WOOLNORTH RENEWABLES

ACN 154 051 617

Bluff Point Wind Farm and Studland Bay Wind Farm Annual Environmental Review 2019

March 2020

Contents

1. General Manager's Statement 3

2. This report 4

3. Introduction 5

3.1 Background 5
3.2 Buff Point Wind Farm and Studland Bay Wind Farm Overview 5
3.3 Environmental Management Plans 9

4. General Environmental Management 11

4.1 Public Complaints 11
4.2 Environmental Procedure or process changes 11
4.3 Waste produced 11
4.4 Non-Trivial Environmental Incidents and non-compliances 11
4.4.1 Environmental Incidents 11
4.4.2 Incident follow-up, mitigation and preventative measures 12
4.4.3 Non-compliance 12
4.5 Breaches of limits 12
4.6 Community consultation and communication and other relevant meetings 12

5. State Environmental Management Plans 14

5.1 General Management 14
5.1.1 Reporting of bird and bat collisions 14
5.2 Orange-bellied Parrot Management 14
5.2.1 Vegetation management - on site program 14
5.2.2 OBP Habitat Plot 20
5.2.3 Orange bellied Parrot rehabilitation and offsets 20
5.2.4 Orange-bellied Parrot Turbine Shutdown Contingency 21
5.3 Eagle management 21
5.3.1 Monitoring of eagle collision with wind turbines 21
5.3.2 Minimising food resources on site 21
5.3.3 Rehabilitation of injured eagles 21
5.3.4 Understanding the factors involved in eagle collision risk 22
5.3.5 Annual appraisal of technologies 2019 22

6. Commonwealth EMPs 24

6.1.1 Commonwealth Bird and Bat Monitoring Plan 24
6.1.2 Commonwealth Vegetation Management Plan 24
6.1.3 Woolnorth to Smithton Transmission Line 24

7. Other Environmental Actions 25

7.1 Eagle Recovery Plan 25
7.2 Environmental Management System 25
7.3 Annual audit reports 25
7.4 Emergency preparedness 26

8. Glossary 27

1. General Manager's Statement

This is the 17th Annual Environmental Review (AER) published for the Bluff Point Wind Farm (BPWF) and the Studland Bay Wind Farm (SBWF) projects. The AER has been prepared according to Condition G5 of the Environment Protection Notices under which the projects are regulated (BPWF EPN no. 7421/2 and SBWF EPN no. 7423/3). According to G5, an Annual Environmental Review, that is publicly available (www.woolnorthwind.com.au), must be submitted to the Director of the Environment Protection Authority (EPA) by the 31st of March of each calendar year for the reporting period (calendar year). This AER reporting period is January 1 2019 to December 31 2019.

The information contained in this AER has been carefully prepared by our environmental team, in collaboration with project staff.

I acknowledge and endorse this report.

Stephen Ross
General Manager
Woolnorth Wind Farm Holding Pty Ltd

2. This report

This AER covers the period 1 January – 31 December 2019 and is provided to fulfil condition G5 of the BPWF and SBWF Environment Protection Notices (BPWF EPN no. 7421/2 and SBWF EPN no. 7423/3). It also contains information relevant to the conditions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) Approval (no.) 2000/12. Additionally, this report provides a summary of additional work undertaken at these sites to address any environmental issues and/or to improve environmental management of the sites. Table 1 contains details of the sections within this report and the specific purpose of each section.

Table 1. Sections contained within this report and details of reporting requirements met.

Sections of this report	Compliance details
1.1 **General Manager's Statement**	Requirement of G5 (1.1) of Environment Protection Notices (EPNs) No. 7421/2 (Woolnorth Bluff Point Wind Farm) and No. 7423/3 (Woolnorth Studland Bay Wind Farm). **G5 requirements: 1.1**
Introduction 3.1 Background 3.2 BPWF & SBWF 3.3 Environmental Management Plans	General information
General Environmental Management 4.1 Public complaints 4.2 Environmental procedure or process changes 4.3 Summary of waste 4.4 Nontrivial Environmental incidents & non compliances 4.5 Breaches of specific limits 4.6 Summary of community consultation and communication	Reporting on commitments contained within Environment Protection Notices (EPNs) No. 7421/2 (Woolnorth Bluff Point Wind Farm) and No. 7423/3 (Woolnorth Studland Bay Wind Farm) **G5 requirements: 1.2, 1.3, 1.4, 1.5, 1.7, 1.10**
Environmental Management Plans (EMPs) 5.1 General Management 5.2 Orange –bellied Parrot Management 5.3 Eagle Management Plan 5.4 Commonwealth EMPs	Reporting on commitments contained within EPNs, EPBC Approval and: o Bluff Point Wind Farm State Environmental Management Plan o Studland Bay Wind Farm State Environmental Management Plan o Tasmanian Wedge-tailed Eagle and White-bellied Sea-Eagle Nesting Habitat Management Plan o Transmission line EMPs **G5 requirements: 1.6, 1.9**
Other Environmental Actions/issues 6.1 Eagle Recovery Plan 6.2 Environmental Management System 6.3 Annual audits 6.4 Emergency preparedness	General Information **G5 requirements: 1.8**
Glossary	

3. Introduction

3.1 Background

The BPWF and SBWF are located in far north-west Tasmania. The wind farms are owned by Woolnorth Wind Farm Holding Pty Ltd (WNH), a joint venture between Shenhua Clean Energy Holdings (75%) and Hydro Tasmania (25%). WNH manage and operate the wind farms and associated transmission lines, including compliance with obligations of EPNs and other approval conditions (EPBC, Local Government). The environmental regulatory compliance obligations of BPWF and SBWF are the focus of this report.

3.2 Buff Point Wind Farm and Studland Bay Wind Farm Overview

The BPWF and SBWF consist of wind turbines placed on towers at a suitable height to generate electricity, underground cables between turbines, an electrical substation, control room and ancillary buildings central to the turbine areas, roads, fences and other associated infrastructure. The wind farms connect to the electricity grid via a 110kV transmission line (approximately 50 km in length) to the Smithton substation.

BPWF was developed in two stages. The first stage comprised the construction of six turbines, with an electrical connection to the Smithton substation via a 22kV power line. Stage 2 comprised an additional 31, 1.75MW turbines, and the construction of the 110kV transmission line from the wind farm switchyard to the Smithton substation. In total BPWF comprises 37 Vestas V66, 1.75MW turbines and was fully commissioned in August 2004 with a generation capacity of 64.75MW. Refer to Figure 1 for the layout of BPWF.

Construction commenced on SBWF in 2006 with a nominal capacity of 75MW. The development of SBWF included construction of a spur transmission line to connect to the existing 110kV transmission line between BPWF and the substation at Smithton. SBWF consists of 25 Vestas V90, 3MW turbines and was fully commissioned by 1 June 2007. Figure 2 details the layout of SBWF, while the transmission line route is shown in Figure 3.

BPWF and SBWF operate under separate EPNs. These EPNs were issued by the Tasmanian Environment Protection Authority (EPA) under the *Environmental Management and Pollution Control Act 1994* (Tas). BPWF and SBWF also operate under an Approval issued by the Australian Government Department of the Environment and Heritage (now the Department of Environment and Energy, DoEE) under the *Environment Protection and Biodiversity Conservation Act 1999*.

Attached to these legal instruments are environmental conditions with which the wind farms must comply. The preparation of this AER is a requirement of each wind farms' EPN. Environmental Management Plans, approved in accordance with the EPNs and Approval conditions, also outline reporting commitments and requirements. This report contains the relevant reporting requirements for the BPWF, SBWF and the associated 110 kV Transmission Line (including the SBWF 'spur line').

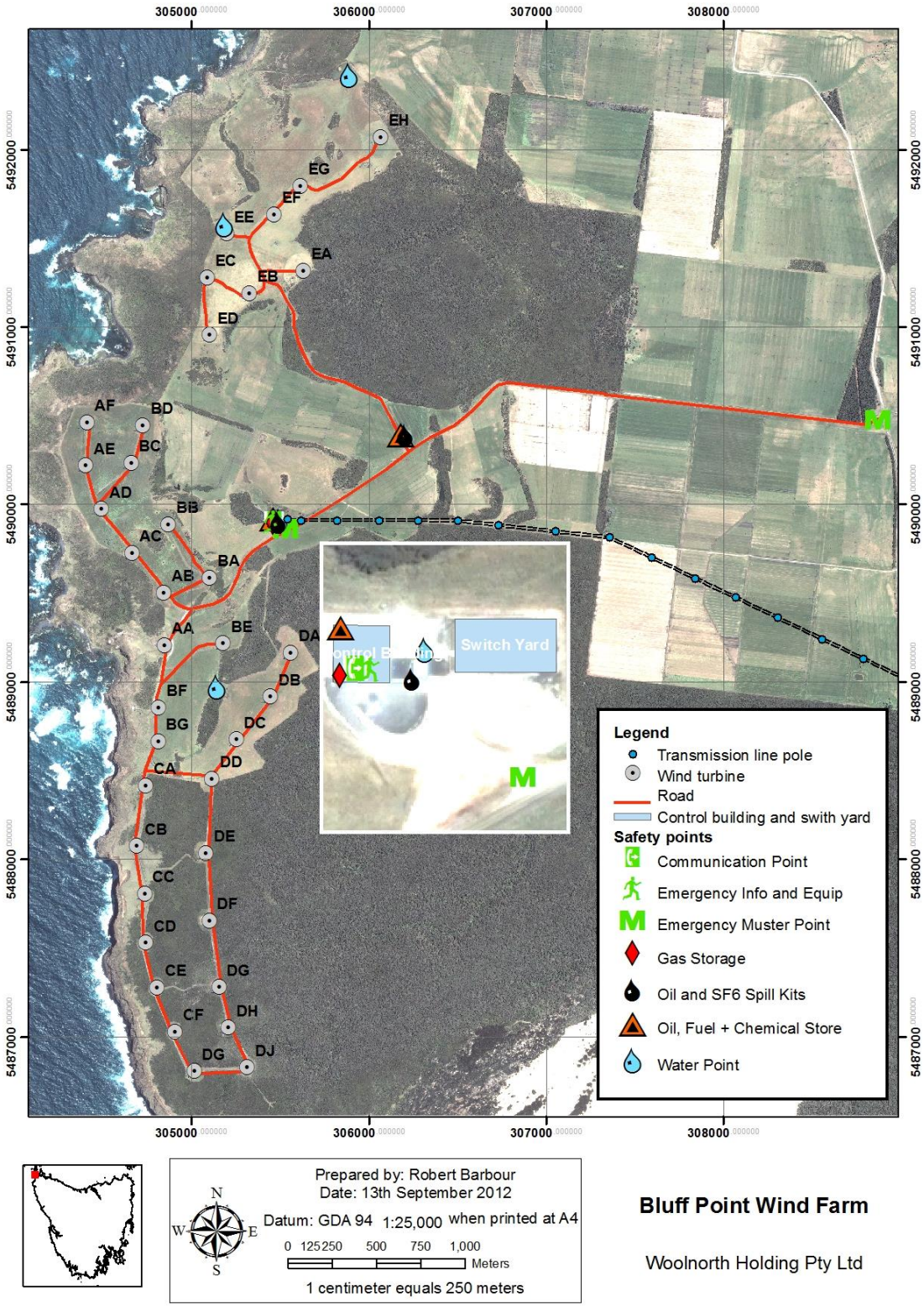

Figure 1. Bluff Point Wind Farm

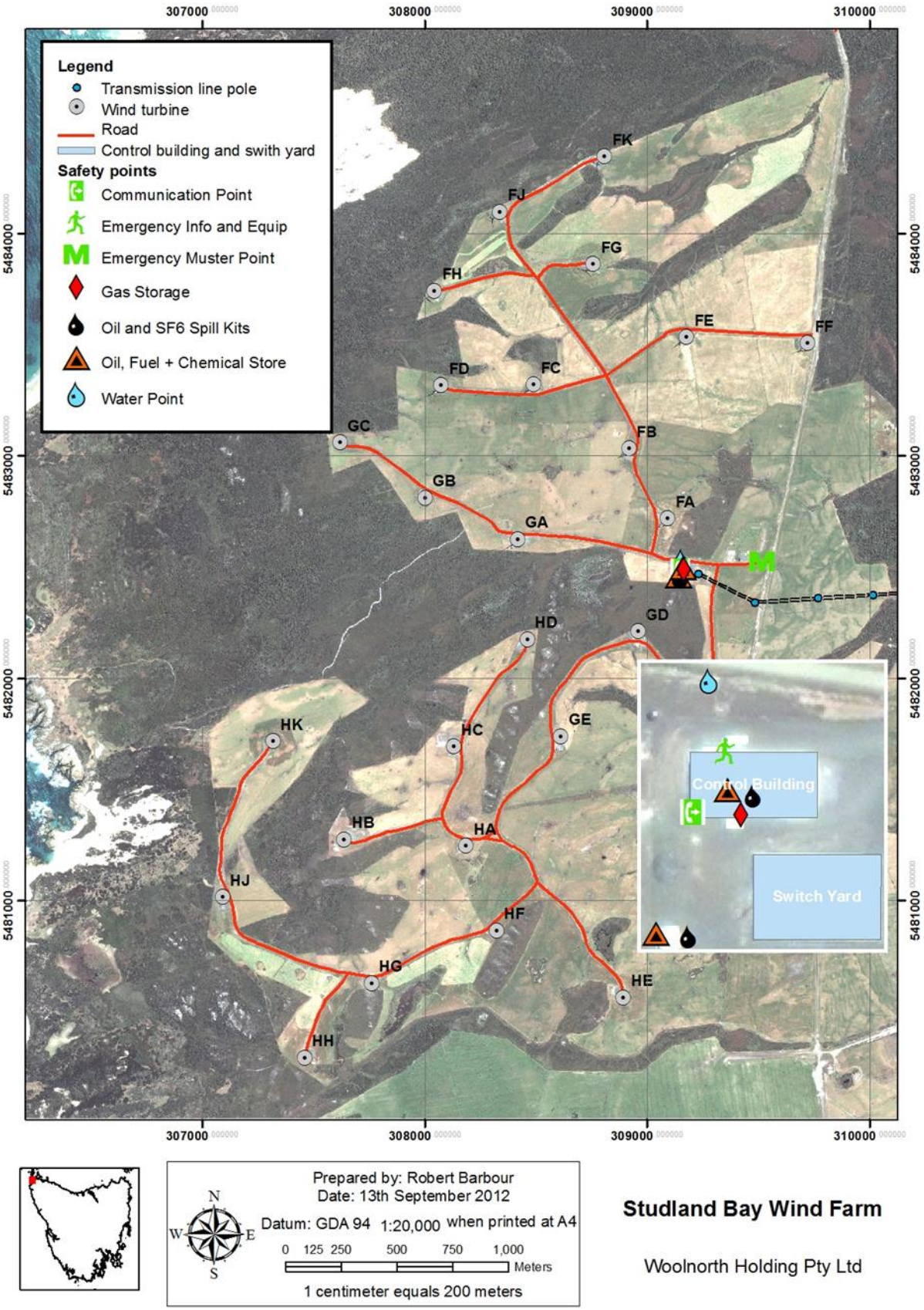

Figure 2. Studland Bay Wind Farm

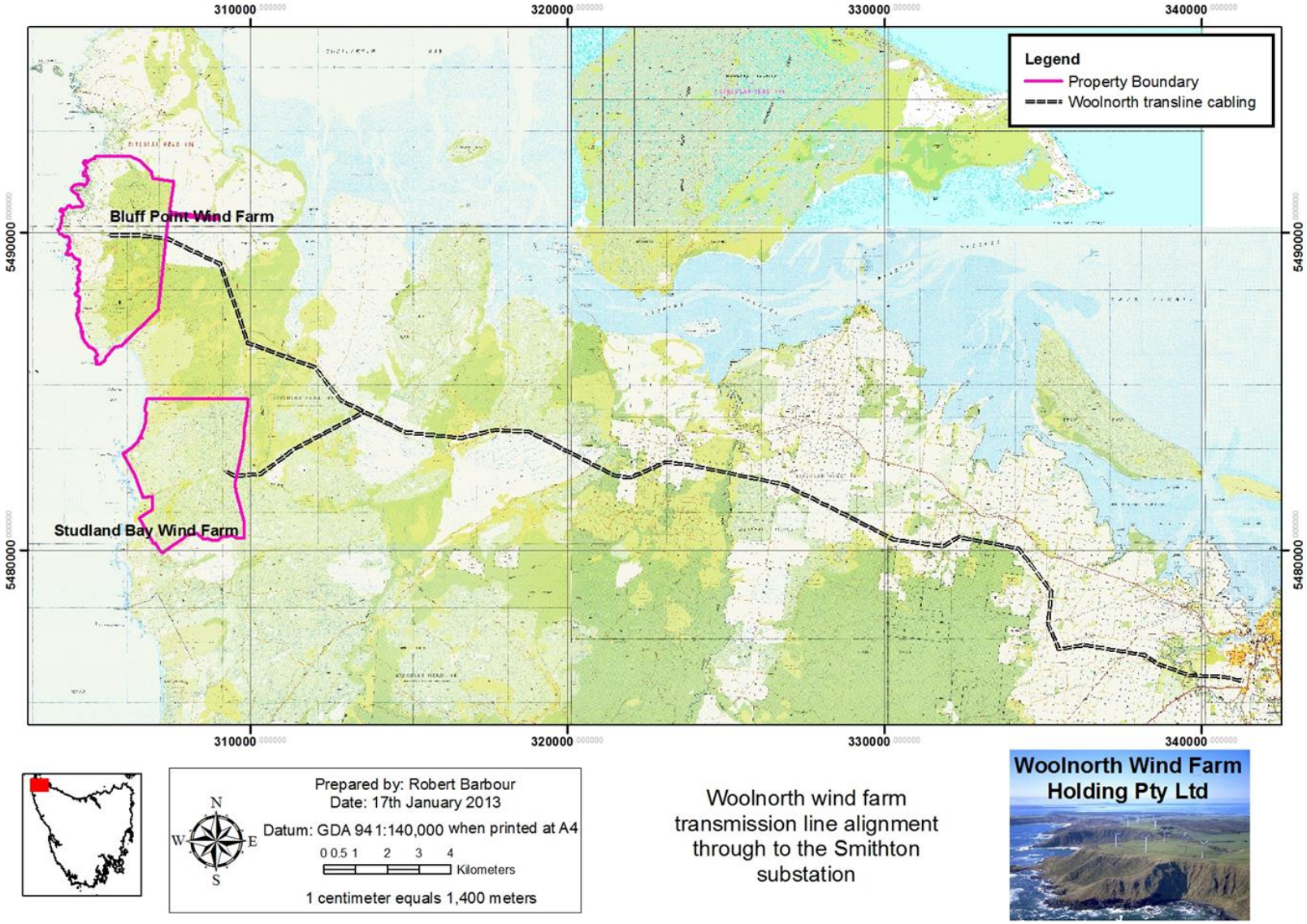

Figure 3. Transmission line alignment

3.3 Environmental Management Plans

As reported in previous AERs, in December 2015, the BPWF and SBWF State EMPs were reviewed. The EMPs were re-approved by the EPA (March 2016). The EMPs were restructured and presented under three separate headings:

1. General management
2. Orange-bellied Parrot Management
3. Eagle management.

This AER presents the results of relevant actions under the currently approved EMPs and this information is collated and presented in Section 5 of this report.

All necessary Environmental Management Plans (EMPs) for BPWF and SBWF were prepared and approved as required by the approval conditions, permit and/or EPNs. The following tables (Tables 2 and 3) summarise the currently relevant management plans and their details (the current Departmental names are used).

Table 2. Status of EMPs for BPWF and SBWF.

Environmental Management Plan	Approved by	Last approved	Status
Vegetation Management Plan	DoEE*	2005	Active, few relevant actions
Bird and Bat Monitoring Plan	DoEE*	2005	Active, few relevant actions
Bluff Point Wind Farm Environmental Management Plan	EPA	2016	Active
Studland Bay Wind Farm Environmental Management Plan	EPA	2016	Active
Tasmanian Wedge-tailed Eagle and White-bellied Sea-Eagle Nesting Habitat Management Plan	DoEE*	2007	Active, but all actions completed

*various previous Department names.

In addition, the following plans and reports were prepared and approved prior to commencement of construction of the Woolnorth to Smithton transmission line.

Table 3. Status of EMPs for the 110kV Transmission Line

Environmental Management Plan	Approved by	Last approved	Status
Transmission Line Bird Strike Mitigation Plan	EPA	2003	Inactive
	DoEE*	2003	Active, few relevant actions
Transmission Line Vegetation Management Plan	EPA	2003	Inactive, few relevant actions
Transmission Line Vegetation Management to Deter the Orange-bellied Parrot	EPA	2003	Inactive
	DoEE*	2003	Active, few relevant actions
Transmission Line Bird Strike Monitoring Plan	DoEE*	2003	Active
	EPA	2003	Inactive, few relevant actions

*various previous Department names.

4. General Environmental Management

4.1 Public Complaints

There were no public complaints (in relation to environmental or other matters) received by WNH during the 2019 reporting period.

4.2 Environmental Procedure or process changes

During the 2019 reporting period there were no significant procedural or process changes relating specifically to the environmental regulation or management of the sites.

4.3 Waste produced

During the 2019 reporting period, the following waste data was collected (Table 4).

Table 4. Waste streams and quantities documented in 2019.

	General waste (m³)	Liquid hydrocarbon (L)	Recycling wastes (m³)	Metal recycling (t)
BPWF	99	2000	7.8	combined
SBWF	37.5	2000	1.4	combined
Total	136.5	4000	9.2	78.2

Waste streams and volumes are regularly monitored and where possible materials are recycled rather than being disposed of as general waste. Waste volumes were slightly higher than previous reporting periods. A licenced contractor disposes of all waste, including waste classified as hazardous.

4.4 Non-Trivial Environmental Incidents and non-compliances

4.4.1 Environmental Incidents

It is a requirement that all reportable incidents are reported to the EPA and sections of Tasmanian Department of Primary Industries, Parks, Water and Environment (DPIPWE). This requirement is outlined in the EPNs and the reporting procedure prescribed in the BPWF and SBWF EPNs and the State EMPs. Bird and bat related incidents are reported in Section 5 of this report.

There were three reportable environmental incidents at BPWF and SBWF during the 2019 reporting period. These incidents were eagle related and the details are set out in Table 6 (Section 5.5.1).

Other non-reportable/trivial incidents were documented and managed by WNH through internal procedures.

4.4.2 Incident follow-up, mitigation and preventative measures

All eagle related incidents were managed in accordance with the requirements of the State EMPs. With respect to mitigation and preventative measures, these are the first eagle collisions recorded at the wind farms since 2010 and therefore action is not currently considered necessary. The implementation of radar technology at Woolnorth's Musselroe Wind Farm is currently underway and should be operational by 2021. The application of this technology and others currently available remain of interest for the operations at Bluff Point and Studland Bay

4.4.3 Non-compliance

WNH continued to comply with the latest approved State EMPs.

There were no non-compliances with the EPN or other approval conditions identified. Internal audits conducted as a part of the WNH internal audit schedule found no EPN or other approval condition related non-compliances. An external audit, against ISO 14001, was conducted in October 2019 and one non-conformance was been identified which has since been addressed. See section 6.

4.5 Breaches of limits

There were no breaches of limits specified in the EPNs or any of the regulatory approved EMPs.

4.6 Community consultation and communication and other relevant meetings

A summary of community and stakeholder consultation and communication for the reporting period is provided in Table 5.

Table 5. A summary of community and stakeholder consultation, communication and other relevant activities / meetings for the reporting period 2019

Date	Activity or meeting	Comment
Activities undertaken and outlined in the approved EMPs are outlined in the relevant sections of this report. Other management activities and meetings held in conjunction or addition to the approved EMPS are listed in this table.		
Regularly throughout the year	Visitor tours of BPWF by Woolnorth Tours	Woolnorth Tours (www.woolnorthtours.com.au) conducts tours of the BPWF. In 2017, approximately 4100 members of the public visited the site.
Regularly throughout the year	Audits and emergency preparedness sessions	Various audits and training sessions conducted throughout the year in accordance with WNH's internal schedules.
Regularly throughout the year	Discussions with VDL	Discussions VDL occur regularly throughout the year to discuss and action a range of topics.
January	TFS visit	Hosted local brigades on site for a site familiarisation and preparedness discussion
January	Devil trapping	DPIWE devil team
February	EPA meeting	General meeting including eagle management.
March	Robin Radar investigation	Discussion and technology assessment with Robin Radar in the Netherlands
July	Routine devil trapping	Site devil conservation activity by DPIPWE
October	Clean Energy Open Day	Studland Bay Wind Farm was opened to the public as a part of Clean Energy Open Day.
October	External Audit	External audit by BSI for ISO 14001 certification
December	Woolnorth Wind Farm Springboard to Higher Education Bursary presentation	Present University of Tasmania Woolnorth Wind Farm Springboard to Higher Education Bursary at Smithton High School and Circular Head Christian School

5. State Environmental Management Plans

5.1 General Management

5.1.1 Reporting of bird and bat collisions

Section 3.1 of the State EMPs for BPWF and SBWF respectively detail the reporting requirements for birds and bat mortalities listed or not listed under the *Threatened Species Protection Act 1995* (TSPA).

The following listed birds were identified in the 2019 reporting period:

Table 6 – Listed species identified during the reporting period.

Species	Location	Event
White-bellied sea eagle (*Haliaeetus leucogaster*)	BPWF	Mortality
Wedge-tailed Eagle (*Aquila audax fleayi*)	BPWF	Injured
Wedge-tailed Eagle (*Aquila audax fleayi*)	SBWF	Injured

One non-listed species was identified in the 2019 reporting period, an unknown bat species identified at BPWF.

All instances of bird or bat mortality or injury were managed in accordance with the BPWF and SBWF Environmental Management Plans respectively.

5.2 Orange-bellied Parrot Management

5.2.1 Vegetation management - on site program

Both wind farms sites were inspected for the presence of Orange-bellied Parrot (OBP) foraging weeds. Specifically, these weeds are:

- Wireweed
- Fathen
- Nettle-leaved Goosefoot
- Water buttons
- Chickweed.

The inspections focus on identifying the presence of the above weed species with spraying (or other actions) undertaken where necessary to remove them. Other weed species, if relevant, are identified and noted during the surveys. The specific methods used are detailed below.

Methods

In late January, prior to the OBP northward migration, a verification survey was conducted at BPWF and SBWF to assess if there were any areas that may attract OBPs. The areas assessed were:

1. Turbine areas;
2. Roads and hardstands areas; and
3. General pastures.

The objective of the survey is to confirm that the average ground cover of known OBP foraging species (listed above) either flowering or producing seed, does not exceed an average of 10% across the total site, and that no localised area (close to a wind turbine) exceeds 30%. A staged design is used, which involves:

1. **Turbine selection**

Six turbines are chosen at random across the site.

2. **Turbine surveys – PASS/FAIL triggers**

- At each turbine (out to 50m from the turbine base), seven 1m x 1m quadrats are randomly selected, and the species contained in each quadrat estimated;
- If the combined average of OBP foraging species (listed above) of these quadrats is less than 20%, the turbine zone is deemed a PASS;
- If the combined average of OBP foraging species (listed above) of these quadrats is greater than 20%, another seven quadrats are randomly selected, and the average of all 14 taken; and
- If the new average is above 22%, the turbine zone is a FAIL and requires treatment/management actions and another turbine is selected at random to be tested.

3. **Site wide calculations – PASS/FAIL triggers**

- If the combined average of all PASS quadrats is less than 7.0%, then the site is a PASS;
- If the combined average of all PASS quadrats is greater than 7.0%, then another two turbines are selected (and the turbine survey methodology described above applied); and
- Following the additional two turbine surveys, the combined average of all PASS quadrats must be less than 7.5%. Greater than this indicates a FAIL for the site and a thorough inspection of all cleared areas within close proximity of turbines is undertaken to identify areas that require treatment/management actions.

A PASS indicates a less than 5% likelihood of the site having a genuine average greater than the trigger level. A FAIL indicates that there is a greater than 5% likelihood that the plant coverage may in fact be greater than the trigger level.

<u>Roads and Hardstands</u>

Roads and hardstands have previously been identified as areas where OBP species can commonly be present. The random quadrat surveys at each turbine (described above) sample road and hardstand areas. Outside of these, all roads within 200m of any turbine and all hardstands are inspected for the presence of known OBP food species (see list above) and treatment/management actions are undertaken where necessary.

General pastures

No OBPs have been recorded foraging at the BPWF or SBWF sites since the development began studies in 2000. Grazing management, fertiliser regimes and pasture species composition are managed by the VDL Farms and assessed on an as needs basis. The random quadrat surveys at turbines (described above) sample general pastures across the site (according to the turbines selected) and management intervention is undertaken when triggers are exceeded (described above).

Results

BPWF

Turbines EC, EA, BA, AA, DD and CF were randomly selected (using Random function in Excel).

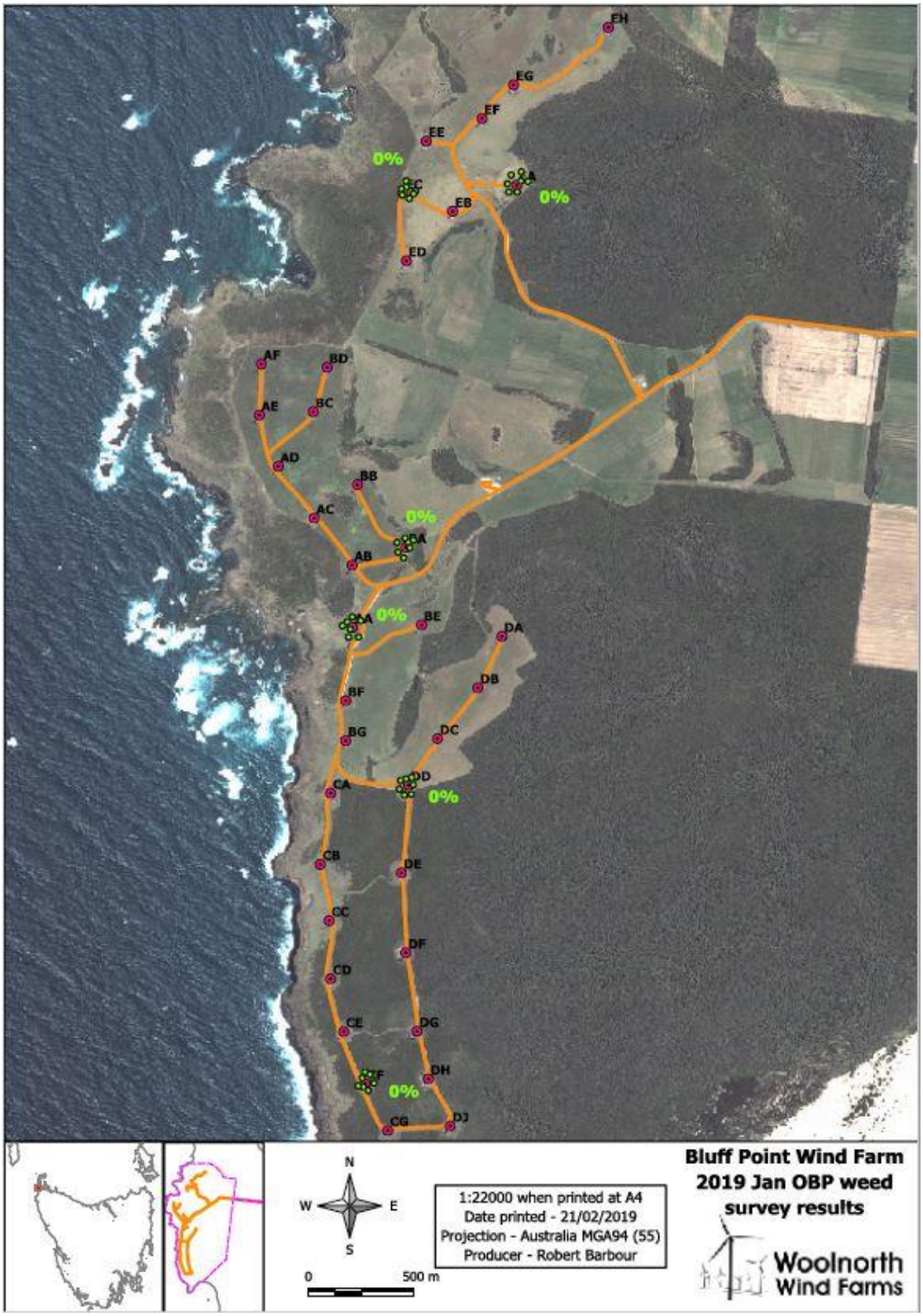

Figure 4. **BPWF weed survey locations and combined average results (%) of OBP foraging species**

Figure 4 (above) outlines the combined average of OBP foraging species at each sampled turbine site. As can be seen from the results, none of the five OBP weed species were identified in any of the surveyed wind turbine areas and hence all wind turbines areas were deemed a 'PASS'. On the basis of the wind turbine area results, the site was also deemed a 'PASS'.

During the surveys there were no OBP weed species found in open pastures indicating the surveys and any control undertaken by VDL Farms during 2019 was effective. Roads and hardstands were assessed by WNH personnel during the formal quadrat surveys and no OBP weed species were identified.

The site was therefore considered free of the key OBP attracting weed species.

In Autumn 2019, all roads and hardstands across the site were sprayed with herbicide for maintenance purposes. The herbicide application will assist in preventing the establishment of OBP weed species in these areas.

SBWF

Turbines FD, FE, GA, HD, HB and HH were randomly selected (using Random function in Excel).

Figure 5 below outlines the combined average of OBP foraging species at each sampled turbine site. As can be seen from the results none of the five OBP weed species were identified in any of the surveyed wind turbine areas and hence all wind turbines areas were deemed a 'PASS'.

During surveys across the balance of the property there were no areas where OBP weed species were identified indicating the surveys and any control undertaken by VDL Farms during 2019 was effective. Roads and hardstands were assessed by WNH personnel during the formal quadrat surveys and no OBP weed species were identified.

The site was therefore considered free of the key OBP attracting weed species.

In Autumn 2019, all roads and hardstands across the site were sprayed with herbicide for maintenance purposes. The herbicide application will assist in preventing the establishment of OBP weed species in these areas.

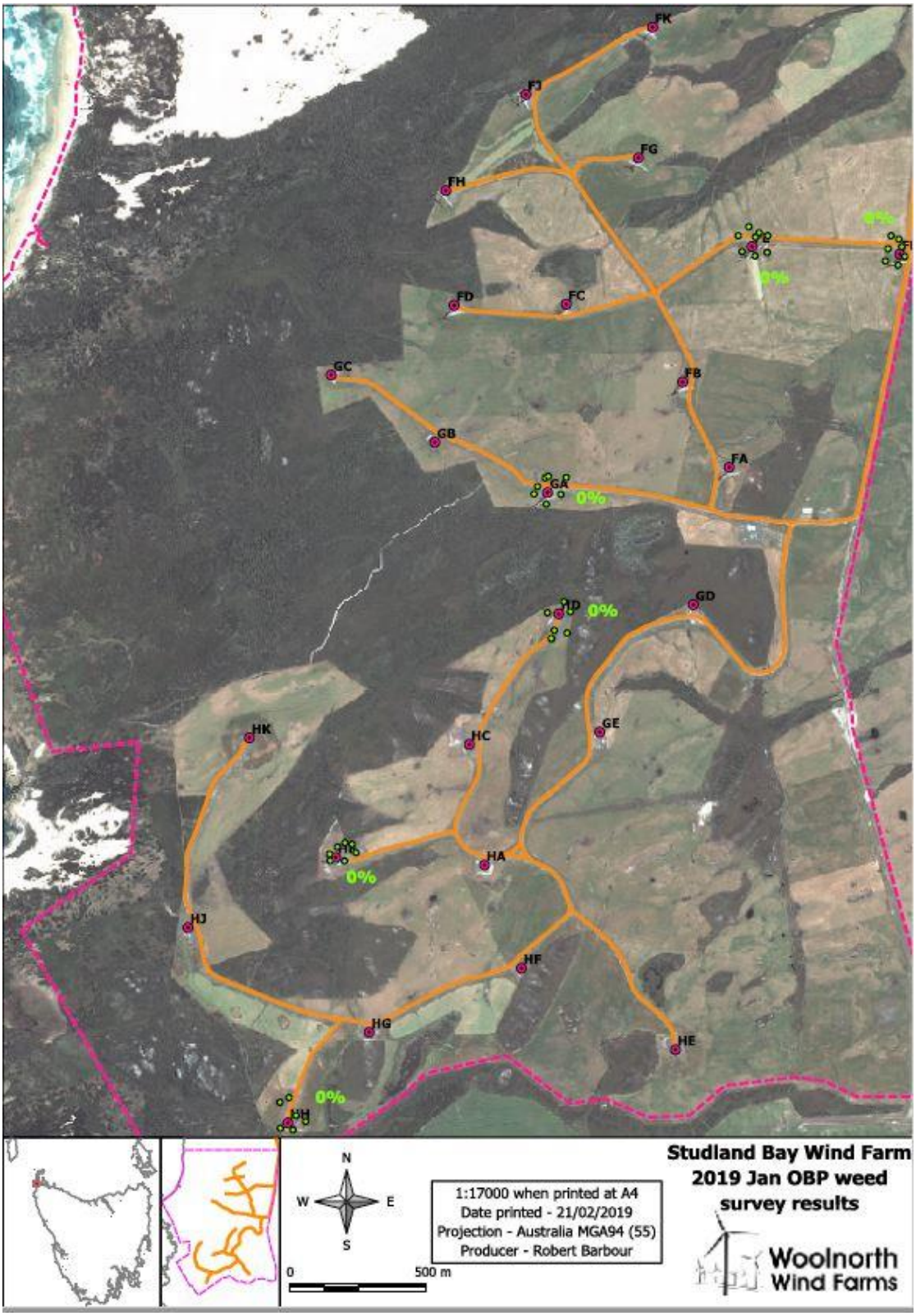

Figure 5. **SBWF weed survey locations and combined average results (%) of OBP foraging species**

5.2.2 OBP Habitat Plot

The OBP habitat plot, established in 2008/09, is visited at least twice yearly and photographs taken to document its progress (Figure 6, Figure 7). No other actions were undertaken in 2019.

Figure 6. The OBP roost plot, from south-west.

Figure 7. Close view of the OBP plot showing the mosaic habitat.

5.2.3 Orange bellied Parrot rehabilitation and offsets

No OBPs were found dead or injured (at either site) and hence no rehabilitation or offsets were required.

5.2.4 Orange-bellied Parrot Turbine Shutdown Contingency

No OBPs, or flocks of Blue-winged Parrots (indicators of OBPs), were observed at either BPWF or SBWF during 2019 that required the shut-down triggers developed to be implemented. Therefore, no management actions (as specified in the State EMPs) were undertaken.

5.3 Eagle management

5.3.1 Monitoring of eagle collision with wind turbines

An updated monitoring strategy was approved by the EPA in December 2013 and by the DoEE in June 2014. This monitoring strategy remains focussed on monitoring BPWF and SBWF for eagle collisions. The strategy relies on ad-hoc monitoring and surveillance by site personnel. A series of benchmarks have been developed based on the calculated long-term collision rate (for each site) and if reached, trigger an escalating response. All responses have the objective of investigating the detected eagle mortalities (to understand or determine the root cause/s) and to determine if there has been a change (increase) in the average annual collision rate.

Methods

Monitoring is conducted by all personnel that are working on the sites. This includes WNH, VDL Farms and any consultants employed to work on the sites. The requirement to report any dead or injured eagles (or other birds and bats) to WNH, or their representative, is managed and reinforced through the general and site induction processes.

Results

There were two injured wedge-tailed eagles (WTE) detected during the reporting period, one each at BPWF and SBWF respectively. One white-bellied sea eagle (WBSE) mortality was identified at BPWF. Each incident was managed in accordance with the State EMP for the specific site.

5.3.2 Minimising food resources on site

WNH continued to minimise potential eagle food resources on site by preventing any calving on the land and by removing any dead cattle or other animals from turbine areas. This has been achieved by daily monitoring of stocked areas by farm staff. No sheep are grazed on the wind farm sites. In addition, a prey control program is implemented when there is a significant or unusual density of WTE or WBSE prey species (wallabies and pademelon) observed/identified on site. A prey control program was not deemed necessary and therefore not implemented.

5.3.3 Rehabilitation of injured eagles

Two injured WTEs were located during the reporting period, one each at BPWF and SBWF respectively. Both birds were assessed and treated by a local veterinarian. Specialist wildlife veterinarians were also consulted on the best course of treatment, but unfortunately both birds were euthanised.

5.3.4 Understanding the factors involved in eagle collision risk

As reported in previous Annual Environmental Reports, a staged camera system project was undertaken at BPWF between 2012 and 2014. The project had two clear objectives to assist in the understanding of the eagle collision risk at the site. However, at the completion of a yearlong data collection phase our conclusion was that further studies using this system were not practically or technically feasible. WNH committed to monitoring possible technologies and methods to improve our understanding of the factors involved in eagle collisions with wind turbines.

5.3.5 Annual appraisal of technologies 2019

The assessment of new technologies for understanding eagle collision risk, collision factors and potential mitigation options continued throughout 2019. This included the review of technical reports and papers, summaries of conference proceedings and workshops, review of technology provider's websites and discussions or meetings with technology suppliers.

In 2019 the Robin Radar Max system was identified by WNH as an appropriate technology to reduce the risk of avian collisions with wind turbines at the Musselroe Wind Farm site. The system comprises of a phased array radar which is designed specifically to detect birds. The radar is able to detect a bird flight and through a custom software program provide signals to the wind farm control system to curtail/shut down the appropriate turbines.

The Robin Radar system is scheduled to be installed in mid-2020 and once operational the results will be carefully analysed to determine if this technology may be applicable to the SBWF and BPWF sites.

Other wind farm developments currently in the construction and commissioning phase in Tasmania are employing different avian detection systems, such as IdentiFlight. Where possible, WHN will collaborate with these developments, where practicable, to share any lessons which may be generated.

Throughout the reporting period, the literature published focused on assessing efficiencies being developed in pre-existing technologies. Much of this research was conducted in a northern hemisphere setting or at offshore wind farms. Although not all of the findings are relevant to the Tasmanian experience, the key outcome themes are applicable.

The effectiveness of commercially available automated avian monitoring systems was assessed by McClure *et al*, 2018. This study found preliminary results indicating that automated bird observation systems were more effective at detecting and classifying birds than human observers at an operating wind farm site in Wyoming.

Another report of interest published in 2018 was '*The Offshore Renewables Joint Industry Programme Bird Collision Avoidance Survey*'. While this publication is focused on the offshore wind industry, there are several key learnings identified that are applicable to the onshore

wind industry. While not a technology, the benefit of a joint industry approach is highlighted. The paper also confirms the importance of bird monitoring systems, and using data gathered from these systems to inform future risk assessments.

The National Wind Coordinating Collaborative (NWCC) held their biennale Wind and Wildlife Research Meeting in November 2018, with the Proceedings of XII Wind and Wildlife Research Meeting published in 2019. The proceedings provide a summary of the advances in technology to reduce impacts on bird and bats at both onshore and offshore wind farms. The meeting proceedings are available here.

During the reporting period existing and developing technologies continued to be reviewed, including:

- Robin Radar
  www.robinradar.com/
- DeTect Inc radar systems
  www.detect-inc.com/
- Acoustic deterrents
  www.lradx.com/, www.hyperspike.com/
- IdentiFlight camera systems
  www.res-group.com/en/services-products/identiflight/
- DT Bird
  www.dtbird.com/

During the 2019 reporting period no applicable technologies were identified that could be easily and practically trialled at BPWF or SBWF. With the installation of the Robin Radar system at WNH's Musselroe Wind Farm scheduled for installation in 2020, WNH will evaluate the effectiveness of this technology within the Tasmanian landscape. WNH will continue to monitor the progression of technologies, research projects and relevant literature.

6. Commonwealth EMPs

Actions that have been developed in response to the Commonwealth approval conditions are contained within the following EMPs:

- Bird and Bat Monitoring Plan (specifically bird utilisation surveys and collision monitoring of turbines)
- Vegetation Management Plan (specifically habitat management for OBPs);
- OBP Winter Habitat Management Plan
- Wedge-tailed Eagle and White-bellied Sea-eagle Nesting Habitat Management Plan (actions relating to wedge-tailed eagles)
- Transmission line EMPs.

All actions in the OBP Winter Habitat Management Plan and Tasmanian Wedge-tailed Eagle and White-bellied Sea-eagle Nesting Habitat Management Plan are completed and have been reported on in previous AERs or PERs. Relevant EMPs are discussed below.

6.1.1 Commonwealth Bird and Bat Monitoring Plan

Approval was obtained from the Commonwealth to cease the generic bird utilisation surveys and to modify the turbine mortality searches from generic to an eagle-focus (as detailed in the 2010 Annual Environmental Performance Report). All results are reported in Section 5.1.1 above.

6.1.2 Commonwealth Vegetation Management Plan

The actions in this plan that are relevant to the Commonwealth are those relating to habitat management of OBPs. The results of these actions are reported in Section 5.2.

6.1.3 Woolnorth to Smithton Transmission Line

Various management plans apply to the Woolnorth to Smithton 110kV transmission line. These are:

- Transmission Line Bird Strike Mitigation Plan;
- Transmission Line Vegetation Management Plan;
- Transmission Line Vegetation Management to Deter the Orange-bellied Parrot; and
- Transmission Line Bird Strike Monitoring Plan.

Most actions contained in these plans were completed during the construction of the transmission line. The remaining actions include vegetation/weed surveys and control (if required) to deter OBPs from the transmission line corridor and surveys of the corridor for evidence of bird collisions. These actions were undertaken as required by the relevant plans. No bird collisions were identified during the 2019 reporting period.

7. Other Environmental Actions

7.1 Eagle Recovery Plan

WNH recognised the benefit of updating the Tasmanian Threatened Eagles Recovery Plan in 2018 and provided a project proposal to relevant Government agencies. The process was not finalised for various reasons. In recent times, WNH have had collaborative discussions with other entities to recommence efforts to update the Plan, various meetings and formal Ministerial correspondence was completed during the reporting period. Industry has communicated clear support and funding for the project

Several State and Commonwealth agencies and Tasmania eagle specialists have been consulted regarding the proposed update, including the DoEE and DPIPWE. These agencies have provided feedback that updating the Recovery Plan would be beneficial.

WHN continues to work collaboratively with other entities to develop a solution to allow for the Recovery Plan to be updated and develop other initiatives, including a Centralised Offset Fund and the creation and administration of a Centralised Database to record various eagle population data from across the state.

7.2 Environmental Management System

WNH (including operations at BPWF and SBWF) operates its business under a Health, Safety and Environmental management system. WNH (including BPWF and SBWF) was certified to ISO 14001 in 2013 and has since retained this certification.

One minor non-conformance was identified in the 2019 ISO 14001 internal audit. To rectify this going forward, WNH has engaged an additional HSE Advisor to assist in the maintenance of the HSE system.

The HSE system includes Policies, Procedures, Forms and other documents that assist to:

- Establish and set high level directives to all areas of the business.
- Document accountabilities and responsibilities.
- Effectively manage business and operational risks.
- Develop procedures and protocols to effectively control and manage operational risks and issues.
- Establish methods to check and review system performance and implementation.
- Ensure a systematic continuous improvement cycle is established and implemented.

7.3 Annual audit reports

Internal and external audits of the two wind farm sites are conducted in accordance with an audit schedule. The audit schedule is established at the commencement of each calendar year and reviewed on a regular basis to ensure the schedule is being followed. Internal audits are conducted in accordance with system procedures. All audit findings are entered into a dedicated database and audit actions tracked. Table 7 includes a summary of the audits (relevant to this report) conducted during the reporting period.

Table 7. Summary of audits in 2019

Year	Audit type
2019	Environmental audit at BPWF and SBWF
2019	Operational audit at BPWF and SBWF
2019	External audit against ISO 14001

Audits conducted over the period continue to check environmental performance and drive continuous improvement in environmental management at both sites. All audit actions including opportunities for improvement have been evaluated and where possible actions developed to address them. Implementation of actions is tracked at various levels.

7.4 Emergency preparedness

Throughout the reporting period, several emergency preparedness exercises were conducted. These were completed according to an annual plan and included both desktop and field-based scenarios. The exercises conducted are shown in the table below.

Table 8. Emergency preparedness exercises conducted in 2019

Activity	Site	Activity Type
Elevated Work Platform rescue	BPWF/SBWF	Field
TFS site tour and preparedness briefing	BPWF/SBWF	Field
Nacelle evacuation rigging exercise	BPWF/SBWF	Field

8. Glossary

AER	Annual Environmental Review
BPWF	Bluff Point Wind Farm
DPIPWE	Tasmanian Department of Primary Industry Parks Water and Environment
DoEE	Commonwealth Department of Environment and Energy
Eagle	WTE or WBSE
EMP	Environmental Management Plan
EPA	Tasmanian Environment Protection Authority
EPBC	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EPN	Environment Protection Notice
OBP	Orange-bellied Parrot (*Neophema chrysogaster)*
SBWF	Studland Bay Wind Farm
TSPA	Tasmanian *Threatened Species Protection Act 1995*
WBSE	White-bellied Sea-Eagle (*Haliaeetus leucogaster)*
WNH	Woolnorth Wind Farm Holding Pty Ltd
WTE	Wedge-tailed Eagle (*Aquila audax fleayi)*

Species names referred to in text

Plants

Chickweed	*Stellaria media*
Fathen	*Chenopodium album*
Nettle-leaved goosefoot	*Chenopodium murale*
Water buttons	*Cotula coronopifolia*
Wireweed	*Polygonum aviculare*

Birds

Wedge-tailed eagle	*Aquila audax fleeyi*
White-bellied sea eagle	*Haliaeetus leucogaster*
Orange-bellied parrot	*Neophema chrysogaster*

Mammals

Wallaby (rufous or bennetts)	*Lagorchestes hirsutus or Macropus rufogriseus*
Pademelon	*Thylogale billardierii*
Tasmanian Devil	*Sarcophilus harrisii*