Wild Cattle Hill Pty Ltd

CATTLE HILL
Wind Farm

Annual Environmental Review 2025

Review period: 1 July 2024 to 30 June 2025

Prepared in satisfaction of State EPN 10105/2 Condition G08

Prepared By: Goldwind Australia

GOLDWIND

On behalf of: Wild Cattle Hill Pty Ltd

WILD CATTLE HILL PTY LTD

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Definitions and Abbreviations

AER	Annual Environmental Review
BBMMP	Bird and Bat Mortality Monitoring Plan
Cattle Hill Wind Farm	Wind Farm comprising 48 wind turbines and up to 150 MW capacity
CADP	Collision Avoidance and Detection Plan
Central Highlands Region	Is that described as the area north of Bothwell, east of Bronte Park and surrounds, south of Liawenee, and west of the Great Western Tiers
CHC	Central Highlands Council
CHWF	Cattle Hill Wind Farm
DAWE	Department of Agriculture, Water and Environment (now DCCEEW)
DCCEEW	Commonwealth Department of Climate Change, Energy Efficiency, and Water
DNRE	Tasmanian Department of Natural Resources and the Environment
DPEMP	Development Proposal and Environmental Management Plan
EMOP	Eagle Mortality Offset Plan
EMPCA	*Environmental Management and Pollution Control Act 1994*
EMS	Environmental Management System
ENPMP	Eagle Nest Productivity Monitoring Plan
EPA	Tasmanian Environment Protection Authority
EPBC	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EPN	Environment Protection Notice (Current version 10105/2)
ERP	Emergency Response Plan
EUMP	Eagle Utilization Monitoring Plan
FPA	Forest Practices Authority
FOMP	Flora Offset Management Plan
GWA	Goldwind Australia Pty Ltd (ACN 140 108 390)
HCMP	Hunting and Culling Management Plan
Ha	Hectare
IDF	IdentiFlight
MW	Megawatt
NVA	Natural Values Atlas
O&M	Operations and Maintenance
OEMP	Environmental Management Plan – Operations
OH	Overhead (in relation to transmission lines) OHL – Overhead Line
PTT	Permit To Take.
SCADA	Supervisory Control and Data Acquisition
SES	State Emergency Services
TasNetworks	Own, operate and maintain the electricity transmission and distribution network in Tasmania.
TFS	Tasmanian Fire Services
The Land	Described as that situated immediately east of Lake Echo and off Bashan Rd, approximately 3km southwest of Waddamana in central Tasmania, 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
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).

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Director's Statement

This is the eighth Annual Environmental Review (AER) for the Cattle Hill Wind Farm, located in Tasmania's Central Highlands.

The AER has been prepared in accordance with the requirements of Condition G8 of Environment Protection Notice 10105/2 issued by EPA on 12 June 2024.

This AER will be made publicly available through publication on the Cattle Hill Wind Farm website: (www.cattlehillwindfarm.com).

As required under Condition G8, this AER has been prepared for submission to the Director of the Environment Protection Authority within 3 months of the end of the review period (1 July 2024 – 30 June 2025).

I acknowledge and endorse the contents of this review.

Nick Learmonth

Chief Financial Officer, Atmos Renewables, and

Director, Wild Cattle Hill Pty Ltd

25 September 2025

1. Introduction

1.1 Purpose of this document

This Annual Environmental Review (AER) 2025 has been prepared in accordance with requirements of Environment Protection Notice (EPN) No. 10105/2 Condition G8, which requires annual reporting of project performance against environmental requirements outlined in the project's regulatory approvals, and their implementation via relevant approved management plans.

This AER report has been prepared by Goldwind Australia (GWA) on behalf of the proponent, Wild Cattle Hill Pty Ltd (WCHPL). The AER covers the period from 1 July 2024 to 30 June 2025 (the review period). A summary of requirements of State EPN 10105/2 Condition G8 and where they are provided in this AER is provided in Table 1.1, with full details of Condition G8 in Appendix A.

1.2 Cattle Hill Wind Farm

Cattle Hill Wind Farm (CHWF) has an installed total capacity of approximately 148.5MW and is allowed by the Grid operator to export up to 144 MW to the Grid when wind conditions allow for maximum generation.

The amount of clean energy generated by the CHWF each year is sufficient to meet the total power demand of approximately 16,765 Tasmanian households (around 7% of the houses in Tasmania)[1].

CHWF commenced operations in August 2020, and boosted Tasmania's renewable energy supply by 5%, which helped Tasmania achieve its goal of becoming 100% powered by renewable energy in the same year. Approval of CHWF as an accredited power station in 2020 also allowed the Australian Government's Large-scale Renewable Energy Target of securing an additional 33,000-gigawatt hours of renewable energy to be surpassed.

CHWF was the first wind farm in the southern hemisphere to install the IdentiFlight eagle detection and collision avoidance system, winning the Clean Energy Council innovation award in 2021 for successfully pioneering this technology in Australia. The CHWF was also the first wind farm in Tasmania to utilize detection dogs for carcass monitoring. During the review period, CHWF environmental representatives have continued to share lessons from these and other initiatives with regulators and wind farm developers, in the interest of advancing best practices for protection of the environment at multiple wind farm sites.

1.3 Proponent Details

Wild Cattle Hill Pty Ltd (WCHPL) is the proponent, and the 'Responsible Person' for the project under State EPN 10105/2 and EPBC Approval 2009/4839. Atmos Renewables acquired 100% share holding in WCHPL during the report period.

Atmos Renewables is a leading Australian renewable energy company with ownership in over 1.9GW of operating and in-construction wind, solar and energy storage assets and a number of development projects across Australia. Atmos Renewables has engaged GWA as the operator of CHWF and for provision of assistance with Development Services.

[1] *2021 Census data recorded a total of 229,000 occupied houses in Tasmania.*

1.4 Structure of this Report

This AER provides a review of performance against environmental obligations outlined in the project's regulatory approvals and implementation of associated approved management plans.

Table 1.1 provides a reference to sections of this AER which address the requirements of Condition G8 of the State EPN. Full detail of requirements for Condition G8 are shown in Appendix A.

Table 1.1: Summary of AER Reporting Requirements and where they are addressed in this document.

Condition G8 reference and Summary of Reporting Requirements		AER Section
1.1	Statement by General Manager or equivalent acknowledging contents of AER	Preface
1.2	List of complaints received from the public and description of any actions taken as a result	4.1
1.3	Environment-related procedural or process changes implemented during the review period	4.4
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Figure 1.1: Cattle Hill Wind Farm

2 Project Overview

2.1 Project Location

The CHWF is located in Tasmania's central highlands, immediately east of Lake Echo and approximately 3km southwest of Waddamana. The site is within a sparsely populated and relatively isolated part of the Central Highlands Council municipal area, on land which ranges from 700-920 metres above sea level (Figure 2.1).

The site is approximately 35 kilometres 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.

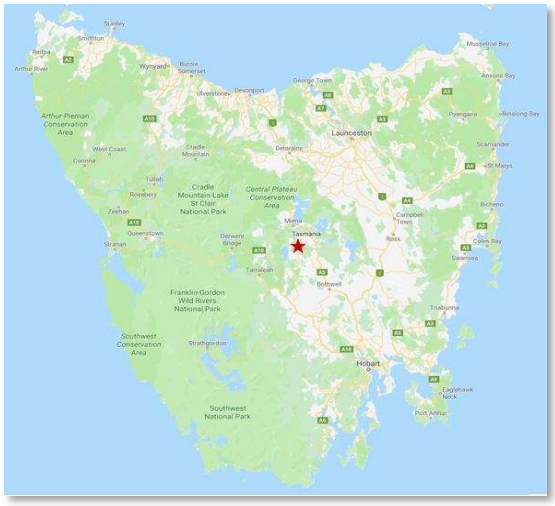

Figure 2.1: Cattle Hill Wind Farm location

The site is accessible by unsealed roads from the northeast, east and south, which after completion of construction of the CHWF in 2020, have returned to their former low traffic levels.

CHWF exports power to the Tasmanian electricity supply network via a short section (approximately 250 metres) of 220 kV overhead line which connects the wind farm substation to the TasNetworks high voltage electricity transmission network which crosses the site. Aside from this, there are no overhead lines associated with the development.

In addition to operation of the CHWF, other land use activities on the site include farming, operation and maintenance of the TasNetworks transmission line, and scattered residential dwellings.

2.2 Project Background

CHWF has had a long planning history; subject to a planning application based on a Development Plan and Environmental Management Plan (DPEMP, 2010) that led to initial approval by Tasmanian State and Local Regulators on 15 December 2011 that was amended by RMPAT in April 2012 and, an EPBC Referral (EPBC 2009/4839) to the (now) Commonwealth Department of Climate Change, Energy, Environment, and Water (DCCEEW) (previously Department of Agriculture, Water and Environment (DAWE) and subsequent EPBC approval in December 2014.

The initial development approval was issued to NP Power Pty Ltd, then transferred to One Wind Australia Pty Ltd and followed by Tasberry Holdings Pty Ltd in 2016. WCHPL (the current proponent) acquired the project in October 2017 and redesigned aspects of it in accordance with a series of Commonwealth, State and Local development approvals (see Section 2.5).

WCHPL has substantially condensed the project footprint from its original proposal for a 100-turbine layout to a more compact 48 turbine layout, with increased tower height and higher capacity turbines, resulting in a more efficient project, with significantly reduced environmental impact.

2.3 Infrastructure Components

Following completion of construction of CHWF, all temporary facilities such as batching plants and the main construction compound were removed from site. Permanent infrastructure components which will remain throughout the life span of the project are described in Table 2.1 and shown on the wind farm layout map (as at December 2023) (Figure 2.2), including IDF 17.

Table 2.1: CHWF Infrastructure (Operations Phase)

Component	Description
Turbines and towers	CHWF consists of 48 wind turbines with a generating capacity of 148.5 MW. The turbines utilise Goldwind Permanent Magnet Direct Drive technology, and have a tip height of 170 m above ground level, a hub height of 100 m and rotor diameter of 140 m. Near the base of each tower is an external kiosk-style 33kV transformer and two banks of cooling fans. Cooling fluid circulates between the cooling fan units and internal areas of the tower and turbine. No aviation safety lighting is required on the wind turbines. Lighting is provided at the entry to each tower. The turbines are off-white (RAL 9016) with non-reflective finish.
Hardstands	Hardstands formed during construction are used for large cranes and component laydown at each turbine site and are retained and maintained to allow for maintenance activities during the operation of the wind farm.
Substation and switchyard	An on-site substation within a security fenced compound receives 33 kV cables from each of the wind farm's five collector groups, via a 33 kV switch room. Voltage is stepped up to 220kV by a bunded 33kV/220 kV transformer before connecting to the Tas Networks 220 kV OH transmission line via a switchyard, overhead gantry, and short section of overhead 220kV line and cut-in poles. Beneath the substation is an earthing grid for electrical protection.
O&M facility	The Operations and Maintenance (O&M) facility is a permanent facility which is being used for operation and maintenance functions of the project. The facility includes offices and amenities, a carpark, storage and maintenance buildings, a workshop, laydown area, and fire safety infrastructure.
Underground cables	A network of 33kV underground cables links each of the 48 turbines to the onsite substation. Where possible, these cables were installed adjacent to access tracks to minimise disturbance
Internal access tracks	A network of internal access tracks has been established to provide all weather access to all turbine sites and the substation and has been designed to facilitate over-dimensional deliveries. Periodic maintenance of the tracks is arranged by the Site Service Team.
IdentiFlight system	CHWF includes 17 IdentiFlight (IDF) pole mounted avian protection units, 16 installed as part of an Australian first technology trial (over 18 months Aug 2020 – Feb 2022) aiming to reduce collision risk for the Tasmanian Wedge-Tailed Eagle. The IDF units are connected to the wind farm's electrical and communication systems and integrated with the CHWF SCADA system, and send signals to curtail any turbine, if an eagle is at risk of entering the turbine's Rotor Swept Area (RSA) based on its speed and trajectory. The 17th IDF unit was installed in October 2023 (Figure 2.2) to address IDF blind spots caused by vegetation to improve IDF's coverage of turbines and their surrounds.
External road upgrades	To allow large component deliveries such as turbine blades, nacelles, tower sections and generators during construction, as well as provide safe access for maintenance of components during operations, significant upgrades to approximately 30 kilometers of external roads were undertaken. These works were completed during the construction period, prior to the over-dimensional deliveries of Wind Turbine components from 2019. The upgraded roads have since been handed back to CHC for ongoing management as local roads.

FIGURE 2.2 CHWF Site Layout (As-Built)

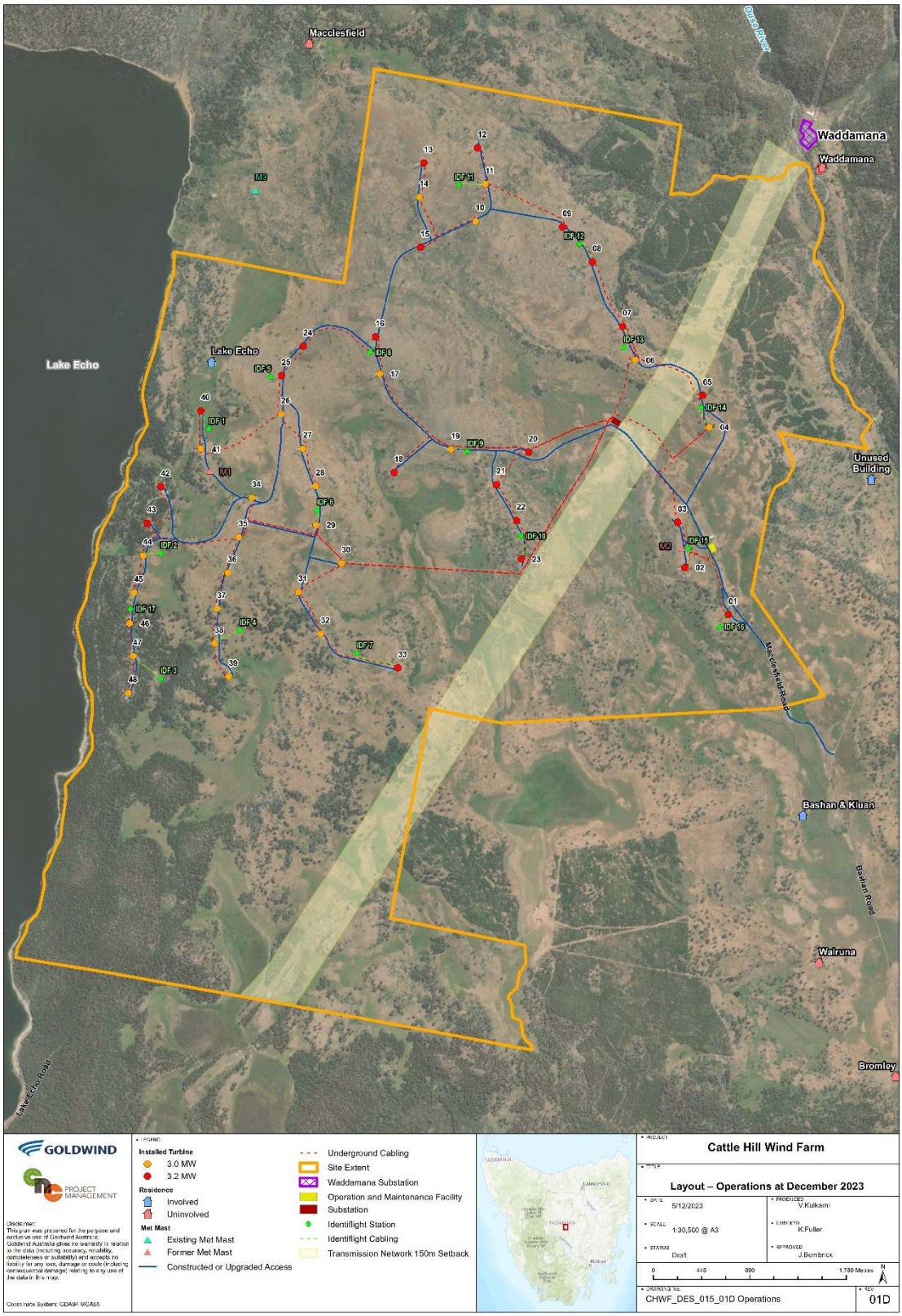

Figure 2.2: Cattle Hill Wind Farm Final (As-Built) Layout (December 2023)

2.4 Site Exclusions and Restricted Areas

CHWF is situated in a remote part of the Central Highlands, spanning two large private landholdings which are primarily used for farming purposes (sheep and cattle). Parts of the site contain areas of cultural heritage and ecological significance, which are protected by existing covenants that have been considered by the project design and site activities.

The following restrictions and requirements have been incorporated into the design of the CHWF and are to be adhered to by all persons on site, for the operational life of the facility:

- A pre-existing 'Lake Echo' conservation covenant which has limits on the placement of infrastructure.
- Avoidance of disturbance of Highland Poa and orchid habitat within the 'Lake Echo' covenant, except as permitted by Permits to Take and/or the Covenant Authorisation
- A 1,000 m infrastructure buffer from Wedge-tailed Eagle or White-bellied Sea Eagle nests known at December 2017, and shown on the wind farm layout approved by EPA on 01/03/18).
- An infrastructure buffer of 100 m from the high-water mark of Lake Echo
- An infrastructure buffer of 150 m from the nearest transmission line on the site
- A 30 m buffer from known mammal dens and nests.
- A 30 m buffer around listed flora and habitat to be protected.
- A 50 m buffer zone around European (Huts) and Aboriginal cultural heritage sites (TASI sites)
- Animal carcasses (e.g., from shooters operating on the property to control deer on behalf of the landowner) found within 500m of turbines must be disposed of in approved carcass pits on site and, to comply with Tasmanian *Animal Health Act 1995,* covered within 24 hours.
- Shooters are prohibited from shooting native animals within the Lake Echo Conservation Covenant, or within 200 metres of turbines.
- Calving is not to be undertaken within 200m of turbines.
- Carbon Credits Forest, part of the Forests Alive project administered by the Clean Energy Regulator. Turbines 42 - 48 near Lake Echo are located within this forest. To allow for construction of these turbines, parts of this covenant had been previously removed by the landowner, however for Carbon Forest outside these areas, clearance of vegetation is prohibited.

In accordance with the CHWF EPBC Approval, three covenant areas have been established to offset impacts to Commonwealth listed orchid species (*Liawanee Greenhood)* which could not be avoided in design. These are referred to as Stone Hut, Whiareja and Bashan Ledge conservation areas.

A single conservation covenant has also been established for protection of State listed species *Discaria pubescens, the Womans Creek conservation area*. This offset was required by a "Permit To Take" that was issued by DPIPWE during construction to address unavoidable impacts on the Discaria species.

These covenant areas have been progressively excluded from staff or visitor access since 2020, with ecologists carrying out monitoring in accordance with the Flora Offset Management Plan, and as necessary, protective fencing established. On the 8th April 2024 the registering of the last of the protective covenants was completed, with Covenant Dealings for Dungrove Land Co P/L (Stone Hut), and Tasberry Holdings (Womans Creek and Bashan Ledge).

2.5 Key Project Approvals

CHWF operates in accordance with Commonwealth, State, and Local permits and approvals, and related approved management plans and processes to support effective implementation of requirements (summarized in Table 2.2).

Table 2.2: CHWF regulatory approvals and related management plans and processes

Primary approval	Related Approved Management Plans / Processes
EPBC Approval Notice 2009/4839 Issued by the Department of Agriculture, Water and Environment (DAWE) (now DCCEEW) on 15 December 2014. Amended on 22 November 2022 to change the timeframe for submission of incident investigations to fifteen (15) days following notification.	• Weed Management Strategy (mainly construction) • Flora Offset Management Strategy • Flora Offset Management Plan (all areas established, addressed by Nature Conservation Plans, see below) • Collision Avoidance and Detection Plan (Update with DCCEEW for review and approval) • Annual Compliance Review by 11 November each year • Notifications and Reporting as required
State Environmental Protection Notice EPN 10105/2 Issued by the Tasmanian EPA on 12/06/2024 Prior EPN Approvals • EPN 10105/1 – issued on 13/03/2019 • EPN 9715/1 – issued on 19/09/2017 Management plans approved under previous EPNs remain in force, where referenced by EPN 10105/2 (e.g FF6)	• Design Report (approved under EPN 9715/1) • Eagle Nest Productivity Monitoring Plan (9715/1) • Post Commissioning Eagle Utilisation Monitoring Plan (9715/1) – All requirements completed • Bird and Bat Mortality Monitoring Plan (9715/1) • Eagle Mortality Offsets and Offset Plan (9715/1) • Hunting and Culling Management Plan (9715/1) • Complaints Register • Emergency Response Plan • Turbine Shutdown Management Plan (Not applicable) • Decommissioning and Rehabilitation Plan (10105/1) • Operational Environmental Management Plan (10105/1) • Annual Environmental Review by 30 September • Notifications and Reporting
Planning Permit DA 2010/19 To use and develop land to establish wind farm and ancillary infrastructure, issued by Central Highlands Council (CHC) on 15 December 2011, RMPAT decision April 2012 as amended on 25/10/18.	• Traffic Management Plan • Approval of Signage • Approval of colours / finishing on towers and turbines • Building permits (permanent buildings)
Planning Permit DA 2017/56 To use and develop land to install sixteen IdentiFlight stations as part of an eagle collision avoidance trial, issued by CHC on 30/01/18. Amended in March 2023 to allow for the use and development of land to establish an additional 17th IDF station (discussed in Sections 4 and 7 of this AER).	• Location and Design in accordance with the Permit • Building permits for IdentiFlight towers • Design report • Eagle Nest Productivity Monitoring Plan.
Four Nature Conservation Plans 3 required under EPBC Flora Offset Management Plan 1 required under Threatened Species Regulation, Permit to Take DA 18293)	• Bashan Ledge (EPBC – On Site) • Stone Hut (EPBC – Off CHWF Site) • Wihareja (EPBC – Off CHWF Site) • Womans Creek (Tas TSA DA18293 – On Site)

3 CHWF Project Status

3.1 Design Changes during the review period

The major design change which occurred prior to the review period was completion of a 30m IdentiFlight (IDF) Station to complement the sixteen IDF stations established for the IDF technology trial to reduce impacts on eagles. This additional IDF station (IDF17) was sited within a heavily forested section of the CHWF near Lake Echo, as a mitigation measure following the eagle mortalities reported in the previous AER. Due to the topography of the site, and protected Carbon Forest the lower height IDF stations installed as part of the trial could not see over the taller tree canopy (approx. 30 m high) and did not detect the low flying eagles due to screening from vegetation. This review period has demonstrated the value of IDF 17 for mitigating WTE risk.

The taller tower initiative has been successful, with no further eagle mortalities occurring at the locations of four previous collisions (T46 and T45). During the review period, a single eagle mortality occurred near Turbine 42 (see also Sections 4.2 and 7) and mitigation followed in April 2025 with removal of a single tree near IDF2 and others near IDF16 to enhance eagle protection for the Turbine 42 and Turbine 1 locations respectively.

3.2 Activities Undertaken within Review Period

Key activities for CHWF undertaken during the review period are summarised in Table 3.1.

Table 3.1: Activities undertaken within Current Review Period.

Key Activities Undertaken within Current Review Period	Date	AER Section
Payment to Eagle Research Fund	October 2024	Section.5.2.6 and Appendix C
Compliance with OEMP – Updated OEMP prepared	To EPA September 2025	Section 5.2
Ongoing eagle nest checks required by ENPP	Mid-November	Section 5.2.2
Ongoing treatment of weeds on wind farm roads and hardstands	During review period	Section 5.3.3
Collection of quarterly shooters records as required by HCMP	Quarterly	Section 5.2.4
Ongoing carcass monitoring as required by BBMMP	Monthly	Section 5.2.5
Ongoing community engagement activities	Throughout review period	Section 6
Ongoing operation and maintenance of IDF system	Throughout review period	Section 7
Review of IDF System performance and options for CADP performance improvements	Periodically in review period	Section 7
Preparation of updated and revised Collision Avoidance and Detection Plan (CADP) and submission to DCCEEW for approval	Submission 13 June 2025	Section 7
Targeted tree clearing – single tree near IDF 2 to improve IDF coverage of Turbine 42 (follows second mortality at T42)	April 2025	Section 7
Targeted tree clearing – eight trees near IDF 16 and Turbine 1 to improve IDF coverage of Turbine 1 (follows single mortality at T1)	April 2025	Section 7

4 General Environmental Management

4.1 Complaints made by the Public during the Review Period

Enquiries and complaints in relation to CHWF are managed in accordance with a Complaints Management System designed to meet *AS/NZS 10002:2014 – Guidelines for Complaint Management in Organisations,* which outlines processes and associated timeframes for:

- registering all enquiries and complaints
- collecting information and responding to enquiries and complaints
- addressing and resolving complaints; and
- mediation if resolution is not reached.

The system includes a dedicated database which is used to store, track, and manage all complaints.

During the review period there were no complaints received.

4.2 Incidents or Non-Compliance – Notification, Investigation and Reporting

A Wedge-tailed Eagle mortality was found near Turbine 42 on 8 October 2024. The incident was notified to EPA and DCCEEW within a 24-hour period of the eagle being found. Also, several Commonwealth listed bird species detected during routine carcass monitoring, were informally notified (see Section 5).

An investigation followed and a comprehensive Incident Report was prepared and submitted to both EPA and DCCEEW on 18 October 2024 within the required timeframe.

Mitigation measure options were considered and a large tree to the north of IDF 2 that blocked IDF 2 views to Turbine 42 and its surrounds was removed in April 2025.

At the same time, tree clearing was also undertaken in vicinity of Turbine 1 and IDF 16 in response to a previous WTE mortality incident at Turbine 1.

No incidences of non-compliance occurred during the reporting period.

4.2.1 Management Actions resulting from Incident Investigations

The incident investigation for the Wedge-tailed Eagle mortality near Turbine 42 has led to clearing of a single tree (April 2025) near Turbine 42 that limited IDF 2 visibility to Turbine 42 and its immediate surrounds. The removal of a tree near IDF 2 has improved IDF coverage for Turbine 42 but not sufficiently, to provide full coverage of Turbine 42 Eagle protection zones, without substantially clearing more mature trees. Accordingly, WCHPL is reviewing other options to reduce risk of WTE collisions at Turbine 42 that would avoid extensive clearing of trees, noting that some of the trees are within a Carbon Forest Reserve.

4.3 Waste Management

4.3.1 Waste Volumes Generated during Review Period

Waste volumes generated during the review period were similarly low to the previous year and are expected to remain low for the remainder of the operational life of the wind farm, as only a small team is present on site. Short term increase in packaging wastes may occur for major maintenance. The operator GWA is a signatory to the Australian Packaging Covenant Organisation (APCO) and submits annual reports to APCO in respect of packaging wastes (based on calendar year). Additionally, GWA submits an annual action plan to APCO setting out objectives for further reduction of packaging wastes. Due to remoteness of CHWF options for avoiding landfill are limited.

Table 4.1 summarizes waste volumes generated during the review period.

Table 4.1: Total Waste Volumes Generated during Review Period

Category	Volume	Treatment / Disposal Method
Solid Wastes		
General waste	87 cubic metres	Launceston Landfill
Liquid Wastes		
Sewerage (amenities)	N/A	AWTS System Serviced and Maintained by Professional Plumbing
Controlled Wastes		
Hydrocarbon (total)	Zero	N/A
Empty oil drums	Zero	N/A
Waste grease	Zero	None removed for report period

4.3.2 Waste Strategies Implemented within Review Period

The approach to managing waste on site remains focused on avoiding, reducing, and reusing waste, in accordance with the waste hierarchy, as outlined in the approved OEMP but due to the low volumes and absence of local recycling facilities options are limited. The bulk of CHWF wastes are removed by a licensed contractor. However, some low volume wastes are transported by the site team to suitable waste facility to address efficiencies of those removals.

4.3.3 Inventory of Hazardous Goods

Condition H3 of EPN 10105/2 requires an inventory to be kept of all environmentally hazardous materials stored and handled on The Land, specifying the location of storage facilities and maximum quantities of hazardous materials held. This is provided in Appendix B.

Only minor volumes of hazardous materials are held on site which are limited to those required to operate and maintain the wind farm.

4.4 Changes to Environmental Procedures or Processes within Review Period

No changes to environmental procedures and processes were adopted during the review period. However, the EMP Operations was reviewed and updated to align with EPN 10105/2. Approved by EPA on 15 September 2025 and to be implemented for remainder of 2025/2026 review period.

4.5 Compliance Breaches

No breaches of limits or exceedance of predicted results occurred during the review period.

5 Implementation of Environmental Management Plans

5.1 Management Plans required by Approval Conditions

CHWF operates in accordance with various management plans approved by State and Commonwealth regulators.

Table 5.1 outlines the plans required by the conditions of approval and implementation activities undertaken within the review period.

Table 5.1: Approved Management Plans and associated Implementation Actions within Review Period

Condition reference / Title of Plan		Approval	Activities Within Current Review Period
Plans required by State EPN			
DC2	Decommissioning and Rehabilitation Plan	29/07/22	• No change, review due in 2027 for Director's approval
G7	Emergency Response Plan	03/04/20	• Annual review and site familiarisation with TFS and SES.
G8	Annual Environmental Review	NA	• This report
G9	EMP (Operations)	06/08/19	• Ongoing implementation of management plans. Updated EMP (Operations) submitted to EPA in September 2025.
FF6 (1.1)	Eagle Mortality Offset Plan[2]	21/12/18	• Annual payment to Research Fund. No additional contributions to research fund during the review period.
FF6 (1.2)	Bird and Bat Mortality Monitoring Plan	26/03/19	• Ongoing main and pulse surveys of 24 turbines each month. Five-year review of BBMMP commenced. Tree clearing near IDF 2 and 16 to improve IDF coverage
FF6 (1.3)	Eagle Nest Productivity Monitoring Plan	30/10/17	• On site nest checks undertaken annually, approximately November to assess breeding success.
FF6 (1.4)	Hunting and Culling Management Plan	20/11/18	• Collation of Records provided by Shooting Groups.
Prior FF6	Eagle Utilization Management Plan	06/02/18	• All requirements completed. EPA confirmed satisfaction.
Plans required by Commonwealth EPBC Approval 2009/4839			
6A	Collision Avoidance Detection Plan	29/05/18	• Additional 30m IDF station operating. • Ongoing use of detection dogs for carcass monitoring. • Single WTE mortality during the 12-month report period • Updated Revised CADP to DCCEEW in June 2025
22	Weed Management Strategy	14/12/17	• Monitoring of priority weeds and treatment as required
23	Flora Offset Management Plan	10/08/19	• Monitoring required by FOMP undertaken. • Finalisation of registration of covenants on land titles. • Arrangements for fencing of part of Discaria covenant for 12 month period at rotating locations.

Activities relating to the above plans are discussed in more detail in the following sections.

[2] *Also addresses EPBC conditions 16 – 19 (inclusive)*

5.2 Management Plans required by State EPN

5.2.1 CHWF Environmental Management Plan – Operations (OEMP)

The OEMP describes the elements of the Environmental Management System (EMS) which WCHPL is implementing and continually improving to avoid, mitigate, and manage potential environmental impacts associated with CHWF operations. High level objectives of the OEMP are to:

- Protect the environment by preventing or mitigating adverse environmental impacts.
- Facilitate efficient conduct of activities in accordance with environmental conditions.
- Assist the organization in the fulfilment of compliance obligations.
- Enhance environmental performance.
- Communicate environmental information to relevant interested parties.

The OEMP has been developed to enable the project to achieve these outcomes by:

- Establishing an EMS framework to enable WCHPL to protect the environment and respond to changing environmental conditions in balance with the project operational requirements.
- Setting out details of each relevant environmental aspect (specific issues) and the management controls for potential impacts in respect of each specific issue.
- Establishing objectives and targets for environment protection and biodiversity conservation.
- Compiling all environmental aspects, management strategies, and compliance requirements for CHWF operations in a single, clearly presented, and accessible reference document.

CHWF is now in its fifth year of full operation, many of the environmental requirements and obligations associated with the construction phase have been satisfactorily addressed, and the site has been satisfactorily rehabilitated.

In June 2024 a new EPN was issued for the wind farm operations phase, which removed a number of requirements which had been fulfilled, or related to construction of the wind farm and were no longer relevant. EPN 10105/2 no longer refers to the pre-construction commitments that are now satisfactorily fulfilled.

An updated OEMP has been prepared in relation to the latest EPN (EPN 10105/2) and reached final review stage at end of the review period. The final version was submitted to EPA on 04 September 2025 during preparation of this AER 2025. Notice of approval of the updated OEMP was received from EPA on 15 September 2025.

Actions relating to approved plans implemented under the framework of the OEMP are discussed in the following sections.

5.2.2 Eagle Nest Productivity Monitoring Plan

The Eagle Nest Productivity Monitoring Plan (ENPMP) as approved by EPA on 30 October 2017 requires undertaking activity and productivity checks of eagle nests each year, as follows:

- within the wind farm site and immediate surrounds
- beyond the wind farm out to about 4 to 5 km

Details of the nest checks for the review period are described below:

On Site Nest Checks

Eagle nests within CHWF were checked by Forest Practices Authority (FPA) during the 2024/25 review period in accordance with *Forest Practices Authorities Fauna Tech Note No. 1 - Eagle nest searching, activity checking and nest management*[3]. All nests were approached and examined from previously established vantage locations designed to avoid disturbance of nesting eagles.

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 5.1 shows the seventeen nests recorded on NVA within 4 kilometers of the CHWF. Provided in Table 5.2 is a summary of the eight nests which were inspected in the reporting period.

In the 2024 survey, nest 837 was not located and was noted as possibly gone from the aerial surveys. Any nests determined as possibly gone would require a ground assessment prior to the NVA status being changed, unless a previous ground survey has already established the nests as absent. For a nest status to be verified the current requirement is for a ground and aerial survey.

Nests which are not checked include RND 872 on the western bank of Lake Echo, RND 490, a recorded nest which no longer exists, 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.

Table 5.2: Nest Survey 2024/25 Reporting Period

Nest Number	Survey Date	Adult	Management Result
1724	25/10/2024	yes	Active
837	25/10/2024		Manage as Active
2470	25/10/2024		Not Active
2469	25/10/2024		Not Active
739	25/10/2024	yes	Active
1608	25/10/2024		Not Active
821	25/10/2024		Not Active
1908	25/10/2024		Not Active

[3] *http://www.fpa.tas.gov.au/__data/assets/pdf_file/0012/110208/Fauna_Tech_Note_1_Eagle_nest_management_May_2015.pdf*

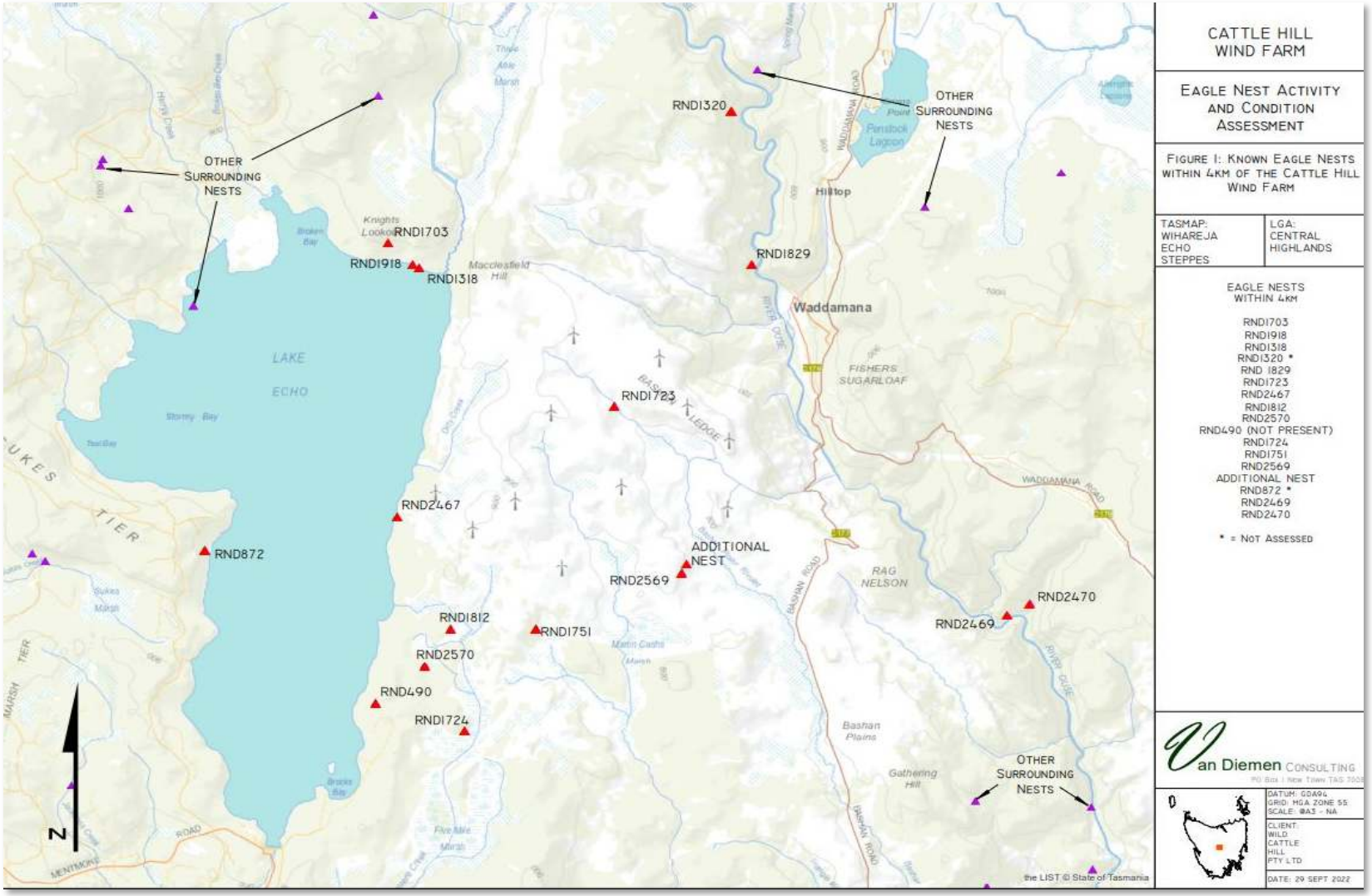

Figure 5.1 – Known nests within 4km of CHWF.

5.2.3 Post Commissioning Eagle Utilization Monitoring Plan

The Post Commissioning Eagle Utilization Monitoring Plan (EUMP) was developed in response to Condition FF6 of the previous EPN 10105/1. Two-years of monitoring were completed and a report was provided by Wildspot in July 2023, that compared the results with the pre-construction monitoring previously undertaken. The report was provided to EPA, and confirmation of satisfaction of the EPN 10105/1 Condition FF6 requirement was provided by EPA in September 2023. The requirement for the EUMP has now been removed from the EPN 10105/2 by EPA.

5.2.4 Hunting and Culling Management Plan

The Hunting and Culling Management Plan (HCMP) was developed in accordance with Condition FF7 of a previous EPN 9715/1 (now addressed by EPN 10105/2 FF6 (1.4)). In parallel, Conditions 3 and 4 of the EPBC approval required the location of four carcass disposal pits to be approved by the Commonwealth Minister responsible for administering the *EPBC Act 1999*. These pits were established at approved locations (Top Ridge, Mushroom, Bashan, and Five Mile) each over 500 meters from the nearest turbine to reduce Eagle Collision risk.

The pits are predominantly used by Hunting and Shooting groups operating on behalf of the landowners and are covered following use within 48 hours (or sooner) to comply with the requirement of the Tasmanian *Animal Health Act* 1995, requiring covering of carcasses.

During the review period, shooters operating on the site, removed and / or disposed of a total of 5,540 carcasses (Figure 5.2) in carcass pits at the approved locations for CHWF.

Approximately 42% of the carcasses were the native Bennet's wallaby, the main food source of the Tasmanian Wedge-tailed Eagle, along with padymelon (10%) and European hare (<1%).

As the carcass pits are now required to be covered following use, the carcasses no longer provide a similar food source for the Wedge-tailed Eagle as intended by the original permit conditions.

Research undertaken under the Tasmanian Wedge Tailed Eagle Research fund also suggests eagles are susceptible to ingestion of lead from bullets when feeding on prey shot by hunters. Previous eagle mortalities from CHWF have been tested in addition to necropsies undertaken for WTE mortalities and had elevated lead levels in their blood, bone, and tissue, suggesting they had been ingesting lead over a long period of time.

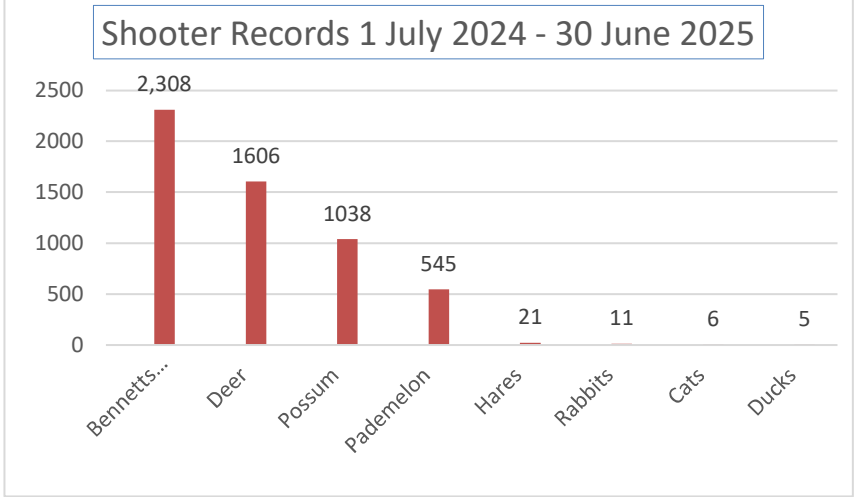

Figure 5.2:

Summary of culling during review period from hunters records collected in accordance with the Hunting and Culling Management Plan.

5.2.5 Bird and Bat Mortality Monitoring Plan

The Bird and Bat Mortality Monitoring Plan (BBMMP) was initially developed to address the requirements of a previous EPN 9715/1 Condition FF10 and was approved by EPA on 26 March 2019. Condition FF6 of EPN 10105/2 Operational requirements stipulates that the person responsible must act in accordance with the BBMMP.

The BBMMP includes requirements for monitoring at Carcass Monitoring Zones (CMZ) beneath each turbine, and the procedures to be carried out following discovery of any injured or dead bird or bat.

Throughout the review period, detailed 'Phase 2' surveys of 24 turbines per month continued to be carried out using trained detection dogs, searching the CMZ area around each turbine, out to 120m. Within three days of each full survey, 'Pulse' surveys were undertaken, searching the inner 60m carcass monitoring zone around each turbine.

As per Figure 5.3, between 1 July 2024 and 30 June 2025, a total of 59 native birds (23 species) 31 introduced birds (5 species) and 29 bats (7 species) were detected during carcass monitoring surveys, which is similar to the proportion of native birds (50%), introduced species (26%) and bats (23%) to last year's results. Tables 5.3 and 5.4 show details for bat and bird surveys, respectively.

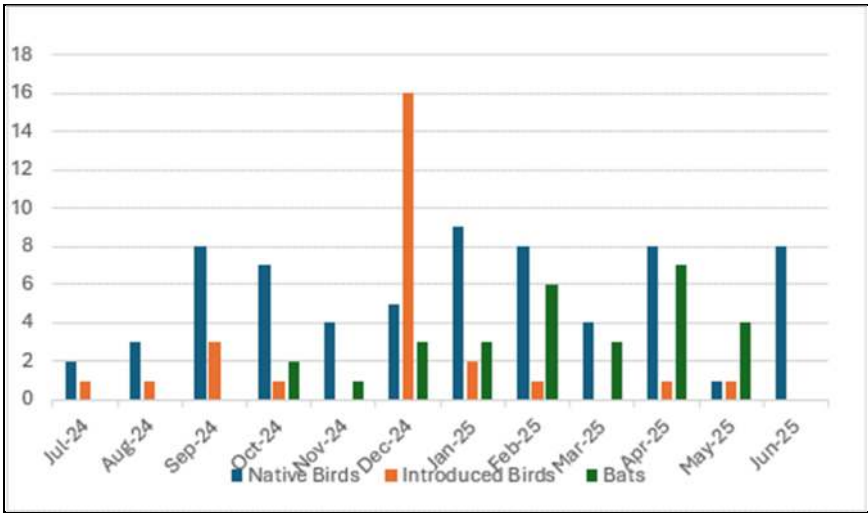

Figure 5.3:

Bird and bat species detected by carcass monitoring at CHWF – 1 July 2024 – 30 June 2025

Table 5.3: Bat species detected by carcass monitoring 2024/2025.

Species	Count	Percent
White Striped Freetail Bat	4	14%
Gould's Wattled Bat	8	28%
Large Forest Bat	7	24%
Lesser long-eared bat	1	3.5%
Southern forest bat	3	10%
Eastern Striped Pipistrelle	1	3.5%
Unidentified Bat	5	17%

Table 5.4: Bird Species detected by mortality monitoring surveys 2024 -2025

Name	Count	%
Australian magpie	5	5%
Black-faced Cuckoo-shrike	1	1%
Black currawong	7	8%
Blue-winged parrot	5	5%
Bronzed Cuckoo	1	1%
Brown falcon	5	5%
Chestnut Teal	1	1%
Eastern rosella	5	5%
Eurasian skylark	4	4%
European goldfinch	1	1%
European starling	24	26%
Flame Robin	1	1%
Forest raven	3	3%
Green rosella	1	1%
Grey Fantail	3	3%
Pacific black duck	2	2%
Peregrin Falcon	1	1%
Pink Robin	1	1%
Robin	1	1%
Rosella	1	1%
Silvereye	1	1%
Skylark Pipette	1	1%
Striated pardalote	3	3%
Tree martin	7	8%
Wedge-tailed Eagle	1	
Welcome swallow	3	3%
White-throated needletail	2	2%
Yellow-rumped thornbill	1	1%
Total	92	100%

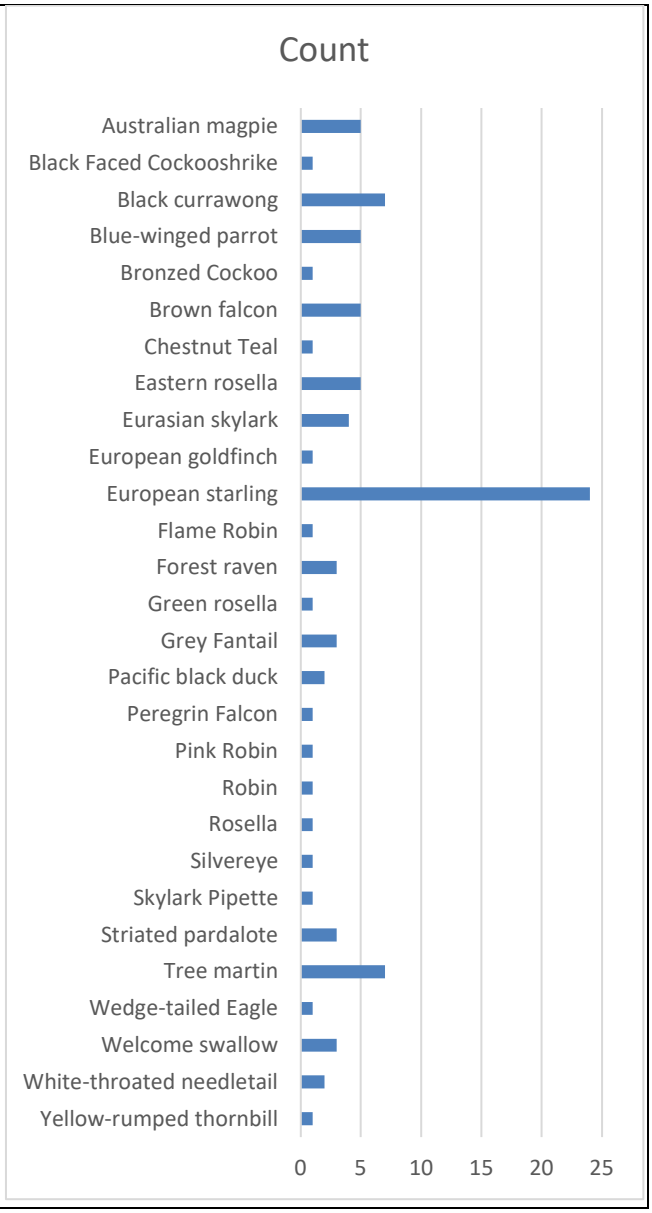

Figure 5.4 – Blue-winged Parrot

Figure 5.5 – White-throated Needletail images from IDF

Consistent with other reporting years the European Starling (26%) and Currawong (8%) are the most common species detected in the carcass monitoring surveys. There was also a reduction in the detected mortalities of the Commonwealth listed species of the Blue-winged parrot (5 mortalities) and the White-throated Needletail (2 mortalities) compared with the previous reporting period. Only one Wedge-tailed Eagle was found during the reporting period.

Comparison of Mortality Levels with Published Data

Carcass monitoring during the review period resulted in the following mortality levels:

- Wedge Tailed Eagle — 1 WTE mortality per wind farm (per 48 turbines) / per year
  1 WTE mortality over last two full years
  Average 2.67 WTE mortalities in first 3 years of operations
  Average 0.5 WTE mortalities/year in years 4 and 5 of operations
- White Bellied Sea Eagle — 0 mortalities (No WBSE mortalities over 5 years)
- Native birds — 1.34 mortalities per turbine / per year
- Native bats — 0.63 mortalities per turbine / per year

These figures are well below reported industry average bird/bat mortalities for large turbines[4] (5-7 birds per turbine/year and 7-10 bats per turbine/year). WTE mortality rate also reduced.

Despite significant increase in eagle utilization and eagle nests within and outside the CHWF site since pre-construction monitoring was conducted, eagle mortalities remained below predicted mortality levels outlined in Attachment 3 of the State EPN, down to 0.5 WTE/year for last 2 years

WCHPL also believes that the addition of IDF 17 has significantly addressed an area of higher risk to WTE (Turbines 45 and 46 where four WTE mortalities have occurred) and that future WTE risk has been reduced due to improved IDF coverage since commencement of operations. As shown in the figure 5.6 below, there were eight mortalities in the first three years of operations and only one mortality in the last two years of operations. Improving the viewfield of IDF units has been the main way of improving IDF effectiveness. Commissioning time for IDF 17 (Oct 2023) is shown in Figure 5.6.

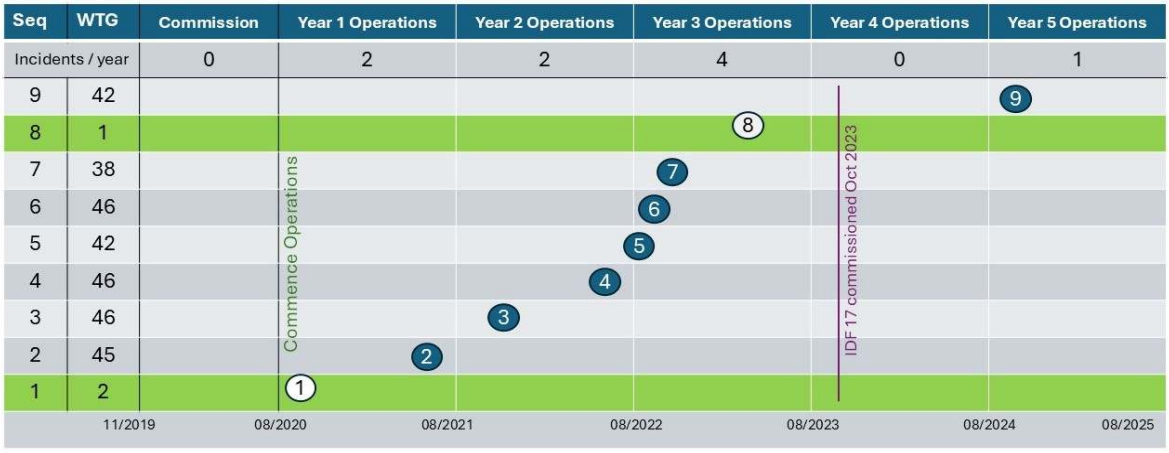

Figure 5.6 – Summary Details for WTE Mortalities for five years of full CHWF operations

[4] *VIC ARI 2020 data*

Improved IDF visibility above the woodland surrounding the western turbines from the 30 m tall IDF tower commissioned in October 2023, is evident in Figures 5.7 and 5.8.

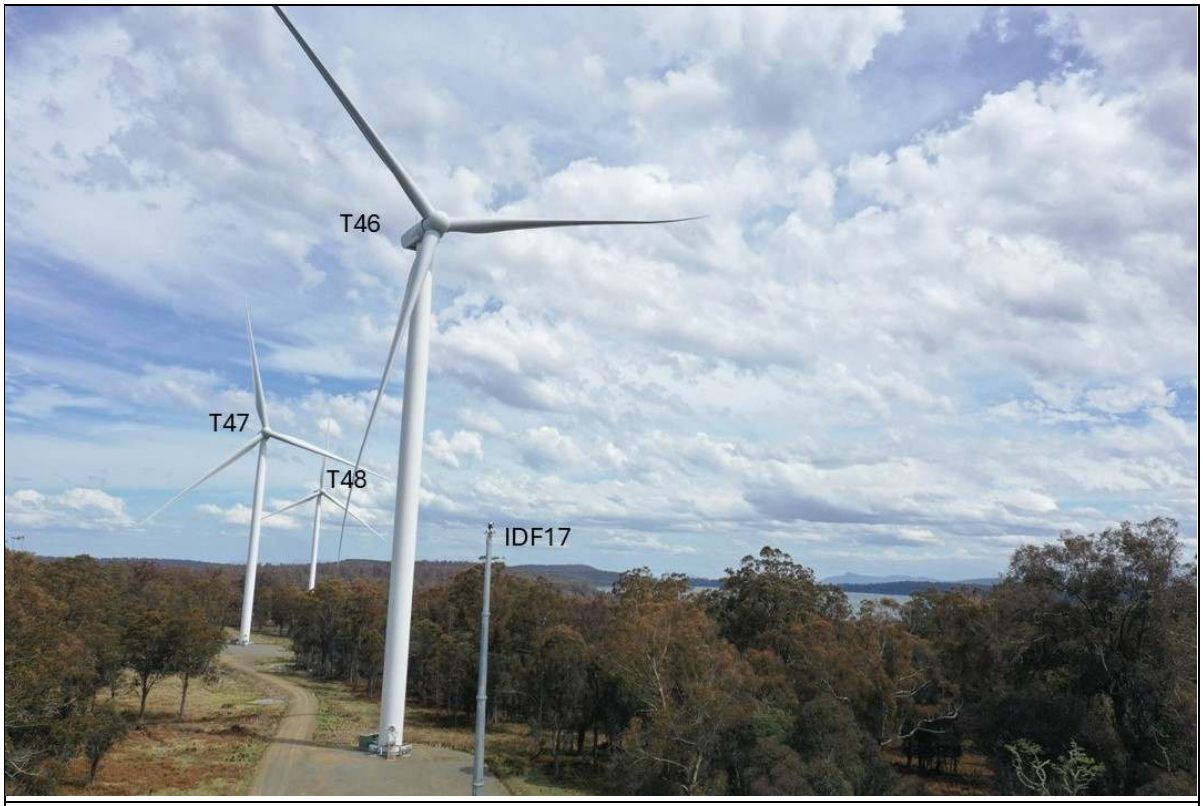

Figure 5.7 View of IDF 17 and Turbines to the south, improved visibility for the taller tower unit

Figure 5.8 View of IDF 17 and Turbines to the north, improved visibility for the taller tower unit

5.2.6 Eagle Mortality Offset Plan

The Eagle Mortality Offset Plan (EMOP) developed in accordance with previous Condition FF15 of EPN 10105/1 (now addressed by Condition FF6 (1.1) required the following measures to offset eagle impacts associated with operation of the wind farm:

- Placement of a 20ha conservation covenant around five WTE nests outside the wind farm (implemented prior to construction of the wind farm based on predicted mortalities)
- Placement of a 20ha conservation covenant around an additional WTE nest for every WTE mortality in excess of five mortalities; OR
- Annual payments to the Tasmanian WTE research fund established for the project[5].
- Additional payments if WTE mortalities exceed 2 per year (not required for 2024-2025 period)

Eagle Research supported during the Review Period

The WTE research fund is independently managed by NRM South and allows qualified researchers to apply for funding to support WTE research meeting fund objectives.

The NRM South 2024 Annual Research Fund report is provided in full as Appendix C to this AER.

Further details can be found at: https://www.nrmsouth.org.au/wedge-tailed-eagle-research-fund/

5.2.8 Decommissioning and Rehabilitation Plan

A Decommissioning and Rehabilitation Plan (DRP) was prepared in accordance with Condition DC2 of the previous EPN 10105/1 in August 2023. The DRP was submitted to EPA during the 2022/2023 review period and approved on 27 July 2023 (2023/2024 period).

The purpose of the DRP is to provide surety on decommissioning and rehabilitation activities to be undertaken when the end of operational life of the CHWF has been reached. The context for the CHWF is that full operation of the wind farm commenced on 4 August 2020 and operations are expected to continue for about 25 years (approx. 2045).

As CHWF is only at the end of its first five years of a 25 year operational life cycle and given the legislative changes and technological advancements likely to occur over the operational life of the wind farm (for example blade recycling), the DRP will be revised on a five-yearly basis, consistent with the Clean Energy Council Best Practice Guidelines for Wind Farms[6]. An updated DRP would be due approximately July 2028, five years from the initial approval.

5.3 Management Plans required by Commonwealth EPBC Approval

5.3.1 Collision and Detection Avoidance Plan

The Collision Avoidance and Detection Plan (CADP) was developed in response to Condition 6A of EPBC Approval 2009/4839 and together with Conditions 1 to 5 and 10 to 20 of the EPBC Approval, provides a range of measures to protect the Tasmanian Wedge-Tailed Eagle (WTE). Requirement for a CADP is also now addressed by Condition FF3 of EPN 10105/2 issued on 12 June 2024 and includes monitoring requirements for White-bellied Sea Eagles as well as WTE.

[5] *Joint requirement of the EMOP (EPN Condition FF15 3.3) and EPBC Approval Notice Condition 17*
[6] *Best Practice Guidelines for Implementation of Wind Energy Projects in Australia, Clean Energy Council, June 2018.*

Condition 6c of the EPBC Approval Notice required the CADP to be updated following completion of the 18-month Technology trial and revised, if necessary, based on the trial outcomes. A revised CADP was submitted to the Commonwealth in March 2022, following the 18-month IDF trial which showed IDF to be effective at reducing WTE mortalities but where optimum effectiveness required all turbines to be fully 'covered' by IDF stations.

More recently, the CADP was updated and revised with reference to:

- almost five years of experience in application of the IDF system
- addition of 30m height IDF Station (IDF17) between Turbines 45 and 46 (addressing a high-risk area where 4 WTE mortalities had occurred), none at the location since IDF 17 installed
- an extensive set of mortality monitoring data for almost five years of CHWF operations
- IDF performance reviews over almost five years of operations and management options.

As per Figure 5.6, only one WTE mortality has occurred in last 2 full years commencing about the time of IDF 17 commissioning.

The updated revised CADP was submitted to DCCEEW on 13 June 2025 and is understood to be under review by DCCEEW.

5.3.2 Flora Offset Management Plan

The Flora Offset Management Plan (FOMP) required by Condition 23 of EPBC Approval Notice 2009/4839 (approved on 27 July 2019) outlines monitoring and management requirements for three protective covenant areas identified to offset impacts associated with construction of CHWF.

Two of the three protective covenants are located outside CHWF, and one is within CHWF in an elevated area dominated by Highland Poa grasslands to the west of Turbines 6 and 7 (Bashan Ledge Covenant, Figure 5.9).

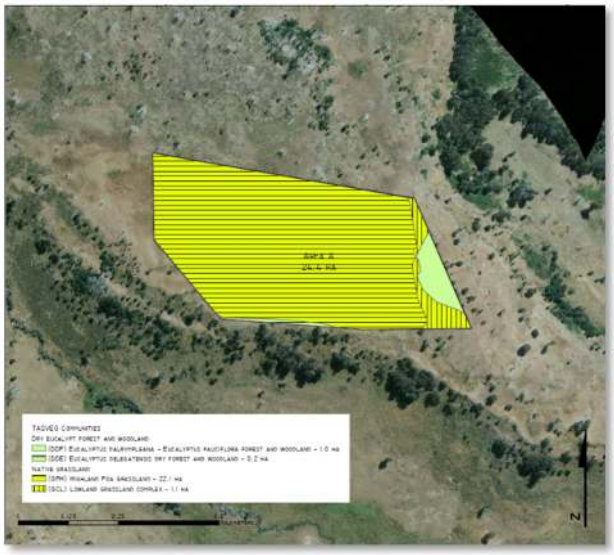

Figure 5.9: Bashan Ledge covenant

The Bashan Ledge covenant is designed to protect known habitat for 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. (Figure 5.10)
- Ptunarra brown butterfly (*Oreixenica ptunarra*) a State and EPBC listed invertebrate.
- Clover glycine (*Glycine latrobeana*) a State and EPBC listed herb. (Figure 5.10)

Formal registration of the last 2 of three protective EPBC covenants was finalized on 8 April 2024.

A fourth covenant area, Womans Creek was also registered on title on 8 April 2024 and is within CHWF project area. The covenant is required by a Tasmanian provision to address unavoidable construction phase impacts on the *Discaria pubescens*, for the off-site road upgrades and site works. The impacts were permitted under a Permit To Take (DA 18293) issued by DPIPWE.

Nature Conservation Plans have been prepared for all four of the Covenant areas.

Figure 5.10: Photos of Liawanee Greenhood and Glycine latrobeana taken from transect monitoring within the Bashan ledge covenant Ledge covenant area (VDC)

5.3.3 Weed Management Strategy

To control potential for weed infestation and propagation 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 is 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.

5.4 Other Environmental Actions undertaken within Review Period or proposed

A fourth covenant area, Womans Creek was also registered on title approximately April 2024 and is within CHWF project area. The covenant is required by a Tasmanian provision to address unavoidable construction phase impacts on the *Discaria pubescens*, for the off-site road upgrades and site works. The impacts were permitted under a '*Permit To Take'* (DA 18293) issued by DPIPWE. The management provisions for the covenant, include fencing on a part of the covenant area to be rotated after 12 months to other parts with a cycle of 5 years to rotate the restricted grazing of the covenant area. Quotes have been obtained for the work, and it will be implemented in the 2025-2026 review period.

Ongoing reviews of the Identiflight system and Eagle mortality performance will occur and be managed in accordance with the approved CADP, BBMMP and investigation findings.

6 Community Engagement

6.1 Community Engagement Activities within the review period

Local community engagement activities during this year reflected changes to ownership of the wind farm, community funding, continued interest and measures to ensure reputation management of the wind farm asset.

CHWF operates under a Local Business Participation Program which facilitates engagement of local suppliers throughout the life of the wind farm. Any enquiries from local businesses are forwarded to the site team for consideration.

During the review period, administration and the reputation of the CHWF Community Fund was improved. This was facilitated by the new owner of WCHPL (Atmos Renewables) and their approach to fund the shortfall from the annual community fund that occurred over several years of initial operation.

New community fund guidelines were published on the Cattle Hill website in early August 2025 in preparation for the fifth round of the community fund. These guidelines reflected community fund guidelines from previous years and may become the ongoing guidance in years to come, with a minimal need seen to constantly update this document.

6.1.1 Project website

The project website (www.cattlehillwindfarm.com.au) was updated periodically throughout the review period with relevant announcements including newsletters, successful community fund applicants and details on applying for the annual fund (Figure 6.1).

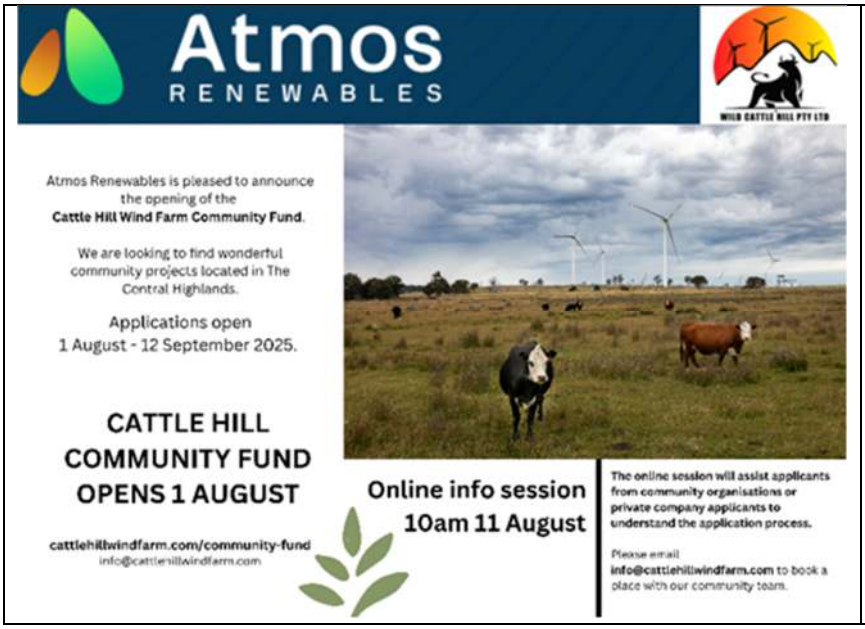

Figure 6.1

Media Advertising of the Community Fund

6.1.2 Dedicated communication channels

A dedicated 1800 phone number and email address for the project was maintained throughout the review period, with 23 enquiries being received via these communication channels. Responses to enquiries were managed in accordance with CHWF Enquiries and Complaints Handling Plan.

6.1.3 Project updates in local publications

The following project-related advertisements were placed in the local newspaper (the Highland Digest) as below.

- Advertisement for Community Fund from August to October 2024 (Figure 6.1).
- Advertising related to Community Fund recipients, Health Action Team Central Highlands (HATCH), was published over several months.

6.1.3 Project Newsletter

Newsletters were produced and distributed throughout local towns in Spring 2024 and Autumn 2025. They offered an overview of site information, community support initiatives and CHWF events, see example in Figure 6.2.

Figure 6.2

Spring 2024 Cover Page of the Newsletter

6.1.4 One-on-one meetings

Representatives from the project maintain engagement with a wide range of stakeholders, including local government representatives, the broader community at community events, interested persons, wildlife group representatives and members of the public.

One-on-one meetings are undertaken as required or as part of the annual Community Fund initiatives for both funding liaison and local research for community projects.

6.1.5 Media events and announcements

Sale of Wild Cattle Hill Pty Ltd took place in December 2024. Previously, PowerChina had an 80% shareholding and Goldwind Australia had 20% shareholding. This change in ownership gained media attention, primarily from industry publications. The new owner of WCHPL in 2025 is Atmos Renewables, which has extensive experience in the renewable energy sector.

Additionally, the Identiflight™ system utilised to protect avifauna at Cattle Hill Wind Farm also receives periodic media attention due to its innovative technology and in response to comments from

community and regulators. Interest in further deployment of Identiflight at other wind farms has been seeded by GWA leadership in application of the technology at CHWF as an Australian first.

6.2 Community Investment and Funding Initiatives

6.2.1 Local Business Participation Program

CHWF operates under a Local Business Participation Program which facilitates engagement of local suppliers, spanning the construction and operation phases. A good example of our community benefit sharing commitments was done by funding an upgrade to playground shading at Bothwell District High School. Representatives from Goldwind Australia and Atmos Renewables met with the school's principal to visit the project site in March 2025.

Figure 6.3

Bothwell School Principal Erica Boas, Asset Manager from Atmos Renewables Michael Crane, and Stakeholder Engagement Manager Paul McMahon from Goldwind Australia.

6.2.2 Community events and participation

CHWF also hosts visits to the wind farm by regulators, politicians, schools and other interested parties. During the review period CHWF hosted in excess of 20 people, including approximately:

- 10 members of the community;
- 2 emergency services regulators including representatives from TFS, SES, Tas Police;
- 5 representatives from other wind developers including Woolnorth and Arc Energy;
- 2 near neighbours and adjoining landowners; and
- 4 ecologists, eagle experts, and interested avifauna stakeholders.

Details are provided below of some of the visits which took place during the review period. CHWF representatives join visits and events where possible to ensure a high level of engagement with a range of stakeholders.

Examples of CHWF involvement in local events include the following events:

- A visit by Josh Wilson, Assistant Minister for Climate Change and Energy on 16 October 2024
- The Highlands Bushfest event with $25,000 community funding on 24 and 25 November 2024

Figure 6.4

Right to Left are:

Assistant Climate Change and Energy Minister, Josh Wilson

Cattle Hill Site Manager, Phil Bowyer-Bower

Goldwind Australia Director John Titchen,

6.2.3 Community Fund

WCHPL continued the annual Community Fund in the review period 2024-2025.

A dedicated website page provided information on how to apply including Fund guidelines, application information and templates to assist local groups. The funding process was run through SmartyGrants, with applications open from 17 August 2024 to 8 October 2024.

The Round was advertised in The Highland Digest and shared online via e-newsletter and local communication channels. Information was also provided to Central Highlands Council, to spread the word and encourage applications through local channels.

Twelve applications for funding were received and an Assessment Panel consisting of seven community members and one GWA representative determined the successful applicants.

WCHPL was pleased to support eleven community projects through Round Four of the Fund:

- Ouse Community Country Club
- Derwent Catchment Report
- Whispering Landscapes
- Tasmanian Fire Service
- Central Highlands Council
- Great Lake Community Centre
- Central Hawks Junior Football Club
- Ellendale Hall Committee Inc
- Bothwell District High School Association
- Campdrafting Tasmania Inc
- Bothwell Golf Club

Round Five of the Community Fund is underway, with applications open from the 1 August to 11 September 2025 (2025-2026 Review period).

A selection of photos from successful applicants over recent years are included in Figures 6.5 - 6.7.

Figure 6.5

A dedication plaque to the Cattle Hill Wind Farm Community Fund on behalf of Waddamana Stays

Figure 6.6

Members of the Great Lakes Community Centre, funded in 2021

Figure 6.7

Shelter for attendees of the Bushfest event held in Bothwell, funded in 2025

7 IdentiFlight System

7.1 Overview and Current Status

The IdentiFlight system (IDF) is designed to detect eagle movements and shut down turbines when eagles are approaching turbines, to reduce the risk of collision. The system was installed as part of an 18-month technology trial in accordance with the Collision Avoidance and Detection Plan (CADP) approved by the Commonwealth in accordance with Condition 6A of the EPBC Approval Notice.

Installation of the IDF system commenced in 2019 and individual IDF units were required by the Owner to be in operation before commissioning of turbines that were being covered by one or more IDF unit(s). Mortality monitoring also commenced on 19 November 2019 with the commissioning of the first wind turbine, however, performance of the IDF system primarily addresses the period of full operations that commenced from 04 August 2020.

As of 30 June 2025, CHWF has been in continuous full operation for 1,791 days (4.9 years) with IDF curtailing turbines to protect eagles from risk of collision or, curtailing certain turbines if the IDF units covering them are out of action due to maintenance requirements. The IDF system initially involved 16 IDF units but was supplemented by an additional unit on a taller tower (IDF 17) which was commissioned in October 2023. In the last two years, there has only been one WTE mortality over two full years (Figure 5.8), with the low mortality rate regarded as due to the substantial improvement of IDF visibility in the higher risk woodland area at the west of CHWF.

During the full period (almost 5 years) of CHWF operations, nine eagle mortalities have occurred, one which was not related to IDF response (but instead operator error). The nine mortalities over almost 5 years are limited to just six Turbine sites.

Four of the mortalities were adjacent Turbines 45 and 46. Three of the four mortalities occurred at Turbine 46 which was the most affected by visibility constraints. Turbine 46 was voluntarily shut down during daylight hours following the third mortality to prevent recurrence. Upon the commissioning of the 30 m high IDF 17 (located between Turbines 45 and 46) and Turbine 46 return to operation during daylight hours, no further mortalities have been recorded at this location.

The remaining seven mortalities occurred at only four turbines and these are assessed as only partially protected by IDF due to screening from vegetation. Ongoing reviews are being undertaken to consider any further mitigation measures. These are outlined in the updated Collision Avoidance and Detection Plan (CADP) submitted to DCCEEW in June 2025.

During the 2024-2025 reporting period, only one mortality was recorded on 11th October 2024. This is the second mortality recorded at T42 in a five-year period. An incident report was provided to EPA and DCCEEW on the 18th October 2024. To increase IDF coverage of T42, there was removal of a single large tree near IDF 2 which provides improved IDF 2 coverage of Turbine 42 and its surrounding area, but not complete coverage. There have been no further WTE mortalities in this area since the removal of the tree in April 2025. Further investigations have been undertaken to identify other mitigation measures independent of tree clearing that could further reduce the risk to Eagles.

7.2 Utilisation of the CHWF by Eagles

Comparison of the two-year period of post commissioning eagle utilization monitoring results carried out by Wildspot (See section 5.2.3 re former EPN 10105/1 Condition FF6 requirement) with the similar two years of pre-construction monitoring also by Wildspot, shows that CHWF now has a larger population of eagles than it did before construction of the wind farm.

IDF data shows a change in Eagle presence. For review of IDF data neither 2020 or 2025 is relied on here as neither currently cover a full year of operations. Also, data post-commissioning of IDF 17 cannot be directly compared with data pre-commissioning of IDF 17. The 30 m tall tower for IDF 17 has increased IDF system coverage and hence it can be expected that I eagle image counts and curtailments will correspondingly increase. For instance, the number of Eagle images has increased from 300,058 in 2021 to 326,231 in 2023 and then 426,614 in 2024 after IDF 17 was commissioned. Table 7.1 also shows that based on IDF data:

- eagle activity based on flight time (hours) at CHWF has increased, greatest increase in 2024
- number of daily curtailments has increased, particularly in 2024 (likely due mainly to IDF 17)

However, it is noted that efficiency of the IdentiFlight system has improved, with the duration of each curtailment and the average monthly total curtailment hours reducing each year since installation. This enables the CHWF generation to be optimized while still providing the eagle protection intended from the IDF System.

Table 7.1 – Comparison of IDF data during the review period vs all-time data collected (5 years)

	2020	2021	2022	2023	2024
Average Daily Curtailment Count	459	427	475	486	628
Total Curtailment Count	13,562	12,674	14,240	13,855	18,117
Maximum Daily Curtailment Count	902	857	1,037	941	2063
Maximum Daily Curtailment (Hours)	49.44	38.39	25.85	23.98	43.87
Average Daily Curtailment (Hours)	22.16	16.12	11.18	11.31	11.10
Average Duration of Curtailments (Minutes)	3.08	2.10	1.44	1.42	1.35
Average monthly Total Curtailment Duration (Hours)	640	479	338	297	267
Eagle Images	161,254	300,058	298,232	326,231	426,614
Other Bird Species Images	34,096	69,635	74,531	71,967	111,648
Maximum Eagle Height AGL (m)	1,031	1,011	990	949	1.041
Average Eagle Height (m)	200	216	229	180	202
Total eagle flight time (Hours)	416	750	682	735	1,504

7.3 Sharing Lessons with Industry

During the review period, WCHPL representatives continued to share lessons from operation and maintenance of IdentiFlight with industry, regulators, and interested parties. Tours of CHWF and presentations within the review period included a visit by University of Tasmania and Alaskan Reps Site Tour (November 2024). Multiple tours were also accommodated for near neighbours and interested parties.

8 Changes to the Activity over the next 12 months

Key activities to be undertaken between 1 July 2025 and 30 June 2026 are shown below:

Operational Activities

- Ongoing inspections and maintenance of wind farm infrastructure
- Ongoing maintenance of SCADA and Communications infrastructure.

IdentiFlight Activities

- Ongoing operation and maintenance of IdentiFlight
- Ongoing tracking and monitoring of IdentiFlight data
- Management of IDF system under revised CADP when approved by DCCEEW
- Ongoing discussion with Identiflight to upgrade the system to V5 imaging heads

Activities required by EPN 10105/2

- Submission of AER 2024-2025 (This report)
- Implementation of the EMP (Operations) as approved under EPN 10105/2 from Sept 2025
- Monitoring required by the Bird and Bat Mortality Monitoring Plan – monthly surveys
- Monitoring required by the Eagle Nest Productivity Monitoring Plan (approx. November)
- Collection of shooters records required by the Hunting and Culling Management Plan
- Notifications and reporting of incidents as required. One WTE incident October 2024

Activities required by EPBC Approval Notice 2009/4839

- Implement revised Collision Avoidance and Detection Plan (Condition 11) once approved
- Ongoing implementation of the Weed Management Strategy (Condition 22).
- Ongoing monitoring in accordance with the Flora Offset Management Plan (Condition 23)
- Notifications and Incident Reporting as required.
- EPBC Annual Compliance Report by 11 November 2025

Other Activities

- Ongoing monitoring and management for the Womans Creek Nature Conservation Area
- Tours, presentations and sharing of lessons with industry and interested stakeholders.
- Ongoing support to local projects via the CHWF Community Fund
- Ongoing tracking of complaints and enquiries

APPENDIX A

EPN 10105/2

Condition G8 Annual Environmental Review – Requirements

G8 Annual Environmental Review

1 Unless otherwise specified in writing by the Director, a publicly available Annual Environmental Review for the activity must be submitted to the Director each year within three months of the end of the reporting period. Without limitation, each Annual Environmental Review must include the following information:

1.1 a statement by the General Manager, Chief Executive Officer or equivalent for the activity acknowledging the contents of the Annual Environmental Review;

1.2 subject to the *Personal Information Protection Act 2004*, a list of all complaints received from the public during the reporting period concerning actual or potential environmental harm or environmental nuisance caused by the activity and a description of any actions taken as a result of those complaints;

1.3 details of environment-related procedural or process changes that have been implemented during the reporting period;

1.4 a summary of the amounts (tonnes or litres) of both solid and liquid wastes produced and treatment methods implemented during the reporting period. Initiatives or programs planned to avoid, minimise, re-use, or recycle such wastes over the next reporting period should be detailed;

DELEGATE FOR THE DIRECTOR, ENVIRONMENT PROTECTION AUTHORITY T O'Hea Date of issue: 12 June 2024

Environment Protection Notice 10105/2 (r1) 11/20

1.5 details of all non-trivial environmental incidents and/or incidents of non compliance with these conditions that occurred during the reporting period, and any mitigative or preventative actions that have resulted from such incidents;

1.6 a summary of the monitoring data and record keeping required by these conditions. This information should be presented in graphical form where possible, including comparison with the results of at least the preceding reporting period. Special causes and system changes that have impacted on the parameters monitored must be noted. Explanation of significant deviations between actual results and any predictions made in previous reports must be provided;

1.7 identification of breaches of limits specified in these conditions and significant variations from predicted results contained in any relevant DPEMP or EMP, an explanation of why each identified breach of specified limits or variation from predictions occurred and details of the actions taken in response to each identified breach of limits or variance from predictions;

1.8 a list of any issues, not discussed elsewhere in the report, that must be addressed to improve compliance with these conditions, and the actions that are proposed to address any such issues;

1.9 a summary of fulfilment of environmental commitments made for the reporting period. This summary must include indication of results of the actions implemented and explanation of any failures to achieve such commitments; and

1.10 a summary of any community consultation and communication undertaken during the reporting period.

APPENDIX B

Hazardous Substances Inventory

Hazardous Substances Inventory, CHWF Operations Phase

Chemical Name	Storage QTY	UN No	Haz Chem Code	DG Class	Location
50GM Pressol Graphite	25g	-	-	-	Workshop
Atherton Chemicals Protek Priming Fluid Red	125ml	1193	2YE	3	
Atherton Protek Type N Clear Solvent Cement	125ml	1133	3YE	3	
BASF Storm Secure Wax Block Rodenticide	1.5kg	-	-	-	
Cabac EJCC/220	880g	-	-	-	
ChemTools R28 Nickel Antiseize	500g	-	-	-	
Chemtools SG Silver GAL Aerosol	800g	1950	-	2.1	
Jif – Lemon	500ml	-	-	-	WOM cleaners' cabinet
Citro Clean Multipurpose Cleaner	500ml	1993	3Y	3	
CRC 3013 Soft Seal – Aerosol	400g	1950	-	2.1	Workshop
CRC 3055 808 Silicone Spray	5.2kg	1950	2YE	2.1	
Dow Corning Molykote P-74 Paste	20kg	-	-	-	
Epirez Safe Step100	4L	1263	3Y	3	
Galmet ColdGal Aerosol	400g	1950	-	2.1	
Hogans Tradesman Touch Up Paint	400g	1950	-	2.1	
Inox-mx3	70L	1950	-	2.1	
Liberty Unleaded Petrol	20L	2103	3YE	3	Workshop DG cabinet
Shell Omala S4 GX 150	60L	-	-	-	
Loctite 243	750ml	3082	3Z	9	Workshop
Molykote G-N Paste	10.5kg	3077	-	9	
Total Oil Equivis ZS 32	205L	-	-	-	
WD-40 Aerosol	400g	1950	2YE	2.1	
Petroleum Hydrocarbon	500ml	-	-	-	
PEM Cutting Oil	4L	-	-	-	
Quick Spray	6 cans	1950	2YE	2.1	
Wire Rope & Cable Lubricant	570g	1950	-	2.1	
Wax and Grease Remover	5 litres	1268	3YE	3	
Galmet Ironize	2L	-	-	-	
Diesel	20 litres	3082	3Z	9	
Kerosene	1 pack	2623	1Z	4.1	
Lubricant	1.53kg	-	-	-	
Lubricant	2.4kg	-	-	-	
Bossweld Nozzle Dip Gel	400g	-	-	-	
Acetone		1090	2YE	3	
CRC NF Contact Cleaner	300g	1950	2Y	2.2	
CRC 5.56 Multipurpose	400g	1950	2YE	2.1	
Hunters Settling Day Insect Spray	300g	1950	2YE	2.1	
LB 8060 Silver Grade Anti-seize	20g	1910	-	-	
Anticorrosive Bright Silver Finish	1kg	1950	-	2.1	
Diggers Acetone	7L	1090	2YE	3	
Recochem Acetone	20L	1090	2YE	3	
Isopropanol	14L	1219	2YE	3	
Methylated Spirits	3L	1170	2YE	3	
Petroleum Gas Liquefied	5kg			2	

APPENDIX C

Wedge Tailed Eagle Research Fund

2025 Annual Report (NRM South)

Wedge-tailed Eagle Research Fund 2025 Annual Report

Photo: Dr Adam Cisterne, NRM South

Prepared for Wild Cattle Hill Pty Ltd

Date: 7th August 2025

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 sixth Annual Report for the Wedge-tailed Eagle (WTE) Research Fund ('The Fund'). It covers the achievements since the last Annual Report in September 2024.

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.

It is noted that on 17 December 2024, Atmos Renewables acquired 100% of the interests in the Cattle Hill Wind Farm and is therefore now the official owners of the asset.

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 (as an observer, Dr Rachael Alderman, Director Threatened Species and Biodiversity).
- 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 Tasmanian wedge-tailed 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 are now in their second term.

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 2025

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

Details of the achievements:

1. The seventh deposit (including the set-up contribution) to The Fund was received from Wild Cattle Hill Pty Ltd in October 2024.
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) was completed. The final payment was made following approval of the final report. (The findings of this study were presented in the 2024 Annual report).
3. A grant round was advertised in October 2024. Four applications were received, with a total of $274,273.56 being sought, which was significantly higher than that available. The TAC determined that two applications warranted funding, and agreed that allocating part of the 2025 funds as well as 2024 funds would enable both to be supported. The cost of supporting the two projects totalled $136,083, which is $36,083 over the $100,000 allocation for 2024. Hence $36,083 was allocated from the 2025 round. This resulted in a reduced amount available for 2025 and the TAC agreed that these funds would be retained and combined with the 2026 round.

Projects supported in 2024/2025

Grants awarded

1. 2024-25: Characterising the demographic history and evolutionary trajectory of Tasmanian wedge-tailed eagles using whole genomic sequencing (Ahrrens, Miller, Burridge, Weeks). To be completed in November 2025.

Project summary:

Current estimates suggest that the census population size of wedge-tailed eagles in Tasmania is approximately 1000-1500 adults. However, estimates of effective population size (number of reproductive adults; N_e) remain uncertain, but are generally orders of magnitude smaller than

census sizes and inherently difficult to quantify using traditional genetic methods. Contemporary estimates of N_e are vitally important for informing conservation, as N_e is the ultimate indicator of overall genetic health and population stability. Rapid historical losses and persistent non-natural deaths are expected to have a measurable impact on N_e by reducing the number of breeding individuals. This can expose affected populations to negative demographic processes that can adversely impact genetic health, population fitness and environmental resilience. Thus, significant reductions in N_e can have long-term consequences for population recovery and persistence.

This project seeks to build on the findings of Stojanovic (2022) to gain a more reliable and robust estimate of contemporary N_e for the TWTE population and understand how N_e and genetic variation changed through time. Our analyses based on whole genome sequencing (WGS) data will determine the impacts of historical and more recent human activities on N_e (i.e., culling practices, landscape modification and wind farm expansion). Outputs from this project are expected to provide a much-needed resource for informing future conservation management of TWTE population by providing reliable estimates of population growth trajectories (positive or negative), and uncovering reasons for differentiation between Tasmania and mainland populations of wedge-tailed eagles.

2. 2024-25: Making the surveys count: an innovative approach to convert relative abundance data to a population estimate for the Tasmanian wedge-tailed eagle, through direct measurement of detectability (Pay, Johnson, Zhang, Hawkins, Potts). To be completed in March 2027.

Project summary:

We will develop an innovative method to estimate Tasmanian wedge-tailed eagle (TWTE) population size from structured annual survey data. Such an estimate is long overdue, and will enable review of its conservation status. An empirical population estimate is necessary, since, even if the trend is stable, strategic conservation decisions will be radically affected by information on whether the population is now close to extinction or is quite large.

Researchers from the University of Tasmania, in collaboration with researchers from the Australian National University and the Bookend Trust, have been pioneering a range of innovative approaches to the population estimate. These integrate multiple novel tools and methods to enhance reliability and accuracy:

1. Territory analysis: using GPS tracking data from adult eagles to estimate how territory size varies across Tasmania and calculate the total number of territories on the island.

2. Genetic techniques: applying advanced genetic methods to determine the effective population size (work previously funded through the WTE Research Fund).

3. Detectability modelling: combining GPS tracking data with human observation records to directly measure detectability for the species and translate survey numbers into a population estimate (this application).

Each offers significant advantages over the previous approaches, but also has inherent limitations. By synthesising these diverse, independent methods, we aim to leverage their complementary strengths and mitigate weaknesses, ultimately producing the most robust and comprehensive

population estimate, collect and analyse field data on detectability through standardised surveys near GPS-tagged eagles. With sufficient field data, we anticipate that we will be able to accurately model the proportion of surveys which miss a tagged eagle, against its distance from the observers. This will allow us to estimate the population size by combining the resulting detection function with ongoing WWW survey data.

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 will commence in October 2025. A student been selected and signed on. 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 will be advertised in 2026 and will include that year's allocation plus the residual funds from 2025.

Financial statement

A summary of the financial statement is provided below:

Details	***August 2024 - August 2025***		
	Contribution	***Costs***	***Commitments***
Funds received (incl. GST) 2024	$109,147.50	-	-
Bank interest	$2,330.97	-	-
Ongoing administration	-	$7,938	-
Grant Advertising	-	$50	-
Contractor costs (TAC)	-	$550	-
Carried forward	$181,737.49	-	-
Final milestone payment – Midlands GPS	-	$16,372.40	-
Genomic sequencing	-	First Milestone payment – $53,930.00	Final payment - $35,953.00
First Milestone payment – Eagle detectability	-	First Milestone payment – $27,720.00	Final payment - $18,480.00
Funds retained for PhD stipend	-	-	$176,166.00
Total	$293,215.96	$106,560.40	$230,599.00

Given the current financial commitments to projects, including that the 2025 funds were allocated in the 2024 round, the next round of grants will be advertised in 2026. Residual funds from 2025 will be combined with the 2026 allocation.

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, Cisterne, Pay, Burridge, Young, Clarke and Butler).
- 2021: Monitoring wedge-tailed eagle population trends (Hawkins and Potts).
- 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).
- 2023: Comprehensive analysis of the ecotoxin threat to Tasmanian Wedge-Tail Eagles (Stojanovic, Pay, Cisterne).

Projects awarded support by the Fund – underway

- 2024-25: Characterising the demographic history and evolutionary trajectory of Tasmanian wedge-tailed eagles using whole genomic sequencing (Ahrrens, Miller, Burridge, Weeks). To be completed in November 2025.
- 2024-25: Making the surveys count: an innovative approach to convert relative abundance data to a population estimate for the Tasmanian wedge-tailed eagle, through direct measurement of detectability (Pay, Johnson, Zhang, Hawkins, Potts). To be completed in March 2027.

Projects awarded support by the Fund – to commence

PhD project: How is TWTE habitat selection affected by human activities and land-use intensity? To commence in October 2025.