analysis to discover what levels of disturbance could be sufficient to cause population-level effects.

Summary of proposed project components

LITERATURE REVIEW: What are the current methods available for monitoring wildlife disturbance?

During the first year of the PhD program, the candidate will conduct a comprehensive review of the contemporary literature on monitoring wildlife disturbance. This review will encompass an exploration of the latest technologies currently at our disposal and update information provided in previous reviews on the topic (e.g., Cox et al., 2012; Cutler and Swann, 1999; Preisler et al., 2006). Conclusions from this review may offer innovative ideas and strategies for subsequent inclusion in the data chapters of the PhD thesis.

1. **How is TWTE habitat selection affected by human activities?**

Human activities can change the way animals use the landscape. For example, at a fine-scale animals can avoid anthropogenic activities (Barker et al., 2023; Suraci et al., 2019), or at a broadscale anthropogenic activities could increase or reduce the size of the area used by individuals (Perona et al., 2019). Understanding these dynamics has relevance to conservation management. The increasing temporal resolution of modern GPS-tracking technologies, together with advances in statistical techniques, are facilitating a more detailed understanding of animal behaviour alongside habitat use. By incorporating spatial information on human activities, modern habitat selection modelling methods can provide insight into how human activities affect wildlife movement. The project can incorporate the GPS data collected from TWTEs into models that assess how particular sources of human disturbance (for which spatial data are available, e.g., roads, land use change, fuel reduction burns) affect the spatial ecology of TWTEs.

- **How does operation of helicopters affect the behaviour of TWTEs?**

Aerial nest surveys are carried out by a number of industries in Tasmania, both to search areas for TWTE nests and to check if TWTE nests are being used in any given breeding season. Furthermore, helicopter traffic associated with various other purposes is also commonplace across the state (e.g., fire management, tourism, construction work, infrastructure surveys). There is little information on how the behaviour of TWTEs is affected by these aircraft. Helicopter flight path data are recorded by industries, which includes information on the time, location, altitude, and speed of the aircraft. These data include flights that have been carried out across territories where adult eagles were being GPS-tracked over the last four years. By combining these existing datasets, the project can investigate this question by assessing if and how eagle flight behaviour and nest attendance is affected by helicopter flights, and how any affects are linked to the flight path characteristics of the aircraft (e.g., speed, altitude, direction).

- **How is the behaviour of TWTEs, including time spent at the nest during breeding, affected by vehicle traffic?**

A large number of TWTE nests are situated within 1 km of roads or vehicle tracks. Current guidelines, adapted from forestry practices (limiting activities within 500 m - 1 km line-of-sight), are employed to mitigate potential impacts from road-based vehicle use during the breeding season. However, there is a lack of information regarding how TWTEs respond to vehicle traffic at the distances of current recommendations. Consequently, it is uncertain whether these guidelines need adjustment, either to enhance conservation or to reduce industry costs. The project can use traffic counters to

assess how the frequency and type of vehicle movements affects the behaviour of breeding GPS-tracked TWTEs (e.g., time spent at the nest). This could also include an experimental component, whereby vehicle movements are introduced at sites where breeding TWTEs are being monitored.

2. **What is the relationship between nest attendance, revealed by GPS tracking, and nest success?**

GPS-tracking can be used to provide valuable information on the breeding behaviour of birds (Murgatroyd et al., 2023; Schreven et al., 2021). However, it is essential to align GPS-derived movement data, such as nest visit durations, with on-site nest surveys for validation. This validation ensures that conclusions drawn from GPS data regarding breeding season timing and nest outcomes are substantiated. By comparing survey data with GPS data from breeding TWTEs, the project can obtain information on how movement characteristics relate to observed breeding events. This will provide an assessment of the utility and limitations of movement data for monitoring TWTE breeding behaviour. Results will contribute to existing work on the TWTE aiming to use GPS-data to inform population models and assess the impacts of disturbance during breeding.

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Next stage in The Fund

The next round of grants is expected to be advertised in later 2024, and new projects will be identified.

Financial statement

A summary of the financial statement is provided below:

Details	***September 2023 - August 2024***	
	Contribution	***Costs***
Funds received (incl. GST)	$106,260	-
Bank interest	$1,484.71	-
Ongoing administration (8%)	-	$7,728
Advertising	-	-
Contractor costs (TAC)	-	$550
Carried forward	$181,737.49	-
Final Milestone payment - Ecotoxins	-	$17,990.60
Funds retained for final Milestone payment – Midlands GPS tracking	-	$16,372.40
Funds retained for PhD stipend	-	$176,166.00
Total	$289,482	$218,807

Any residual funds will be allocated to future grant rounds.

Appendix 1

Projects awarded support by the Fund - completed

- 2020: Investigating the spatial ecology and habitat use of the Tasmanian wedge-tailed eagle in unmodified landscapes using high-frequency GPS telemetry (Cameron, Pay, Katzner, Koch, Wiersma).
- 2021: Estimating the population size of the Tasmanian wedge-tailed eagle (*Aquila audax fleayi*) using modern genetic techniques (Stojanovic, Cistern, Pay, Burridge, Young, Clarke and Butler).
- 2021: Monitoring wedge-tailed eagle population trends (Hawkins and Potts).
- 2023: Comprehensive analysis of the ecotoxin threat to Tasmanian Wedge-Tail Eagles (Stojanovic, Pay, Cistern).

Projects awarded support by the Fund – underway

- 2022: Investigation the spatial ecology and habitat use of Tasmania wedge-tail eagles in the Tasmanian Midlands using high-frequency GPS telemetry (Pay, Koch, Cameron, Wiersma, Katzner).

Projects awarded support by the Fund – to commence

PhD project