ecology & heritage partners

Final report

Biodiversity Assessment to Accompany an Application to Amend Planning Permit No. PL-SP/05/0548, Stockyard Hill

Prepared for

Stockyard Hill Wind Farm Pty Ltd

May 2016

Ecology and Heritage Partners Pty Ltd

MELBOURNE: 292 Mt Alexander Road, Ascot Vale VIC 3056 GEELONG: 230 Latrobe Terrace, Geelong West Vic 3218
BRISBANE: Level 22, 127 Creek Street, Brisbane QLD 4000 ADELAIDE: 22 Greenhill Road, Wayville SA 5034
CANBERRA: PO Box 6067, O'Connor ACT 2602 SYDNEY: Level 5, 616 Harris Street, Ultimo, NSW, 2007
www.ehpartners.com.au | (03) 9377 0100

DOCUMENT CONTROL

Assessment	Biodiversity Assessment
Address	Stockyard Hill
Project number	7334
Project manager	Aaron Organ (Director / Principal Ecologist), Lyndsey Vivian (Consultant Botanist)
Report reviewer	Andrew Hill (Director / Principal Ecologist)
Other staff	Chelsy Maloney (Research Assistant), Clio Gates Foale (Senior Ecologist)
Mapping	Monique Elsley (GIS Coordinator)
File name	7334_EHP_WEF_Report_ 10052016
Client	Stockyard Hill Wind Farm Pty Ltd
Bioregion	Victorian Volcanic Plan & Central Victorian Uplands
CMA	Glenelg Hopkins
Council	Pyrenees Shire Council

Report versions	Comments	Comments updated by	Date submitted
Draft 1	Cara Layton and Peter Marriott	AO, LV	28/01/2015
Draft 2	Cara Layton and Peter Marriott	AO, LV	03/02/2016
Draft 3	Minor updates and formatting	AO, LV, CM	11/02/2016
Draft 4	Minor updates and formatting	AO, LV	01/03/2016
Draft 5	Minor updates	AO, LV	08/03/2016
Draft 6	Minor updates, figure updates	AO, LV, ME	26/04/2016
Draft 7	Minor updates to reflect changes in the footprint	AO, LV, ME	29/04/2016
Final		CM	10/05/2016

Acknowledgements

We thank the following people for their contribution to the project:

- Cara Layton and Peter Marriott (Origin) for project information;
- The landowners who provided access to the study area;
- The Victorian Department of Environment, Land, Water and Planning for access to ecological databases.

GLOSSARY

Acronym	Description
Amended WEF	Permitted WEF amended as per changes described in Section 1.1.2 of this report
BEU	Biodiversity Equivalence Units
BIOR	Biodiversity Impact and Offset Requirements
CVU	Central Victorian Uplands
DELWP	Department of Environment, Land, Water and Planning (formally, Department of Planning and Community Development, and Department of Sustainability and Environment)
DoE	Commonwealth Department of Environment
EE Act	*Environment Effects Act 1978*
EES	Environment Effects Statement
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999 (Cth)*
EPBC Act Approval	Decision (2009/4719) to approve the WEF (as a controlled action) was made under the *EPBC Act 1999*
EVC	Ecological Vegetation Class
FFG Act	*Flora and Fauna Guarantee Act 1988*
FIS	Flora Information System
The Guidelines	*Permitted clearing of native vegetation - Biodiversity assessment guidelines, September 2013*
Habitat Hectare	A unit of measurement which combines the condition and extent of native vegetation
NES	National Environmental Significance
Net Gain Assessment	*Native Vegetation Management Framework – A Framework for Action* 2002
NTGVVP	Natural Temperate Grassland of the Victoria Volcanic Plain
NVIM Tool	Native Vegetation Information Management Tool (DELWP)
P&E Act	*Planning and Environment Act 1987*
Permitted WEF	Project permitted by the Permit (Planning Permit No. PL-SP/05/0548 Pyrenees Planning Scheme))
SHWF	Stockyard Hill Wind Farm
SHWFPL	Stockyard Hill Wind Farm Pty Ltd
the Permit	Planning Permit No. PL-SP/05/0548 (Pyrenees Planning Scheme) issued by the Minister for Planning in October 2010 to enable the use and development of the SHWF
WEF	Wind Energy Facility
Wind farm boundary	Land referenced in 'Address of the Land' in the Permit.
VVP	Victorian Volcanic Plain bioregion

SUMMARY

Introduction

Stockyard Hill Wind Farm Pty Ltd (SHWFPL) (a subsidiary of Origin Energy) is developing a wind farm project in south-west Victoria, known as the Stockyard Hill Wind Farm (SHWF). Planning Permit No. PL-SP/05/0548 (Pyrenees Planning Scheme) (the Permit) was issued by the Minister for Planning in October 2010 to enable the use and development of the SHWF Wind energy Facility (WEF). SHWFPL has now decided to progress the preparation of an application to amend the Permit to seek approval for taller turbines to achieve more efficient generation of energy.

Objectives

This document was prepared with the purpose to accompany an application to amend the Permit, and inform self-assessments (and referrals, if deemed required) under the *Environment Effects Act 1978* (EE Act), and/or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), including the assessment of listed threatened species and ecological communities. This document provides an assessment of the overall impact of the proposed amended WEF, whilst also describing the resulting change in potential impact from the permitted WEF.

Methods

Relevant literature, online-resources and numerous databases were reviewed to provide an assessment of flora and fauna values associated with the study area. A range of ecological assessments have previously been undertaken (pre and post approval of the WEF) by Brett Lane and Associates (BLA) and Ecology and Heritage Partners to assess the impacts of the permitted WEF on significant species and ecological communities listed under the EPBC Act and FFG Act. The results of previous vegetation mapping and habitat hectare assessments were used to determine the extent of vegetation to be removed within the permitted WEF and the amended WEF, and the offset requirements under the '*Permitted clearing of native vegetation - Biodiversity assessment guidelines*' (the Guidelines). Most recently, additional site assessments were undertaken by qualified ecologists on 10 December 2015 to identify whether there are additional patches of remnant native vegetation, and significant species and communities affected by the amended WEF.

Results

Pre-project approval (BLA 2009)

The original ecological assessment that was undertaken as part of the development approval was prepared in 2009. A summary of the type and extent of remnant native vegetation, and the known and likelihood of significant species and ecological communities occurring within the study area is outlined in this previous report (BLA 2009).

As outlined in BLA (2009) an analysis of the likelihood of occurrence of species listed under the EPBC Act and FFG Act, based on the initial field investigation, indicated that 11 of these species: Small Milkwort, Australian Anchor Plant, Clover Glycine, Ben Major Grevillea, Adamson's Blown-grass, White Sunray, Spiny Rice-flower, Salt-lake Tussock-grass, Hairy Tails, Button Wrinklewort and Swamp Everlasting, may occur in the study area. However, no EPBC Act-listed species were recorded during the surveys.

Post-project approval (Ecology and Heritage Partners)

Detailed ecological assessments (including targeted significant species surveys) and habitat hectare assessments were undertaken along an optimised WEF footprint[1] (which included most of the permitted WEF footprint), to satisfy several of the EPBC Act approval conditions and the planning permit conditions for the project.

Ten Ecological Vegetation Classes (EVCs) (ranging from poor to very good condition) were recorded within the Victorian Volcanic Plain and the Central Victorian Uplands bioregions within the study area during the field assessments. Remnant native vegetation is largely restricted to road reserves and intersections with small degraded areas on private land. Scattered remnant indigenous River Red-gums *Eucalyptus camaldulensis* are present along road reserves and scattered across private property.

Targeted surveys for significant species and ecological communities have previously been undertaken across the study area and several EPBC Act-listed species were detected during these surveys, including Spiny Rice-flower *Pimelea spinescens* subsp. *Spinescens*, Matted Flax-lily *Dianella amoena*, White Sunray *Leucochrysum albicans* var. *tricolor*, Striped Legless Lizard *Delma impar* and Golden Sun Moth *Synemon plana*. In addition, patches of Natural Temperate Grassland of the Victoria Volcanic Plain (NTGVVP) are present along roadsides within the disturbance area. It is considered unlikely that any EPBC Act-listed species will be significantly impacted by the amended WEF footprint.

One significant species listed under the FFG Act (Plump Swamp Wallaby-grass *Amphibromus pithogastrus*) and three additional state significant species (Golden Cowslips *Diuris behrii*, Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra) and Slender Bindweed *Convolvulus angustissimus* subsp. *omnigracilis*) that are not listed under the FFG Act were recorded during the assessment.

The proposed development across the permitted and amended WEF footprint is unlikely to significantly impact any fauna species listed under the FFG Act.

One threatened community, the Western (Basalt) Plain Grassland floristic community, which is the state equivalent of the NTGVVP community and listed under the FFG Act, occurs within the study area on public land (i.e. along roadsides).

Permitted Clearing Assessment (the Guidelines)

For the purposes of the preparation of an application to amend the Permit, an assessment of the permitted and amended WEF footprint under the Guidelines has been completed and the results presented below. The permitted footprint includes two scenarios: the first based on the original design assumptions for the WEF footprint, and the second based on the current design assumptions.

The Guidelines manage the impacts on biodiversity from native vegetation removal using a risk-based approach. Two factors – extent risk and location risk – are used to determine the risk associated with an application for a permit to remove native vegetation. The location risk (A, B or C) has been determined for all areas in Victoria and is available on DELWP's Native Vegetation Information Management (NVIM) Tool, with Location C representing the highest risk. The permitted WEF footprint based on the current design assumptions is within Location C, with approximately 31.991 hectares of native vegetation proposed to be removed. Similarly, the permitted WEF footprint based on the original design assumptions is within Location

[1] For the purposes of this assessment, the permitted WEF / footprint is considered to be the layout shown on the indicative layout plan referenced within condition 1 of PL-SP/05/0548 (*Map No. WF 02C; Rev. 01; dated 23/05/2010*), but modified to show the deletion of turbines, removal of other infrastructure associated with the deleted turbines and resiting of turbines as required by condition 1(a), (b) and (c) of the existing Permit. The optimised footprint was a footprint that was being developed to submit development plans pursuant to Condition 1 of the Permit, prior to the decision to pursue amendments to the Permit. The optimised permitted footprint was generally in accordance with the permitted WEF.

C, although approximately 15.915 hectares of native vegetation proposed to be removed. If the permitted WEF was to be assessed under the current guidelines it would fall under the High Risk-based pathway under Clause 52.17 Native Vegetation of the Pyrenees Planning Scheme.

The offset requirement for native vegetation removal associated with the permitted WEF footprint (based on the original design assumptions) is 1.993 General Biodiversity Equivalence Units (BEU). Specific Offset requirements are Button Wrinklewort (0.575 specific BEUs) and White Sunray (1.010 specific BEUs). The offset requirement for native vegetation removal associated with the permitted WEF footprint (based on the current design assumptions) is 4.172 General Biodiversity Equivalence Units (BEU). Specific Offset requirements are Button Wrinklewort (1.044 specific BEUs), White Sunray (1.853 specific BEUs), and Matted Flax Lily (1.252 specific BEUs).

The amended WEF footprint is also within Location C, with 34.415 hectares of native vegetation proposed to be removed. As such, the application to amend the Permit also falls under the High Risk-based pathway. The offset requirement for native vegetation removal is 5.176 General Biodiversity Equivalence Units (BEU).

Summaries of proposed vegetation losses and associated offset requirements for both the permitted and amended WEF are presented in the Biodiversity Impact and Offset Requirements (BIOR) Report (Appendix J and K).

Legislative and Policy Implications

EPBC Act

Due to the fact that the amended WEF footprint is considered a different 'action' under the EPBC Act, and is likely to impact matters of National Environmental Significance (namely a known population and 1.57 hectares of Golden Sun Moth habitat, and 0.06 hectares of NTGVVP), the project should be re-referred to the DoE for assessment under the EPBC Act. Given the small and insignificant area of proposed impact to confirmed Golden Sun Moth habitat and NTGVVP a likely outcome of the EPBC Act referral is a 'non controlled action – particular manner' decision.

The particular manner provisions of the EPBC Act allow the decision-maker to take into account such practices, design features and mitigation measures which avoid or reduce significant impacts on matters protected by the Act, and this is what has been demonstrated for this project (i.e. detailed surveys to accurate document the extent of matters of NES, and adjustments to the development footprint to avoid impacts to EPBC Act-listed species and ecological communities). As a result a not controlled action particular manner decision should be taken, and assessment and approval under the EPBC Act is not necessary to ensure that the objectives of the Act are met.

The particular manner will need to be set out in detail in the initial referral, or in any additional information provided by SHWFPL in order to make clear the manner in which the action is proposed to be taken.

It is understood that SHWFPL has discussed the proposed changes to the WEF footprint with DoE and the measures that will be undertaken to avoid, minimise and offset the impacts to matters NES.

FFG Act

The planning authority may consider flora, fauna and communities listed under the FFG Act when making decisions regarding the use and development of land. There is suitable habitat within the study area for several species listed or protected under the FFG Act. A permit under the FFG Act is required as the study area is located on public land.

EE Act

Based on the proposed ecological impacts associated with the amended WEF footprint, it is reasonable to conclude from a biodiversity perspective that an assessment of the project under the EE Act is not warranted. The reason for this is that the majority of the remnant native vegetation proposed to be removed is of low quality, and the project will not lead to the loss of any significant species and associated habitats, threatened ecological communities, or wetlands supporting migratory birds.

The Guidelines

Clause 52.17 Native Vegetation of the *Pyrenees Planning Scheme* requires a planning permit to be obtained to remove, destroy or lop native vegetation. A permit was issued previously and this report compares the permitted WEF footprint with the amended WEF footprint, in accordance with the Guidelines (DEPI 2013).

The amended WEF footprint has demonstrated the minimisation requirement for a High Risk-based Pathway application and the offset requirement for native vegetation removal is 5.176 General Biodiversity Equivalence Units (BEU). The required offset should be readily achieved through Over-the-Counter facility through bushbroker based on available offsets in the local municipality and broader Catchment Management Authority area.

Comparison of impacts between the Permitted WEF Footprint and Amended WEF Footprint

Significant species and ecological communities

There are several proposed alterations to the WEF footprint that have resulted in the avoidance of ecological impacts. A comparison of impacts to significant species and ecological communities between the permitted WEF footprint and the amended WEF footprint is as follows:

- A reduction of approximately 0.49 hectares of NTGVVP (0.55 hectares in the permitted WEF footprint compared with 0.06 hectares for the amended WEF footprint) proposed to be impacted
- The avoidance of populations of White Sunray along Eurambeen Stratham Road and Stockyard Hill Road, along with the avoidance of Matted Flax-lily along Cheesemans Road;
- The avoidance of a small population of Golden Cowslips in Property 4 and Arching Flax-lily along Geelong Road. However, the amended WEF footprint will potentially impact a small population of Golden Cowslips in the north eastern portion of Property 4;
- The avoidance of several hectares of remnant native vegetation and scattered remnant trees;
- A reduction of approximately 1.1 hectares of confirmed Golden Sun Moth habitat (2.67 hectares in the permitted WEF footprint compared with 1.57 hectares for the amended WEF footprint) across Property 4; and
- The amended WEF footprint and permitted WEF footprint are likely to impact areas of potential Striped Legless Lizard habitat. Within the amended WEF footprint, although approximately 37.13 hectares of medium quality habitat for Striped Legless Lizard is proposed to be impacted across properties 24 and 52 (Figure 2d), the species presence has not been confirmed in these areas. This compares with approximately 0.41 hectares of high quality habitat and 35.27 hectares of medium quality habitat for Striped Legless Lizard across the permitted wind farm footprint.

Native vegetation and offsets

The most significant difference between the permitted WEF and the amended WEF is the specific offsets required. The permitted WEF (under the original design assumptions) requires specific offsets for three species: Button Wrinklewort, White Sunray, and Matted Flax Lily, along with general offsets. If considered under the current design assumptions, specific offsets are required for two species: Button Wrinklewort and White Sunray. In comparison, the amended WEF has no specific offsets required and will only require general offsets.

The previous habitat hectare assessment undertaken to inform the original permit application WEF footprint (BLA 2009) identified that 5.28 hectares of remnant native vegetation was proposed to be removed, with an associated offset target of 3.09 habitat hectares under the Net Gain policy (NRE 2002). These figures are specified in the Permit, whereby Condition 6(f) of the Permit states that as part of the native vegetation management plan, it must include a plan showing '*a clear extent of the 5.28 ha (3.09 habitat hectares) of native vegetation to be removed*'.

While the total extent of remnant native vegetation proposed to be removed associated with the amended WEF footprint is greater than the area outlined in the former assessment (BL&A 2009), given the highly modified nature of the patches of vegetation and the subsequent low habitat score (i.e. the majority of patches have a habitat score of 0.23 or less), along with the low Strategic Biodiversity Score (i.e. 0.293) this has led to a very similar offset requirement for the amended WEF footprint. That is, 5.176 general BEUs for the amended footprint (assessed under the Guidelines) which typically costs approximately $750,000 to offset, and under the former Framework, 3.09 habitat hectares for the permitted WEF footprint translates to an offset cost of approximately $550,000.

Recommendations

Several recommendations are provided, including further micro-siting through detailed design (post approval) to avoid areas supporting remnant native vegetation which will be outlined in a detailed Environment Management Plan. Additionally, an application to amend Planning Permit No. PL-SP/05/0548, including changes to Permit Conditions 3, 6f, 6g, 6h, 9, 10 and 14 will prepared. There will also be a requirement to fulfil the offsets under the Guidelines pertaining to the WEF, and offsets are likely to be achieved via Over the Counter scheme within the local municipality jurisdiction or the Catchment Management Authority area.

Finally, given the amended WEF footprint is considered a different 'action' under the EPBC Act, and is likely to impact matters of National Environmental Significance (namely a known population and approximately 1.57 hectares of suitable Golden Sun Moth habitat, and 0.06 hectares of NTGVVP), the project should be re-referred to the DoE for assessment under the EPBC Act. However, due to the small and insignificant area of proposed impact to confirmed Golden Sun Moth habitat and NTGVVP a likely outcome of the EPBC Act referral is a 'non controlled action – particular manner' decision.

CONTENTS

SUMMARY 4
1 INTRODUCTION 12
1.1 Background 12
1.1.1 Permitted WEF 12
1.1.2 Amended WEF 13
1.2 Scope and Objectives 15
1.3 Study Area 15
2 METHODS 17
2.1 Desktop Assessment 17
2.2 Site Assessments 17
2.3 Permitted Clearing Assessment (the Guidelines) 17
2.3.1 Risk-based Pathway 18
2.3.2 Vegetation Assessment 18
2.3.3 Impact Minimisation 19
2.3.4 Offsets 19
2.4 Assessment Qualifications and Limitations 19
3 RESULTS 20
3.1 Vegetation 20
3.1.1 Pre-project approval (BLA 2009) 20
3.1.2 Post-project approval (Ecology and Heritage Partners) 20
3.2 Significant Species and Ecological Communities 22
3.2.1 Pre-project approval (BLA 2009) 22
3.2.2 Post-project approval (Ecology and Heritage Partners) 22
3.3 Native Vegetation Management Framework (Net Gain) 24
3.4 Permitted Clearing Assessment (the Guidelines) 25
3.4.1 Permitted WEF footprint 25
3.4.2 Amended WEF footprint 26
4 LEGISLATIVE AND POLICY IMPLICATIONS 28
4.1 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) 28
4.1.1 Implications 29
4.2 Flora and Fauna Guarantee Act 1988 (Victoria) 33
4.2.1 Implications 33

4.3 Environment Effects Act 1978 (Victoria) 33
4.3.1 Implications 34
4.4 Permitted Clearing of Native Vegetation - Biodiversity Assessment Guidelines 34
4.4.1 Implications 35
4.5 Wildlife Act 1975 and Wildlife Regulations 2013 (Victoria) 35
4.5.1 Implications 35
4.6 Catchment and Land Protection Act 1994 (Victoria) 35
4.6.1 Implications 35
5 MITIGATION MEASURES 36
5.1 Minimise Impacts 36
5.1.1 Contribution to Victoria's Biodiversity 36
5.1.2 Minimisation Statement 37
5.2 Offset Impacts 39
6 IMPACT COMPARISON AND RECOMMENDATIONS 41
6.1 Impact Comparison 41
6.1.1 Significant species and ecological communities 41
6.1.2 Native vegetation and offsets 42
6.2 Amendment of Planning Permit Conditions 43
6.3 Recommendations 43
REFERENCES 46
FIGURES 48
Figure 1 – Ecological features within the study area 49
Figure 2 – Significant fauna species listed under the EPBC Act 50
Figure 3 – Proposed impacts to remnant native vegetation within the study area 51
Figure 4 – Advoidance of impacts to known Golden Sun Moth habitat 52
APPENDICES 53
Appendix A – Permitted WEF Indicative Layout Plan 54
Appendix B – Planning Permit Conditions 55
Appendix C – Amended WEF Indicative Layout Plan 59
Appendix D – Natural Temperate Grassland of the Victorian Volcanic Plain and Targeted Flora Surveys 60
Appendix E – Targeted Spiny Rice-flower Surveys 61
Appendix F – Targeted Striped Legless Lizard Surveys 62
Appendix G – Targeted Striped Legless Lizard Surveys of proposed Borrow Pits 63
Appendix H – Detailed Flora Investigations 64

Appendix I – Targeted Golden Sun Moth Surveys, 2011/12 and 2012/13 Flight Seasons 65

Appendix J – Biodiversity Impact and Offset Requirements (BIOR) Report for the Permitted WEF Footprint 66

Appendix K – Biodiversity Impact and Offset Requirements (BIOR) Report for the Amended WEF Footprint 67

Appendix L – EPBC Act Approval..... 68

1 INTRODUCTION

1.1 Background

Stockyard Hill Wind Farm Pty Ltd (SHWFPL) (a subsidiary of Origin Energy) is developing a wind farm project in south-west Victoria, known as the Stockyard Hill Wind Farm (SHWF).

The project has three components - a Wind Energy Facility (WEF), a grid connection (approximately 75 kilometres of overhead powerlines and terminal station) and a quarry. This document relates to the WEF component of the project. It was determined on 29 September 2008 that no Environment Effects Statement (EES) was required to be prepared, subject to three conditions under the *Environment Effects Act 1978* (EE Act) and that the *Planning and Environment Act 1987* could adequately assess the Project.

Planning Permit No. PL-SP/05/0548 (Pyrenees Planning Scheme) (the Permit) was issued by the Minister for Planning on 26 October 2010 to enable the use and development of the SHWF WEF, including associated native vegetation removal.

SHWFPL has now decided to progress the preparation of an application to amend the Permit under Section 97I of the *Planning and Environment Act 1987*. The primary driver for the amendment application is to seek approval for taller turbines to achieve more efficient generation of energy. However, as a result of the proposed taller turbines and to ensure the Permit reflects current standards, guidelines and departments, there are a number of other amendments proposed as part of the application. The proposed amendments to the Permit are discussed below (Table 1).

In addition, the WEF was approved as a 'controlled action' under the *Environment Protection and Biodiversity and Conservation Act 1999* (EPBC Act) on 11 February 2011 (Approval 2009/4719) subject to a number of conditions.

1.1.1 Permitted WEF

The Permit was issued by the Minister for Planning in October 2010 to enable the use and development of the SHWF WEF, subject to 48 conditions. In summary, the Permit allows for:

- Up to 157 turbines sites (with a maximum tower height of 80m, blade length of 52m and tip height of 132m);
- Underground electrical reticulation network;
- Access track network;
- Up to 5 electricity substations;
- 132 kV overhead powerlines;
- A maintenance facility;
- temporary staging areas allowing for three temporary concrete batching plants;
- Up to 8 anemometers (monitoring masts);
- Removal of native vegetation; and
- Car parking and bicycle facilities.

The permitted layout is shown on the map contained in Appendix A[2], whilst the Permit conditions, as relevant to biodiversity are outlined in Appendix B.

1.1.2 Amended WEF

The amendment is proposed to enable physical changes to the project and amendments to the permit conditions.

Non-physical changes proposed include amendments to the Permit conditions as a result of the proposed physical changes and/ or administrative improvements (departmental name changes, changes to guidelines etc.). The proposed changes to the Permit conditions, as relevant to biodiversity, are outlined in Appendix B.

The 'physical' amendments proposed to be undertaken to the permitted WEF are described below (Table 1) and shown in Appendix C.

Table 1. Summary of proposed 'physical' amendments to the SHWF WEF

Proposed Amendments		Reason for amendment
Turbine Dimensions	The turbine envelope proposed includes: • overall maximum tip height must not exceed 180m above natural ground level; • hub-height of no greater than 120m above natural ground level; and • rotor diameter no greater than 140m.	• To allow for taller turbines to achieve more efficient generation of energy.

Layout	*Turbine locations*
	• Ultimate design for up to 149 wind turbine locations, consisting of the following changes:
	  ○ Relocation of 3 turbines onto 3 new titles within the centre of the WEF site (adjoining existing permitted address of lands).
	  ○ Addition of 4 new turbine locations within the existing permit address of lands.
	  ○ Deletion of 12 turbine locations.
	• Movement of most turbine positions, generally limiting movement to 250m from the permitted layout.
	Civil and electrical infrastructure
	• Optimisation and relocation of the associated civil and electrical infrastructure within the WEF area.
		• In response to the spacing required for larger turbines.
		• To ensure compliance with shadow flicker and noise conditions of PL-SP/05/0548.

WEF boundary	Deleted and addition of land parcels in the Address of Lands.	• Re-design / optimisation process. • Relocation of 3 turbines onto land currently not

[2] For the purposes of this assessment, the permitted layout is considered to be the layout shown on the indicative layout plan referenced within condition 1 of PL-SP/05/0548 (*Map No. WF 02C; Rev. 01; dated 23/05/2010*), but modified to show the deletion of turbines, removal of other infrastructure associated with the deleted turbines and resiting of turbines as required by condition 1(a), (b) and (c). Additionally, whilst the original referrals made under the EE Act and EPBC Act related to a larger project (e.g. before the loss of 85 turbine locations during the planning permit process), for the purpose of self-assessments (and potentially referrals) under the EE Act and EPBC Act the project 'permitted' under PL-SP/05/0548 will be used to understand any change in impacts.

Proposed Amendments		Reason for amendment
		included in the Address of Lands.

Since the original planning permit application was prepared, and the Permit was issued, the turbine layout and other civil and electrical infrastructure impact areas have also been refined to ensure they accurately represent what will be required to construct the SHWF WEF (Table 2). The design assumptions used for the revised infrastructure footprint have been determined using the most conservative design outcomes for:

- The potential wind turbine options available within the specified dimensions, including craneage requirements (i.e. for turbine foundations, hardstands, access road widths and turn swept-paths);
- Hydrology and geotechnical conditions (which influence the level of cut and fill and drainage); and
- Period of construction (i.e. ground breaking activities during wetter periods are likely to lead to an increased disturbance area).

The actual area of disturbance associated with the construction and operation of the WEF will be optimised for minimal impact pending final major procurement decisions, detailed civil and electrical design and timing of project construction.

Table 2: Wind Energy Facility Footprint Assumptions

Infrastructure	Original Application	Amended WEF	Reason for difference
Access Tracks	5 m wide	General – 12.5 m wide Trunk – 13.5 m wide	Original design footprint assumed design as per minimal disturbance design (REpower MM92), being 4.4 m trafficable width with minimal verge. Revised design is based on largest design requirement for specified turbine dimensions, (5.5 m trafficable width) including allowance for road verges and drainage.
Underground Cable	Not specified	3 m wide	Original design footprint assumed cabling and access tracks followed the same alignment and did not account for their location side by side. Revised design assumes direct bury or open trenching construction outside of access track footprint.
Hardstands & Foundations	40 m x 25 m hardstands plus 16 m diameter foundations	50 m x 70 m including foundations	Original design footprint assumed design as per minimal disturbance design (REpower MM92). Revised design is based on largest design requirement for specified turbine dimensions.
Temporary Construction Facilities (Concrete Batching Plant / Staging Areas / Compound)	3 x 100 m x 100 m batch plants (north, south areas) 1 x 130 m x 250 m construction compound (west area)	2 x 100 m x 100 m (north/east area and south) 1 x 130 m x 250 m construction compound (west area) 1 x 100 m x 200 m (south area)	Original design assumes one batch plant located within main construction compound area. Revised design assumes west area batch plant located within quarry disturbance area (or alternatively within main compound). Revised design includes batching plant locations within other compound areas (i.e. substation construction area)
Permanent Maintenance Facility	1 x (100 m x 40 m)	1 x (100 m x 40 m)	No change
Substations / Switchyards	5 x dimensions not specified	4 x (100 m x 100 m)	One substation removed as part of project re-design. Revised design allows for temporary construction compound to be located adjacent to the substation site within the disturbance area.

Infrastructure	Original Application	Amended WEF	Reason for difference
Powerlines	(dimensions not specified)	10 m wide	Revised design allows for a conservative disturbance corridor for access, temporary materials storage and foundation construction.

1.2 Scope and Objectives

This document was prepared with the purpose to accompany an application to amend the Permit, and inform self-assessments (and referrals, if deemed required) under the EE Act, and/or EPBC Act, including:

- Review the relevant flora and fauna databases and available literature (e.g. previous ecological assessments);
- Conduct a site assessment to identify flora and fauna values within the study area;
- Provide maps showing any areas of remnant native vegetation and locations of any significant flora and fauna species, and/or fauna habitat (if present);
- An assessment of the potential impacts to ecological values (i.e. remnant native vegetation and significant species and ecological communities) within the study area;
- An assessment of the implications under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and State *Flora and Fauna Guarantee Act 1988* (FFG Act); and
- The implications under the current native vegetation policy, including required offsets associated with the permitted WEF footprint compared with the amended WEF footprint.

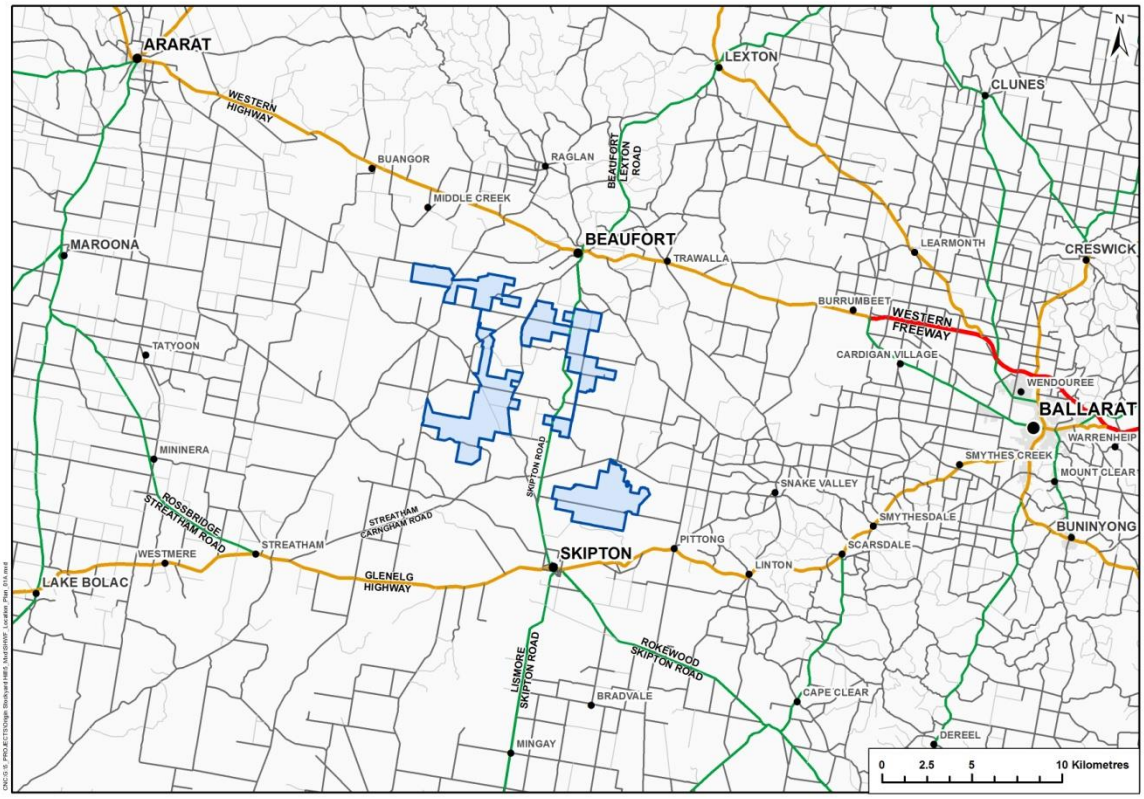
Where areas of remnant vegetation are present, the following tasks were completed to address requirements under the '*Permitted clearing of native vegetation - Biodiversity assessment guidelines*' (the Guidelines) (DEPI 2013):

- A habitat hectare assessment of any areas of remnant native vegetation within the study area;
- Recommendations to address requirements under the Guidelines to minimise impacts to remnant vegetation; and,
- Provision of offset targets for any native vegetation, scattered trees and habitat for rare or threatened species proposed to be impacted as a result of the proposed development.

1.3 Study Area

The study area is located in the Pyrenees Shire Council, approximately 150 kilometres west, north-west of Melbourne and approximately 35 kilometres west of Ballarat (Figure 1).

Figure 1 – WEF Site Location



The closest townships to the WEF site include Beaufort (approximately 4.5 kilometres north of the site) and Skipton (approximately four kilometres south of the site).

The site comprises approximately 155.3 km^2 (approximately 45.8 km^2 less than the permitted WEF) and is generally bound by Eurambeen-Streatham Road and Beaufort-Carranballac Road to the west, Stockyard Hill Road and Mt Emu Settlement Road in the south, Mount Emu Creek in the east and Ballrogan Road, Long Gully Road and Dalgleishs Road in the north. Skipton Road bisects the subject site. According to the Victorian Department of Environment, Land, Water and Planning (DELWP) Biodiversity Interactive Map (DELWP 2015a), the study area occurs within the Victorian Volcanic Plain and the Central Victorian Uplands bioregions. It is located within the jurisdiction of the Glenelg Hopkins Catchment Management Authority (CMA).

2 METHODS

2.1 Desktop Assessment

Relevant literature, online-resources and numerous databases were reviewed to provide an assessment of flora and fauna values associated with the study area. The following information sources were reviewed:

- The online Biodiversity Interactive Map (DELWP 2015a) to ascertain the extent of historic and current Ecological Vegetation Classes (EVCs);
- The online resource Planning Maps Online (DELWP 2015b);
- Aerial photography of the study area;
- Relevant environmental legislation and policies; and
- Previous ecological assessments, including targeted significant species and listed ecological community surveys within the study area.

2.2 Site Assessments

Previous ecological assessments were undertaken as part of the State (i.e. the EE Act and *Planning and Environment Act 1987* processes) and Commonwealth (EPBC Act) planning and approval stages of the project (BLA 2009). In addition, several ecological assessments (post project approval) were undertaken by Ecology and Heritage Partners between 2011 and 2013 to satisfy several of the approval conditions under the EBPC Act and the Permit. Namely those assessments that related to targeted surveys for significant species (i.e. Spiny Rice-flower, Striped Legless Lizard, Golden Sun Moth) and ecological communities (Natural Temperate Grassland of the Victorian Volcanic Plains) required pursuant to permit / approval conditions (Ecology and Heritage Partners 2011a, 2011b, 2011c, 2012a, 2012b, 2013a, 2013b, 2014a, 2014b) (Appendix D).

The results of habitat hectare assessment undertaken by Ecology and Heritage Partners (2014a) were used to determine the extent and quality of remnant native vegetation to be removed within the permitted and the amended WEF footprint, and the resulting offset requirements. Additional site assessments of the amended WEF footprint were undertaken on 10 December 2015 to identify any additional patches of remnant native vegetation and/or significant species and communities affected by the amended WEF footprint. Areas within the permitted WEF footprint that had previously been assessed (Ecology and Heritage Partners 2014a) were also assessed, where required, on 10 December 2015.

2.3 Permitted Clearing Assessment (the Guidelines)

Under the Pyrenees Planning Scheme, Clause 52.17 Native Vegetation requires a planning permit to remove, destroy or lop native vegetation (unless an exempt applies). The assessment process for the clearing of vegetation follows the '*Permitted clearing of native vegetation - Biodiversity assessment guidelines*' (the Guidelines) (DEPI 2013). However, the Permit (and assessments conducted pre approval) refers to *Victoria's Native Vegetation Management – A Framework for Action* (The Framework) (NRE 2002) which was the native vegetation policy at the time that the planning permit application was assessed. The Guidelines have since superseded the Framework.

The application to amend the Permit the proposed removal of remnant native vegetation will be assessed under the current native vegetation policy (i.e. the Guidelines). Three scenarios of clearing will be assessed:

1. Native vegetation impacted by the permitted WEF footprint, based on the original design assumptions as described in Section 1.1.2;
2. Native vegetation impacted by the permitted WEF footprint, based on the current design assumptions as described in Section 1.1.2 (i.e. a larger footprint than that based on the original design assumptions); and
3. Native vegetation impacted by the amended WEF footprint.

2.3.1 Risk-based Pathway

The Guidelines manage the impacts on biodiversity from native vegetation removal using a risk-based approach. Two factors – extent risk and location risk – are used to determine the risk associated with an application for a permit to remove native vegetation. The location risk (A, B or C) has been determined for all areas in Victoria and is available on DELWP's Native Vegetation Information Management (NVIM) Tool (DELWP 2016a). Determination of risk-based pathway is summarised in Table 3.

Table 3. Risk-based pathways for applications to remove native vegetation (DEPI 2013)

Extent		Location		
		A	B	C
Native Vegetation	< 0.5 hectares	Low	Low	High
	≥ 0.5 hectares and < 1 hectare	Low	Moderate	High
	≥ 1 hectare	Moderate	High	High
Scattered Trees	< 15 scattered trees	Low	Moderate	High
	≥ 15 scattered trees	Moderate	High	High

Notes: For the purpose of determining the risk-based pathway of an application to remove native vegetation the extent includes any other native vegetation that was permitted to be removed on the same contiguous parcel of land with the same ownership as the native vegetation to be removed, where the removal occurred in the five year period before an application to remove native vegetation is lodged.

2.3.2 Vegetation Assessment

Native vegetation (as defined in Table 4) is assessed using two key parameters: extent (in hectares) and condition. Extent is determined through a site assessment. The condition score for High Risk-based pathways must be assessed through a habitat hectare assessment conducted by a qualified ecologist. The condition score for Low Risk-based pathways may be based on either modelled data available on the NVIM Tool (DELWP 2016a), or through a habitat hectare assessment.

Table 4. Determination of remnant native vegetation (DEPI 2013)

Category	Definition	Extent	Condition
Remnant patch of native vegetation	An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native. OR An area with three or more native canopy trees where the canopy foliage cover is at	Measured in hectares. Based on hectare area of the remnant patch.	Vegetation Quality Assessment Manual (DSE 2004).

Category	Definition	Extent	Condition
	least 20 per cent of the area.		
Scattered tree	A native canopy tree that does not form part of a remnant patch.	Measured in hectares. Each scattered tree is assigned an extent of 0.071 hectares (30m diameter).	Scattered trees are assigned a default condition score of 0.2.

Notes: Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'.

2.3.3 Impact Minimisation

Applications under the Moderate and High risk-based pathways must include a statement outlining steps taken to minimise the impact of the removal of native vegetation on Victoria's biodiversity, along with an assessment of whether the proposed removal of native vegetation will have a significant impact on Victoria's biodiversity (DEPI 2013). The impact minimisation statement is provided in Section 5.1.2.

2.3.4 Offsets

Offsets are required to compensate for the permitted removal of native vegetation. Offsets are divided into two categories: General and Specific. When the removal of native vegetation has a significant impact on habitat for a specific rare or threatened species, the offset must compensate for the removal of that particular species' habitat. This is referred to as a specific offset. When the removal of native vegetation does not have a significant impact on the habitat of a particular rare or threatened species, a general offset must be obtained (DEPI 2013). Offset obligations and offset site criteria are determined in accordance with the Guidelines (DEPI 2013).

The offset requirements for native vegetation removal are calculated by DELWP, based on the vegetation condition scores determined during the biodiversity assessment (Ecology and Heritage Partners 2014a). The resulting Biodiversity Impact and Offset Requirements (BIOR) Reports for the permitted WEF footprint and the amended WEF footprint are provided in Appendix J and K, respectively.

2.4 Assessment Qualifications and Limitations

Data and information held within the ecological databases and mapping programs reviewed in the desktop assessment (e.g. VBA, PMST, NVIM etc.) are unlikely to represent all flora and fauna observations within, and surrounding, the study area. It is therefore important to acknowledge that a lack of documented records does not necessarily indicate that a species or community is absent, but instead may reflect a lack of survey effort.

Ecological values identified on site are recorded using a hand-held GPS or tablet with an accuracy of +/-5 metres. This level of accuracy is considered adequate to provide an accurate assessment of the ecological values present within the study area; however this data should not be used for detailed surveying purposes.

Terrestrial flora and fauna data collected during the field assessments and information obtained from relevant desktop sources is considered adequate to provide an accurate assessment of the ecological values currently present, or likely to be present within the study area.

3 RESULTS

3.1 Vegetation

3.1.1 Pre-project approval (BLA 2009)

The original ecological assessment that was undertaken to support the original planning permit application was prepared in 2009 (BLA 2009). A summary of the type and extent of remnant native vegetation, the known and likelihood of significant species and ecological communities occurring within the study area, and an assessment of the implications of the proposed removal of remnant native vegetation associated with the proposed development under the former native vegetation policy (i.e. the Framework) (NRE 2002) is provided below.

The original ecological assessment included a flora assessment conducted from 10 to 13 November 2007 (BLA 2009). During the field assessment, the entire study area was surveyed by vehicle and accessible areas potentially supporting native vegetation were assessed on foot. The area surveyed fully encompassed the permitted and amended WEF footprints. Ground-truthing during this investigation identified the presence of the following EVCs within the study area (BLA 2009):

- Heathy Dry Forest (EVC 20) in the Central Victorian Uplands bioregion;
- Plains Grassy Woodland (EVC 55) in the Central Victorian Uplands bioregion;
- Grassy Woodland (EVC 175_61) in the Central Victorian Uplands bioregion;
- Grassy Woodland/Heathy Dry Forest Complex (EVC 896) in the Central Victorian Uplands bioregion;
- Plains Grassy Wetland (EVC 125) in the Victorian Volcanic Plain bioregion;
- Heavier-soils Plains Grassland (EVC 132_61) in the Victorian Volcanic Plain bioregion; and
- Stony Rises Woodland (EVC 203) in the Victorian Volcanic Plain bioregion.

3.1.2 Post-project approval (Ecology and Heritage Partners)

Detailed ecological assessments (including targeted significant species surveys) and habitat hectare assessments were undertaken along the optimised WEF footprint, which included most of the permitted WEF footprint, to satisfy several of the EPBC Act approval conditions and the planning permit conditions for the WEF (Ecology and Heritage Partners 2011a, 2011b, 2011c, 2012a, 2012b, 2013a, 2013b, 2014a, 2014b). The assessments completed post-project approval, include:

- Ecology and Heritage Partners Pty. Ltd. 2011a. Preliminary Ecological Assessments for the Stockyard Hill Wind Farm, Stockyard Hill, Victoria. Unpublished report for Stockyard Hill Wind Farm Pty Ltd.
- Ecology and Heritage Partners Pty Ltd 2011b. Stockyard Hill Wind Farm, Natural Temperate Grassland of the Victorian Volcanic Plain and Targeted Flora Surveys. Unpublished report prepared for Stockyard Hill Wind Farm Pty Ltd (Appendix D).
- Ecology and Heritage Partners Pty Ltd 2011c. Stockyard Hill Wind Farm targeted Spiny Rice-flower surveys. Unpublished report prepared for Stockyard Hill Wind Farm Pty Ltd (Appendix E).
- Ecology and Heritage Partners Pty Ltd 2012a. Targeted Striped Legless Lizard *Delma impar* surveys of the Stockyard Hill Wind Farm, Stockyard Hill, Victoria. Unpublished report prepared for Stockyard Hill Wind Farm Pty Ltd (Appendix F).

- Ecology and Heritage Partners Pty Ltd 2013. Targeted Striped Legless Lizard surveys of proposed borrow pits within Stockyard Hill Wind Farm, Stockyard Hill, Victoria. Unpublished report prepared for Stockyard Hill Wind Farm Pty Ltd (Appendix H).
- Ecology and Heritage Partners Pty Ltd 2014a. Detailed Flora Investigations for the Stockyard Hill Wind Farm, Victoria. Unpublished report prepared for Stockyard Hill Wind Farm Pty Ltd (Appendix I).
- Ecology and Heritage Partners Pty Ltd 2014b. Targeted Golden Sun Moth *Synemon plana* Surveys for 2011/12 and 2012/13 at Stockyard Hill Wind Farm, Stockyard Hill, Victoria. Unpublished report for Stockyard Hill Wind Farm Pty Ltd (Appendix J).

A summary of the outcomes of these reports is provided below.

Ten EVCs (ranging from poor to very good condition) were recorded within the Victorian Volcanic Plain and the Central Victorian Uplands bioregions within the study area during the field assessments (Table 5).

Table 5. Ecological Vegetation Classes recorded in the study area

Ecological Vegetation Class	Number
Victorian Volcanic Plain bioregion (VVP)	
Heavier-Soils Plains Grassland	132_61
Plains Grassy Woodland	55_61
Higher Rainfall Plains Grassy Woodland	55_63
Stony Knoll Shrubland	649
Stony Rises Woodland	203
Plains Grassy Wetland	125
Creekline Grassy Woodland	68
Central Victorian Uplands (CVU)	
Grassy Dry Forest	22
Grassy Woodland	175_61
Heathy Dry Forest	20
Plains Grassy Wetland	125
Plains Grassy Woodland	55

Remnant native vegetation is largely restricted to road reserves and intersections with small degraded areas on private land. Scattered remnant indigenous River Red-gums *Eucalyptus camaldulensis* are present along road reserves and scattered across private property.

Of the EVCs that are present within the study area (Table 5), the following are proposed to be impacted by the amended WEF: Creekline Grassy Woodland, Grassy Dry Forest, Grassy Woodland, Heathy Dry Forest, Plains Grassland, Plains Grassy Wetland, Plains Grassy Woodland, Stony Knoll Scrubland and Stony Rises Woodland. The total area of proposed removal is outlined in the detailed the BIOR Reports (Appendix J and K).

3.2 Significant Species and Ecological Communities

3.2.1 Pre-project approval (BLA 2009)

As outlined in BLA (2009) an analysis of the likelihood of occurrence of species listed under the EPBC Act and FFG Act, based on the initial field investigation, indicated that 11 of these species: Small Milkwort, Australian Anchor Plant, Clover Glycine, Ben Major Grevillea, Adamson's Blown-grass, White Sunray, Spiny Rice-flower, Salt-lake Tussock-grass, Hairy Tails, Button Wrinklewort and Swamp Everlasting, may occur in the study area. However, no EPBC Act-listed species were recorded during the surveys (BLA 2009).

Several other significant species identified by the Flora Information Systems (FIS) and EPBC Act Protected Matters Search Tool were considered unlikely to occur in the study area due to a lack of suitable habitat. Areas where the development footprint may intersect areas of remnant native vegetation were surveyed for rare and threatened species in early spring 2008 (BLA 2009) and no State significant species were detected.

A number of national and State significant fauna have previously been recorded from the local area (BLA 2009). An assessment of the likelihood of occurrence and potential impacts on significant fauna species is provided on Pages 36-84 (BLA 2009), and this assessment is relevant to the application to amend the Permit.

3.2.2 Post-project approval (Ecology and Heritage Partners)

3.2.2.1 Nationally significant species and ecological communities

Targeted surveys for significant species and ecological communities have previously been undertaken across the study area (Ecology and Heritage Partners 2011a, 2011b, 2012a, 2012b, 2013a, 2013b, 2014b). The following is a summary of the results of the targeted surveys for EPBC Act-listed flora species and ecological communities listed under the EPBC Act that were undertaken after the project was approved (i.e. surveys were undertaken to satisfy the planning permit and EPBC Act approval conditions):

- Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens*: Although some suitable habitat was identified in the study area for this species, a desktop assessment found that there are no previous records of the species within the study area. Detailed targeted surveys for Spiny Rice-flower conducted in July-August 2011 did not locate any specimens within the permitted and amended WEF footprint study area (Ecology and Heritage Partners 2011c) (Appendix E).
- Matted Flax-lily *Dianella amoena*: While this species was recorded at two locations within the broader study area (i.e. in Heavier-Soils Plains Grassland along Cheesemans Road reserve and Carngham – Streatham Road reserve) (Figure 1c and 1f) (Appendix D), the species is was not recorded within the permitted and amended WEF footprint and is not likely to be impacted.
- White Sunray *Leucochrysum albicans* var. *tricolor*: Approximately 30 White Sunray plants were recorded within the broader study area during targeted surveys (Figure 1) (Appendix D). Plants were recorded within the road reserve on the east side of the Eurambeen Streatham Road and along sections of Stockyard Hill Road. Under the permitted WEF the White Sunray population was proposed to be bisected by an access track leading to a turbine location. However, as a result of changes to the amended WEF footprint in this area plants will be avoided.
- Striped Legless Lizard *Delma impar*: This species has a patchy distribution within the study area, and has been recorded during targeted surveys from areas of suitable grassland habitat primarily along roadside remnants (Appendix F). Under the permitted WEF Striped Legless Lizard habitat was proposed to be impacted in areas supporting native grassland (principally in the southern portion of

the study area). Areas of potentially suitable habitat for Striped Legless Lizard are likely to be impacted by the amended WEF.

- Golden Sun Moth *Synemon plana*: All suitable areas within the study area have been surveyed for this species. The species was detected in high numbers from a single property (property 4) within the study area (Figure 2b) (Appendix I), in both the permitted or amended WEF footprints with a reduction in impact in the amended footprint (i.e. Property 4).
- Natural Temperate Grassland of the Victoria Volcanic Plain: This community was recorded during pervious detailed ecological surveys and occurs mostly in road reserves (Appendix D). Areas of NTGVVP are largely restricted to road reserves and intersections within the study area (Figure 1). A reduction of 0.49 hectares of this community is proposed to be disturbed by the amended WEF (now 0.06 ha), compared with the permitted WEF (0.55 hectares).

Despite the presence of suitable habitat and nearby documented records, Ben Major Grevillia, Clover Glycine, Adamson's Blown Grass, Button Wrinklewort, Swamp Everlasting, and Salt-Lake Tussock-Grass, specimens were not recorded during targeted surveys. It is considered unlikely that any of these EPBC Act-listed species will be impacted by either the permitted or amended WEF footprint.

Similarly, with the exception of Growling Grass Frog where this is low quality habitat in the form of artificial waterbodies (e.g. farm dams) and ephemeral drainage lines, and where the species or its habitats are unlikely to be impacted by the amended WEF, no other EPBC Act-listed fauna species are expected to reside within the study area and be impacted by either the permitted or amended WEF footprint.

3.2.2.2 State significant species and ecological communities

One significant species listed under the FFG Act (Plump Swamp Wallaby-grass *Amphibromus pithogastrus*) and three state significant species (Golden Cowslips *Diuris behrii*, Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra) and Slender Bindweed *Convolvulus angustissimus* subsp. *omnigracilis*) that are not listed under the FFG Act were recorded during the assessment (Ecology and Heritage Partners 2014) (Appendix I). The following is a summary of the results of the targeted surveys for State significant flora species and ecological communities listed under the FFG Act:

- Plump Swamp Wallaby-grass *Amphibromus pithogastrus*: Plump Swamp Wallaby-grass *Amphibromus pithogastrus* (Endangered in Victoria, listed under the FFG Act) was recorded within the study area along Dunnets Road (Figure 1i). Only a few individuals were recorded in moderate quality vegetation. It may possible that this area can be avoided through detailed design and micro-siting.
- Golden Cowslips *Diuris behrii*: Approximately 13 Golden Cowslips (Vulnerable in Victoria, not listed under the FFG Act) were recorded within the study area during the targeted surveys (Ecology and Heritage Partners 2014). Plants were located within the road reserve on the east side of the Eurambeen Streatham Road (Figure 1a) (occurring alongside the EPBC Act-listed White Sunray and NTGVVP) and along the permitted WEF footprint on Property 4 (Figure 1b). The amended WEF footprint also intersects in the north east portion of Property 4 (Figure 1b) where Golden Cowslips has previously been recorded.
- Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra): A single Arching Flax-lily (Vulnerable in Victoria, not listed under the FFG Act) plant was detected along the Geelong Road reserve (Figure 1d) within the permitted WEF footprint. No Arching Flax-lily plants are proposed to be impacted by the amended WEF.

- Slender Bindweed *Convolvulus angustissimus* subsp. *omnigracilis*: Slender Bindweed (Poorly Known, not listed under the FFG Act) was recorded at one location along the Stockyard Hill Road reserve (habitat zone PG4) (Figure 1j). No Slender Bindweed plants are proposed to be impacted along the permitted or the amended WEF footprint.

A further 21 state significant flora species have previously been recorded in the local area (FIS; Ecology and Heritage Partners 2014). There is habitat for three significant flora species within the study area: Hairy Tails, Small Milkwort, and Australian Anchor Plant. However, no individuals were detected during targeted surveys, and therefore given the highly modified nature of the vegetation proposed to be disturbed, there is a low likelihood that any of these flora species will be impacted by the proposed development across the amended WEF footprint.

While several State significant fauna species have previously been recorded within the local area, the proposed development across the amended WEF footprint is unlikely to significantly impact any fauna species listed under the FFG Act.

One threatened community, the Western (Basalt) Plain Grassland floristic community, which is the state equivalent of the NTGVVP community and listed under the FFG Act, occurs within the study area on public land. Areas of the Western (Basalt) Plain Grassland community occur within patches of Heavier-soils Plains Grassland (EVC 132_61). All habitat zones of Heavier-soils Plains Grassland recorded within the study area, on public land, including those constituting NTGVVP, are part of the FFG Act listed community (Figure 1). No further ecological communities listed under the FFG Act are present within the study area and will not be impacted by the amended WEF.

3.3 Native Vegetation Management Framework (Net Gain)

The permitted WEF was assessed and approved under the Framework (NRE 2002), which has now been superseded by the Guidelines. This State Government former strategy, the Framework (NRE 2002), was developed to protect, enhance and revegetate Victoria's native vegetation and stated that the primary goal was to achieve:

'A reversal, across the entire landscape, of the long-term decline in the extent and quality of native vegetation, leading to a Net Gain' (NRE 2002).

When Net Gain was considered for potential impacts on native vegetation within all planning schemes, the Framework previously defined a three-step approach for applying Net Gain to protection and clearance decisions. The three-step approach is:

1. To avoid adverse impacts, particularly through vegetation clearance;
2. If impacts cannot be avoided, to minimise impacts through appropriate consideration in planning processes and expert input to project design or management; and,
3. Identify appropriate offset options.

The State Planning Policy Framework previously made specific reference to the Framework. The three-step approach to Net Gain was the first consideration for all planning permit applications and planning scheme amendments, with emphasis placed on the first two steps of avoidance and minimisation. Only after these two steps were taken should offsets (actions undertaken to achieve commensurate gains) be considered (NRE 2002).

A habitat hectare assessment of the WEF footprint was undertaken in spring 2008 as part of a Net Gain analysis under the Framework (NRE 2002) (BLA 2009). As outlined on Page 60 of BLA (2009), based on the

field assessments and WEF footprint at the time, there was an offset requirement of 3.09 habitat hectares under the Net Gain policy. Based on an offset target value of 3.09 habitat hectares, approximately 16 hectares of remnant native vegetation of equivalent EVCs was required to achieve the target, based on a potential 20% improvement of the offset site. The following approximate areas of specific EVCs were likely to be required to meet the abovementioned offset target and like-for-like criteria:

- 9.1 hectares of Heathy Dry Forest (EVC 20);
- 3.35 hectares Grassy Woodland/Heathy Dry Forest Complex (EVC 896);
- 0.05 hectares of Plains Grassy Woodland (EVC 55);
- 0.7 hectares of Grassy Woodland (EVC 175_61);
- 1.9 hectares of Heavier-soils Plains Grassland (EVC 132_61); and
- 0.2 hectares of Stony Rises Woodland (EVC 203).

There was also a requirement under the Net Gain policy to offset the loss of eight scattered remnant trees by recruiting several (n=10) new plants (BLA 2009).

3.4 Permitted Clearing Assessment (the Guidelines)

3.4.1 Permitted WEF footprint

For the purposes of the preparation of an application to amend the Permit, an assessment of the two permitted WEF footprint scenarios under the Guidelines has been completed and the results presented below.

The study area is within Location C. Under the current design assumptions, approximately 31.991 hectares of native vegetation is proposed to be removed. Under the original design assumptions, approximately 15.915 hectares of native vegetation is proposed to be removed. If the permitted WEF was to be assessed under the current guidelines it would fall under the High Risk-based pathway under Clause 52.17 Native Vegetation of the Pyrenees Planning Scheme (Table 6).

An updated habitat hectare assessment was completed by Ecology and Heritage Partners to determine condition scores of vegetation proposed to be removed (Ecology and Heritage Partners 2014) (Appendix I). There were over 250 native vegetation patches mapped, ranging in quality from a site assessed condition score of 0.11 to 0.77. The EVCs recorded included Grassy Woodland, Heathy Dry Forest, Plains Grassland, Plains Grassy Wetland, Plains Grassy Woodland, and Stony Rises Woodland.

Table 6. Permitted Clearing Assessment (the Guidelines): Permitted WEF

	Original design assumptions	Current design assumptions
Risk-based pathway	High	High
Total Extent	15.915 (this area includes the area calculated for the 12 scattered remnant trees)	31.991 (this area includes the area calculated for the 15 scattered remnant trees)
Remnant Patch (ha)	15.071	30.936
Scattered Trees (no.)	12	15
Location Risk	C	C
Strategic Biodiversity Score	0.358	0.364

3.4.1.1 *Offset Targets*

Under the original design assumptions, the offset requirement for native vegetation removal is 1.993 General Biodiversity Equivalence Units (BEU). Specific Offset requirements are Button Wrinklewort (0.575 specific BEUs) and White Sunray (1.010 specific BEUs) (Table 7).

Under the current design assumptions, the offset requirement for native vegetation removal is 4.172 General Biodiversity Equivalence Units (BEU). Specific Offset requirements are Button Wrinklewort (1.044 specific BEUs), White Sunray (1.853 specific BEUs), and Matted Flax Lily (1.252 specific BEUs) (Table 7).

A summary of proposed vegetation losses and associated offset requirements is presented below (Table 5) and the Biodiversity Impact and Offset Requirements (BIOR) Report is presented in Appendix J.

Table 7. Offset targets: Permitted WEF

	Original design assumptions	Current design assumptions
General Offsets Required	1.993 General BEUs	4.172 General BEUs
Specific Offsets Required	Button Wrinklewort (0.575 specific BEUs), White Sunray (1.010 specific BEUs)	Button Wrinklewort (1.044 specific BEUs), White Sunray (1.853 specific BEUs), Matted Flax Lily (1.252 specific BEUs)
Vicinity (catchment / LGA)	Glenelg Hopkins CMA / Pyrenees Shire Council	Glenelg Hopkins CMA / Pyrenees Shire Council
Minimum Strategic Biodiversity Score*	0.283	0.289

Note: BEU = Biodiversity Equivalence Units

3.4.2 Amended WEF footprint

The amended WEF footprint has been assessed under the Guidelines and the results presented below (Table 8). The study area is within Location C, with 34.415hectares of native vegetation proposed to be removed. As such, the application to amend the Permit falls under the High Risk-based pathway.

There are over 100 native vegetation patches mapped, ranging in quality from a site assessed condition score of 0.11 to 0.77. The EVCs recorded were: Creekline Grassy Woodland, Grassy Dry Forest, Grassy Woodland, Heathy Dry Forest, Plains Grassland, Plains Grassy Wetland, Plains Grassy Woodland, Stony Rises Woodland and Stony Knoll Shrubland.

As the application falls under the High Risk-based pathway, a habitat hectare assessment was completed to determine condition scores of vegetation proposed to be removed.

Table 8. Permitted Clearing Assessment (the Guidelines): Amended WEF

Risk-based pathway	High
Total Extent	34.415 (this area includes the area calculated for the 25 scattered remnant trees)
Remnant Patch (ha)	32.657
Scattered Trees (no.)	25
Location Risk	C
Strategic Biodiversity Score	0.369

3.4.2.1 *Offset Targets*

The offset requirement for native vegetation removal is 5.176 General Biodiversity Equivalence Units (BEU). A summary of proposed vegetation losses and associated offset requirements is presented below (Table 9) and in the Biodiversity Impact and Offset Requirements (BIOR) Report (Appendix K).

Table 9. Offset targets: Amended WEF

General Offsets Required	5.176 General BEUs
Specific Offsets Required	None
Vicinity (catchment / LGA)	Glenelg Hopkins CMA / Pyrenees Shire Council
Minimum Strategic Biodiversity Score*	0.296

Note: BEU = Biodiversity Equivalence Units

4 LEGISLATIVE AND POLICY IMPLICATIONS

4.1 *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)*

The EPBC Act establishes a Commonwealth process for assessment of proposed actions that are likely to have a significant impact on matters of NES, or on Commonwealth land. An action (i.e. project, development, undertaking, activity, or series of activities), unless otherwise exempt, requires approval from the Commonwealth Environment Minister if the action has, will have, or is likely to have, a 'significant impact' on a matter of NES.

A significant impact is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.

A comparison of potential relevant impacts under the EPBC Act for the permitted WEF and the amended WEF is provided below (Table 10). The matters of National Environmental Significance that are not relevant to the application to amend the Permit, include World Heritage properties, National heritage places, Commonwealth marine area, Nuclear actions, Great Barrier Reef Marine Park, and water resources impacted by coal seam gas or mining development.

Table 10. Potential impacts to relevant matters of National Environmental Significance (NES)

Matter of NES	Potential Impacts: Permitted WEF	Potential impacts: Amended WEF
Ramsar wetlands of international significance	The study area does not contain or occur in the vicinity of a Ramsar wetland (DoE 2015). Provided management practices and construction techniques are consistent with Construction Techniques for Sediment Pollution Control (EPA 1991) and Environmental Guidelines for Major Construction Sites (EPA 1996), the proposed action is unlikely to impact the ecological character of any Ramsar wetland.	The study area does not contain or occur in the vicinity of a Ramsar wetland (DoE 2015). Provided management practices and construction techniques are consistent with Construction Techniques for Sediment Pollution Control (EPA 1991) and Environmental Guidelines for Major Construction Sites (EPA 1996), the proposed action is unlikely to impact the ecological character of any Ramsar wetland.
Threatened species and ecological communities	Removal and/or disturbance of approximately 0.55 hectares of NTGVVP. Potential loss of several White Sunray plants along Eurambeen Stratham Road (Figure 1a). Potential loss of Matted Flax-lily along Cheesemans Road (Figure 1c and 1f); Removal and/or disturbance of approximately 2.67 hectares of known Golden Sun Moth habitat across Property 4 (Figure 2b). Loss and/or disturbance to low-medium quality Striped Legless Lizard habitat.	Removal and/or disturbance of approximately 0.06 hectares of NTGVVP. The avoidance of populations of the EPBC Act-listed White Sunray along Eurambeen Stratham Road (Figure 1a) and Stockyard Hill Road (Figure 1d and 1e); The avoidance of Matted Flax-lily along Cheesemans Road (Figure 1c and 1f); Avoidance of known Golden Sun Moth habitat across property 4 (Figure 2b) which will lead to a reduction of approximately 1.1 hectares in the amended WEF footprint compared with the permitted WEF footprint; and Loss and/or disturbance to low-medium quality Striped Legless Lizard habitat.
Migratory and marine species	Several Migratory and/or Marine species have been recorded within 10 kilometres of the study area (DELWP 2015d). However, the study area is not considered 'important habitat' as defined under the EPBC Act Policy Statement 1.1 Principal Significant Impact Guidelines (DoE 2013).	Several Migratory and/or Marine species have been recorded within 10 kilometres of the study area (DELWP 2015d). However, the study area is not considered 'important habitat' as defined under the EPBC Act Policy Statement 1.1 Principal Significant Impact Guidelines (DoE 2013).

4.1.1 Implications

The permitted WEF was previously referred under the EPBC Act and was subsequently deemed a 'controlled action' under the EPBC Act as the project was proposed to have an impact on 'listed threatened species and communities', and 'listed migratory species' (Appendix L). The bilateral assessment agreement between the Commonwealth and the State applied to the project.

Due to the fact that the amended WEF footprint is considered a different 'action' under the EPBC Act, and is likely to impact matters of National Environmental Significance (namely a known population and suitable habitat Golden Sun Moth, and 0.06 hectares of NTGVVP), the project should be re-referred to the DoE for assessment under the EPBC Act. Given the small and insignificant area of proposed impact to confirmed Golden Sun Moth habitat (i.e. approximately 1.57 hectares) and NTGVVP (i.e. 0.06 hectares) a likely outcome of the EPBC Act referral is a 'non controlled action – particular manner' decision.

Assessments against the Significant Impact Guidelines 1.1 (DoE 2013) for the NTGVVP ecological community and for the Golden Sun Moth are provided below (Table 11,

Table 12).

The particular manner provisions of the EPBC Act allow the decision-maker to take into account such practices, design features and mitigation measures which avoid or reduce significant impacts on matters protected by the Act, and this is what has been demonstrated for this project (i.e. detailed surveys to accurate document the extent of matters of NES, and adjustments to the development footprint to avoid impacts to EPBC Act-listed species and ecological communities). As a result a not controlled action particular manner decision should be taken, and assessment and approval under the EPBC Act is not necessary to ensure that the objectives of the Act are met.

The particular manner will need to set out in detail in the initial referral, or in any additional information provided by SHWFPL in order to make clear the manner in which the action is proposed to be taken. It is understood that SHWFPL has discussed the proposed changes to the WEF footprint with DoE and the measures that will be undertaken to avoid, minimise and offset the impacts to matters NES.

Table 11. Assessment against the Significant Impact Guidelines for Endangered or Critically Endangered Ecological Communities: NTGVVP ecological community (DoE 2013b).

Significant Impact Guidelines 1.1 – Significant Impact Criteria for Endangered or Critically Endangered Ecological Communities (NTGVVP)	
Significant impact Criteria	**Comment**
1. Reduce the extent of an ecological community.	The proposed development will result in the loss of very small area of modified NTGVVP (i.e. 0.06 hectares).
2. Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines.	The proposed removal of small patches of NTGVVP will not lead to the fragmentation of a much larger patch of NTGVVP (i.e. patches of NTGVVP are already fragmented and isolated for any larger patches).
3. Adversely affect habitat critical to the survival of an ecological community.	The proposed removal of NTGVVP will not adversely affect the long-term survival of the ecological community.
4. Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns.	Given the localised nature of the proposed action, groundwater levels, water drainage patterns and nutrient loads will not be affected by the proposed development.
5. Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting.	Due to the small, localised nature of the NTGVVP and the extent of the proposed removal, the overall functionality of the community within a landscape context will not be affected by the proposed development.

Significant Impact Guidelines 1.1 – Significant Impact Criteria for Endangered or Critically Endangered Ecological Communities (NTGVVP)	
6. Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: a. assisting invasive species, that are harmful to the listed ecological community, to become established or; b. causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.	The proposed development will result in the loss of 0.06 hectares of NTGVVP, however this loss is considered marginal due to the small area and isolated nature of the vegetation.
7. Interfere with the recovery of an ecological community.	The proposed development will not allow for the recovery of this community, however due to the minimal area of NTGVVP the loss is considered to be minimal.

As outlined in DoE (2013), an action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- Lead to a long-term decrease in the size of a population
- Reduce the area of occupancy of the species
- Fragment an existing population into two or more populations
- Adversely affect habitat critical to the survival of a species
- Disrupt the breeding cycle of a population
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat
- Introduce disease that may cause the species to decline, or
- Interfere with the recovery of the species.

Given that approximately 1.57 hectares of suitable grassland habitat that is known to support a population of Golden Sun Moth is proposed to be permanently removed as a result of the construction of internal access tracks and turbine bases, the extent of impacts are considered to be significant under the EPBC Act.

Table 12. Assessment against the Significant Impact Guidelines for Vulnerable species: Striped Legless Lizard (DSEWPaC 2011; DoE 2013).

Significant Impact Guidelines 1.1 – Significant Impact Criteria for a Vulnerable Species (Striped Legless Lizard)	
Significant Impact Criteria	**Comment**
1. Disrupt the breeding cycle of an 'important population', defined as: i) key source populations either for breeding or dispersal ii) populations that are necessary for maintaining genetic diversity iii) populations that are near the limit of the species range. iv) Sites less than 0.5 hectares v) Small isolated areas of habitat which are currently under pressure, or are likely to experience long-term pressures (for example sites located within urban settings, such as adjacent to factories or in residential subdivisions) vi) Small sites which support marginal or low quality habitat (for example dominated by high threat weeds).	Despite targeted surveys being undertaken across the proposed WEF footprint (i.e. in areas of proposed internal access tracks and turbine locations) no Striped Legless Lizards were detected. However, the species was recorded along Stockyard Hill Road and Dunnets Roads. The proposed action will result in the removal of approximately 37.13 hectares of medium quality Striped Legless Lizard habitat. However, no individuals were detected in these areas and therefore it is not known whether resident populations of the species exist. The grassland habitat across the study area is highly modified and subject to ongoing land use practices (principally grazing) and is connected to extensive areas (i.e. it forms part of an area greater than 0.5 hectares) within the agricultural landscape. These areas (i.e. several hectares) of available habitat are likely are consistent with the areas proposed to be impacted and support the species' breeding and dispersal requirements in the future. Therefore, the breeding and dispersal capabilities of this population are unlikely to be significantly impacted given the highly localised nature of the proposed road works.
2. Lead to a long-term decrease in the size of an important population of a species	Given the breeding and dispersal capabilities of the population are unlikely to be significantly affected by the proposed action, there is not likely to be a long-term decrease in the size of this population in direct response to the proposed works.
3. Reduce the area of occupancy of an important population	Approximately 37.13 hectares of medium quality grassland habitat (where the species has not been confirmed) is proposed to be removed. However, given the nature of the proposed works and the availability of suitable dispersal habitat across properties (i.e. extensive areas of medium quality habitat), the removal of modified grassland is not likely to fragment the existing population into two or more populations. Indeed, individuals are likely to continue to disperse across the landscape within and between areas of suitable habitat.
4. Fragment an existing important population into two or more populations	
5. Adversely affect habitat critical to the survival of a species	The proposed road widening and intersection upgrades will result in the removal of modified vegetation / habitat that does not constitute habitat that is critical to the survival of the species.
6. Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Given the availability of the same habitat across paddocks adjacent to the proposed works, the proposed removal of medium quality habitat is not likely to lead to the long-term decline of the species in the immediate area, nor is the proposed action likely to impact the population on a regional, state or national level.
7. Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	The proposed action is not likely to result in invasive species that are harmful to the Striped Legless Lizard habitat, introduce disease that may cause the species to decline, and interfere substantially with the recovery of the species.
8. Introduce disease that may cause the species to decline, or	

Significant Impact Guidelines 1.1 – Significant Impact Criteria for a Vulnerable Species (Striped Legless Lizard)	
9. Interfere substantially with the recovery of the species.	

Given that medium quality habitat Striped Legless Lizard habitat is proposed to be impacted the proposed action has the potential to significantly impact the species (i.e. potential for resident populations of the species and associated grassland habitats).

4.2 Flora and Fauna Guarantee Act 1988 (Victoria)

The FFG Act is the primary legislation dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Proponents are required to apply for an FFG Act Permit to 'take' listed and/or protected flora species, listed vegetation communities and listed fish species in areas of public land (i.e. within road reserves, drainage lines and public reserves). An FFG Act permit is generally not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

There is suitable habitat within the study area (i.e. in areas supporting remnant native vegetation) for a small number of 'protected' flora listed under the FFG Act.

4.2.1 Implications

The planning authority may consider flora, fauna and communities listed under the FFG Act when making decisions regarding the use and development of land. There is suitable habitat within the study area for several species listed or protected under the FFG Act. A permit under the FFG Act is only required where the development is proposed to impact public land and not private property.

Plump Swamp Wallaby-grass which is listed under the FFG Act was recorded within the study area along Dunnets Road (Figure 1i). However, there may be an opportunity to avoid this population during construction.

4.3 Environment Effects Act 1978 (Victoria)

The *Environment Effects Act 1978* provides for assessment of proposed actions that are capable of having a significant effect on the environment via the preparation of an EES. A project with potential adverse environmental effects that, individually or in combination, could be significant in a regional or State context should be referred. An action may be referred for an EES decision if the project meets specific criteria, including (but not limited to):

- one of the following occurs:
    - Potential clearing of 10 hectares or more of native vegetation from an area that:
        - is of an EVC identified as endangered by DELWP;
        - is of Very High conservation significance; or,
        - is not authorised under an approved Forest Management Plan or Fire Protection Plan.
    - Potential long-term loss of a significant proportion (1-5% depending on conservation status of species) of known remaining habitat or population of a threatened species within Victoria.

- or where two or more of the following occur:
    - Potential clearing of 10 hectares or more of native vegetation, unless authorised under an approved Forest Management Act or Fire Protection Plan;
    - Matters listed under the FFG Act:
        - Potential loss of a significant area of a listed ecological community;
        - Potential loss of a genetically important population of an endangered or threatened species;
        - Potential loss of critical habitat; or,
        - Potential significant effects on habitat values of a wetland supporting migratory birds.

4.3.1 Implications

The amended WEF footprint is likely to result in the removal of approximately 0.06 hectares of NTGVVP, 32.657 hectares of remnant native vegetation and 25 scattered trees (Appendix J). Based on the extent of the proposed impacts, it is accurate to conclude that from a biodiversity perspective a referral for the amended WEF footprint under the EE Act is not warranted. An explanation relating to the specific criteria relevant to ecology is provided:

- The criteria refers to Very High conservation significance which relates to the former Native Vegetation Management Framework (NRE 2002) and does not apply to the Guidelines (i.e. no such classification). The majority of the remnant native vegetation within the amended WEF footprint that is proposed to be impacted is of very low quality (i.e. approximately 66% of all remnant native vegetation has a habitat score of 0.3).
- The project will not lead to the potential long-term loss of a significant proportion (1-5% depending on conservation status of species) of known remaining habitat or population of a threatened species within Victoria.
- The project will not lead to the loss of the following:
    - Matters listed under the FFG Act:
    - Potential loss of a significant area of a listed ecological community;
    - Potential loss of a genetically important population of an endangered or threatened species;
    - Potential loss of critical habitat; or,
    - Potential significant effects on habitat values of a wetland supporting migratory birds.

4.4 Permitted Clearing of Native Vegetation - Biodiversity Assessment Guidelines

The decision guidelines at Clause 52.17 (Native Vegetation) and Clause 12.01 (Biodiversity) require Planning and Responsible Authorities to have regard to the Guidelines (DEPI 2013). Where the clearing of native vegetation is permitted, the quantity and type of vegetation to be offset is determined using methodology specified in the Guidelines. The primary objective of the regulations is “no net loss in the contribution made by native vegetation to Victoria’s biodiversity”.

4.4.1 Implications

With respect to the permitted WEF footprint, the initial permit to remove native vegetation was obtained for the internal access tracks and turbine locations. Similarly, the amended WEF footprint will result in the proposed removal of remnant native vegetation along internal access tracks and turbine locations (principally across Property 4 which is located in the northern portion of the project) and therefore a permit to remove native vegetation is required from Council (Figure 1b).

The offset requirement associated with the amended WEF footprint for native vegetation removal is 5.176 General Biodiversity Equivalence Units (BEU). A summary of proposed vegetation losses and associated offset requirements is presented in Table 7 and in the Biodiversity Impact and Offset Requirements (BIOR) Report (Appendix K).

4.5 Wildlife Act 1975 and Wildlife Regulations 2013 (Victoria)

The *Wildlife Act 1975* (and associated Wildlife Regulations 2013) is the primary legislation in Victoria providing for protection and management of wildlife. Authorisation for habitat removal may be obtained under the *Wildlife Act 1975* through a licence granted under the *Forests Act 1958*, or under any other Act such as the *Planning and Environment Act 1987*. Any persons engaged to remove, salvage, hold or relocate native fauna during construction must hold a current Management Authorisation under the *Wildlife Act 1975*, issued by DELWP.

4.5.1 Implications

Authorisation for habitat removal may be obtained under the *Wildlife Act 1975* through a licence granted under the *Forests Act 1958*, or under any other Act such as the *Planning and Environment Act 1987*. Any persons engaged to remove, salvage, hold or relocate native fauna during construction must hold a current Management Authorisation under the *Wildlife Act 1975*. However, for this project it is unlikely that salvage of fauna will be undertaken and therefore Management Authorisation under the Wildlife Act 1975 is not required.

4.6 Catchment and Land Protection Act 1994 (Victoria)

The *Catchment and Land Protection Act 1994* (CaLP Act) contains provisions relating to catchment planning, land management, noxious weeds and pest animals. Landowners are responsible for the control of any infestation of noxious weeds and pest fauna species to minimise their spread and impact on ecological values.

4.6.1 Implications

A number of weeds listed as noxious under the CaLP Act were recorded during the assessment (Blackberry, Spear Thistle). Similarly, there is evidence that the study area is currently occupied by several pest fauna species listed under the CaLP Act (Red Fox, European Rabbit). A Weed Management Plan is a requirement outlined in Condition 6i of the permit (Appendix B).

5 MITIGATION MEASURES

5.1 Minimise Impacts

For the removal of vegetation that falls under the High Risk-based pathways, the Guidelines (DEPI 2013) require the responsible authority to consider whether reasonable steps have been taken to ensure that impacts of the proposed removal of native vegetation on biodiversity have been minimised. Minimisation effort should be commensurate with the contribution that the native vegetation makes to Victoria's biodiversity (DELWP 2016c).

5.1.1 Contribution to Victoria's Biodiversity

The *Biodiversity assessment handbook, Permitted clearing of native vegetation* (DELWP 2015c) describes the relevant information to consider when determining the contribution native vegetation makes to Victoria's biodiversity (Table 13). Based on available information it is determined that the native vegetation proposed to be removed as part of the current application has a Moderate contribution to Victoria's biodiversity (Table 13).

Table 13. Assessment of the contribution the native vegetation makes to Victoria's biodiversity (as per Table 3 of the Handbook [DELWP 2015c])

Criteria	Assessment	Contribution
What is the extent and condition of native vegetation?		
Habitat hectare assessment • The higher the value, the greater the contribution to Victoria's biodiversity. • Scores above 0.8 indicate very good condition.	Total extent: 34.415 hectares (32.657 hectares of remnant patch and 25 scattered trees). Habitat score: 0.11 to 0.77	Low to High
What is the landscape biodiversity value of the native vegetation?		
Strategic Biodiversity Score • The higher the value, the greater the contribution to Victoria's biodiversity. • Scores above 0.8 are very important sites.	0.369	Low
Is the native vegetation important habitat for rare or threatened species?		
Number of Rare or Threatened species habitats impacted • The more species listed, the greater the contribution the native vegetation makes to Victoria's biodiversity. • Site observations may also be considered.	No species	Based on overall impacts to habitat for rare or threatened species the overall impact is considered to be Moderate.
Number of Rare or Threatened species habitats impacted above the specific offset threshold • The more species requiring a specific offset, the greater the contribution the native vegetation makes to Victoria's biodiversity.	No species	
The proportional impact for species requiring a specific offset • The higher the proportional impacts, the more important that site is for that particular species.	No species	

Criteria	Assessment	Contribution
Habitat importance score for impacted species • The higher the habitat importance score, the more important that site is for that particular species.	N/A	
Impact on highly localised habitat • Native vegetation that provides habitat for species with highly localised habitat is very important vegetation as it is limited and any loss needs to be carefully considered.	All species – Dispersed habitat	

5.1.2 Minimisation Statement[3]

SHWFPL have avoided and minimised the proposed removal of remnant native vegetation, and also areas supporting EPBC Act-listed listed species and communities, and sensitive sites by locating the WEF footprint in areas of exotic vegetation / areas devoid of ecological values (Plate 1, and 2; Figure 4).

[3] Section 5.2 (page 20) of the Handbook (DELWP 2015e) states:

> *"Minimisation should target native vegetation that makes the greatest contribution to Victoria's biodiversity - that is, areas of better condition, higher strategic biodiversity score, and/or higher habitat importance scores.*
>
> *The minimisation statement could state that minimisation was achieved by a past strategic planning exercise or by site interventions, or that it is not achievable or desirable on site for specific reasons."*

Section 6.3.2 (page 26) of the Handbook (DELWP 2015e) states:

> *"Minimisation should be commensurate with the contribution that the native vegetation makes to Victoria's biodiversity. Minimum effort can be considered reasonable when the native vegetation contributes lower value to Victoria's biodiversity – for example, only general offsets are required, strategic biodiversity score is low, the native vegetation is limited in extent and isolated from other patches of remnant vegetation."*

Section 6.5, Table 4 (page 29) of the Handbook (DELWP 2015e) states:

> *"Statement can describe that minimisation is unreasonable at the site level because the native vegetation makes a very low contribution to biodiversity (such as no species offset requires, low strategic biodiversity score) or because retained native vegetation would have limited long term prospect of retaining biodiversity value."*

Plate 1. Areas of remnat native vegetation (NTGVVP) proposed to be avoided along Skipton Road.

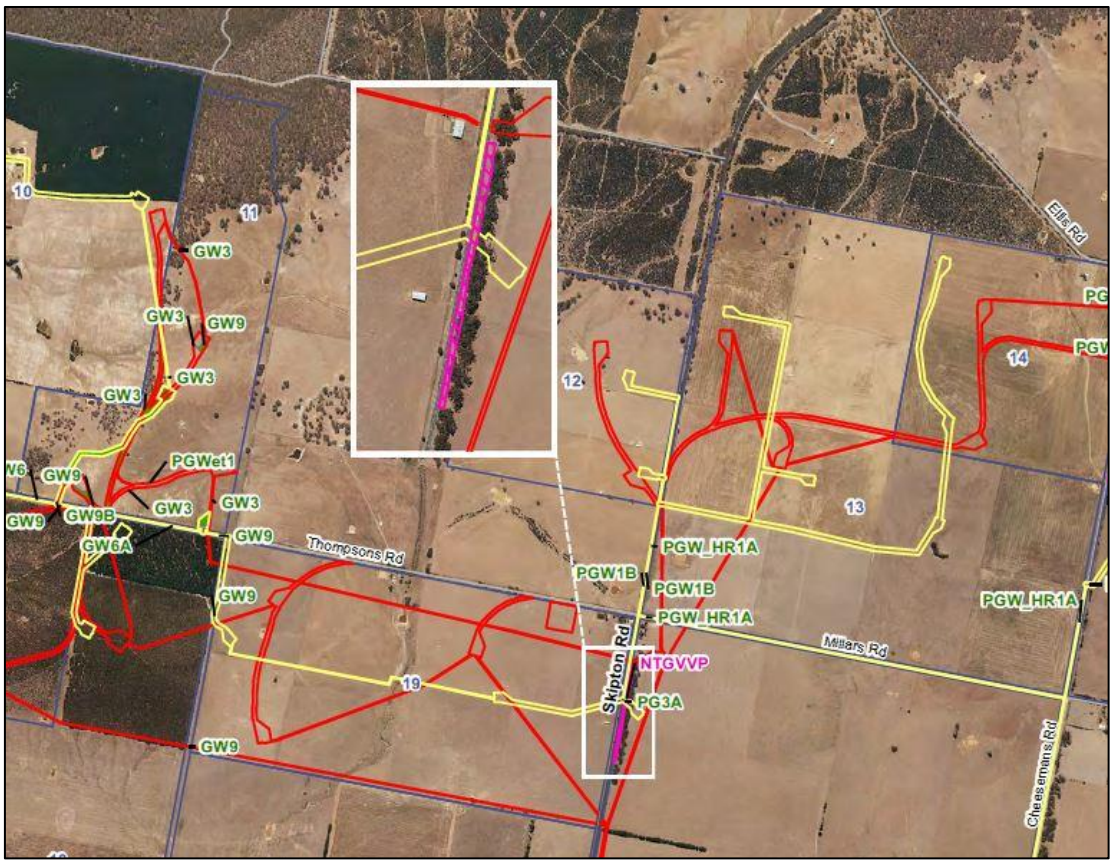
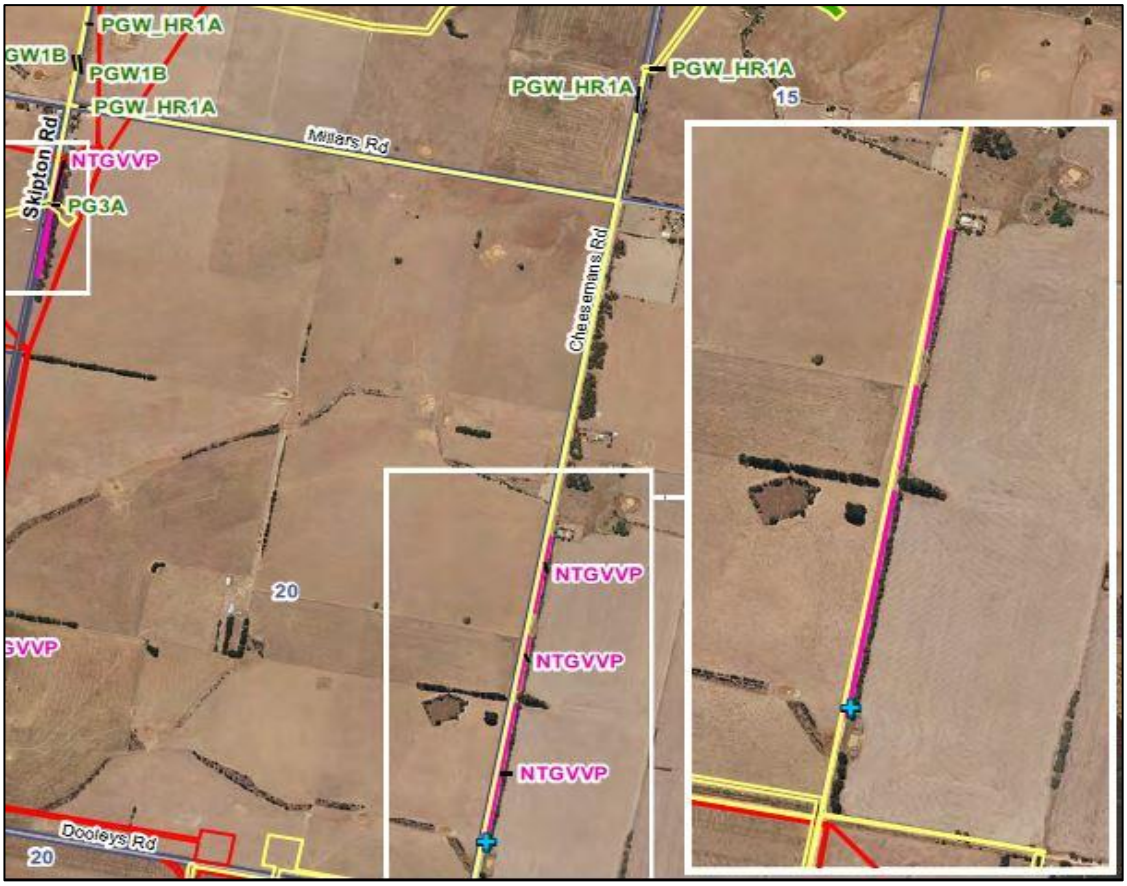


Plate 2. Areas of remnat native vegetation (NTGVVP) and Matted Flax-lily avoided along Cheesemans Road.



Areas of ecological values will be further minimised through the implementation of an Environment Management Plan (EMP). The following measures will be undertaken (as appropriate) as part of the development of the project and will be in accordance with the EMP which is required to be implemented (Condition 6 of the Permit):

- Further micro-siting techniques, including fencing retained areas of native vegetation. If indeed necessary, trees will be lopped or trimmed rather than removed. Similarly, soil disturbance and sedimentation into drainage lines / dams will be avoided or kept to a minimum, to avoid, or minimise impacts to fauna habitats.
- All contractors will be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention. Habitat zones (areas of sensitivity) will be included as a mapping overlay on construction plans;
- Tree Retention Zones (TRZs) will be implemented to prevent indirect losses of native vegetation during construction activities (DSE 2010). A TRZ applies to a tree and is a specific area above and below the ground, with a radius 12 x the DBH. At a minimum standard a TRZ will consider the following:
    a. A TRZ of trees will be a radius no less than two metres or greater than 15 metres;
    b. Construction, related activities and encroachment (i.e. earthworks such as trenching that disturb the root zone) will be excluded from the TRZ;
    c. Where encroachment exceeds 10% of the total area of the TRZ, the tree will be considered as lost and offset accordingly;
    d. Directional drilling may be used for works within the TRZ without being considered encroachment. The directional bore will be at least 600 millimetres deep;
    e. The above guidelines may be varied if a qualified arborist confirms the works will not significantly damage the tree (including stags / dead trees). In this case the tree would be retained and no offset would be required;
    f. Where the minimum standard for a TRZ has not been met an offset may be required; and,
- A planning permit condition for the project requires the development of a Pest Plant Management Plan . This plan will follow the guidelines set out in the CaLP Act, and clearly outline any obligations of the project team in relation to minimising the spread of weeds as a result of this project. This may include a pre-clearance weed survey undertaken prior to any construction activities to record and map the locations of all noxious and environmental weeds; and,
- Construction stockpiles, machinery, roads, and other infrastructure will be placed away from areas supporting native vegetation and/or other ecological sensitive areas;

5.2 Offset Impacts

The Guidelines (DEPI 2013) require offsetting as the final step in considering the impacts of development on native vegetation. Under the High Risk-based pathway, emphasis is placed on minimising impacts, and only after these steps have been taken should offsets be considered. Offset targets must be met, as specified in Section 3.4.2.1. Potential offsets may be sourced using the following mechanisms:

- BushBroker: BushBroker maintains a register of landowners who are willing to sell offset credits. Offsets secured by Bushbroker are done so via a Section 69 Agreement under the *Conservation, Forest and Lands Act 1987*.
- Trust for Nature: Trust for Nature holds a list of landowners who are willing to sell vegetation offsets. Offsets secured by Trust for Nature are done so under the Victorian *Conservation Trust Act 1972*.
- Local Councils: The proponent may contact local councils to seek availability of offsets.
- Over-the-Counter Offsets Scheme: The Guidelines include the expansion of the "Over-the-Counter" (OTC) Offsets Scheme, allowing non-government agencies to establish themselves as OTC Facilities. OTC Facilities will broker native vegetation offsets (credits) between landholders (with offset sites) and permit holders (with offset requirements).

5.2.1.1 Offset Strategy

Based on the current offset requirement for the amended WEF footprint the General offset obligations generated by the development can be satisfied through existing credits registered through the OTC scheme. As such, it is anticipated that the relevant offset obligations generated by the WEF can be secured through an OTC scheme without any difficulty.

In addition, a detailed Offset Management Plan for the proposed removal of medium quality Striped Legless Lizard and Golden Sun Moth will be prepared, and this will include commitments for the protection and management of suitable grassland habitats for both of these species.

6 IMPACT COMPARISON AND RECOMMENDATIONS

6.1 Impact Comparison

There are several proposed alterations to the WEF footprint that have resulted in the avoidance of ecological impacts. A comparison of impacts between the permitted WEF footprint and the amended WEF footprint is provided.

6.1.1 Significant species and ecological communities

A comparison of impacts to significant species and ecological communities between the permitted WEF footprint and the amended WEF footprint is outlined below. The amended WEF footprint will result in:

- A reduction of approximately 0.49 hectares of NTGVVP (approximately 0.55 hectares in the permitted WEF footprint compared with approximately 0.06 hectares for the amended WEF footprint) proposed to be impacted, including avoidance of remnant patches in the following areas:
    - South of the intersection of Millars Road and Skipton Road (Figure 1c)
    - Cheesemans Road (Figure 1c);
    - Geelong Road (Figure 1d); and
    - Dunnets Road (Figure 1i);
- The avoidance of populations of White Sunray along Eurambeen Stratham Road (Figure 1a) and Stockyard Hill Road (Figure 1d and 1e);
- The avoidance of Matted Flax-lily along Cheesemans Road (Figure 1c and 1f);
- The avoidance of a small population of Golden Cowslips in Property 4 (Figure 1b) and Arching Flax-lily along Geelong Road (Figure 1d). However, the amended WEF footprint will potentially impact a small population of Golden Cowslips in the north eastern portion of Property 4 (Figure 1b);
- The avoidance of several hectares of remnant native vegetation proposed to be removed. For example:
    - Property 4 (Figure 2a);
    - Cheesemans Road (Figure 1c and 1f);
    - Geelong Road (Figure 1d);
    - Skipton Road (Figure 1i and 1j); and
    - Mt Emu Settlement Road (Figure 1l);
- The avoidance of scattered remnant trees along Mt Emu Settlement Road (Figure 1l);
- A reduction of approximately 1.1 hectares of confirmed Golden Sun Moth habitat (2.67 hectares in the permitted WEF footprint compared with 1.57 hectares for the amended WEF footprint) across Property 4 (Figure 2b); and
- The amended WEF footprint and permitted WEF footprint are likely to impact similar areas of potential Striped Legless Lizard habitat. Within the amended WEF footprint medium quality habitat

for Striped Legless Lizard will be impacted across properties 24 and 52 (Figure 2d), although the species presence has not been confirmed in these areas.

6.1.2 Native vegetation and offsets

A comparison of impacts to remnant native vegetation and associated offset requirements between the permitted WEF footprint and the amended WEF footprint is provided.

Both the permitted WEF and amended WEF are within Location C, and fall under the High Risk-based pathway. Both footprints are estimated to impact a similar area of remnant native vegetation (Table 14). Both footprints are estimated to require similar general offsets: 4.172 General BEUs for the permitted WEF (under the current design assumptions) compared with 5.176 BEUS for the amended WEF.

The most significant difference between the permitted WEF and the amended WEF is with respect to the specific offsets required. The permitted WEF (under the current design assumptions) requires specific offsets for three species: Button Wrinklewort, White Sunray, and Matted Flax Lily, along with general offsets. These specific offsets must be located in the same species habitat as that being removed, as determined by the habitat importance map for that species. In comparison, the amended WEF has no specific offsets required and will only require general offsets (Table 14). The likely reason why specific offset have been triggered for the permitted WEF is that a larger area is proposed to be impacted across property 42.

Table 14. Comparison of offset targets between the permitted and amended WEF

	Permitted WEF – original design assumptions	Permitted WEF – current design assumptions	Amended WEF
Total Extent	15.915	31.991	34.415
Remnant Patch (ha)	15.071	30.936	32.657
Scattered Trees (no.)	12	15	25
Strategic Biodiversity Score	0.358	0.364	0.369
General Offsets Required	1.993 General BEUs	4.172 General BEUs	5.176 General BEUs
Specific Offsets Required	Button Wrinklewort (0.575 specific BEUs), White Sunray (1.010 specific BEUs)	Button Wrinklewort (1.044 specific BEUs), White Sunray (1.853 specific BEUs), Matted Flax-lily (1.252 specific BEUs)	None
Minimum Strategic Biodiversity Score*	0.283	0.289	0.296

Note: BEU = Biodiversity Equivalence Units

The previous habitat hectare assessment undertaken to inform the original permit application WEF footprint (BLA 2009) identified that 5.28 hectares of remnant native vegetation was proposed to be removed, with an associated offset target of 3.09 habitat hectares under the Net Gain policy (NRE 2002). These figures are specified in the Permit, whereby Condition 6(f) of the Permit states that as part of the native vegetation management plan must include '*a clear extent of the 5.28 ha (3.09 habitat hectares) of native vegetation to be removed*'.

While the total extent of remnant native vegetation proposed to be removed associated with the amended WEF footprint is greater than the area outlined in the former assessment (BL&A 2009), given the highly modified nature of the patches of vegetation and the subsequent low habitat score (i.e. the majority of patches have a habitat score of 0.23 or less), along with the low Strategic Biodiversity Score (i.e. 0.296) this

has led to a very similar offset requirement for the amended WEF footprint. That is, 5.176 general BEUs for the amended footprint (assessed under the Guidelines) typically costs approximately $750,000 to offset, and under the former Framework, 3.09 habitat hectares for the permitted WEF footprint translates to an offset cost of approximately $550,000.00.

The difference in the extent may be due to:

- An underestimation based upon ground conditions at that time of the original surveys and/or due to the difference in the assessment methodology undertaken by BLA (BLA 2009) (i.e. BLA assessments were based on different design assumptions). A review of the native vegetation mapped in BLA (2009) revealed that it was broadly consistent with the extent of remnant native vegetation mapped more recently (Ecology and Heritage Partners 2011a, 2011b); and,
- As stated on Page 40 in BLA (2009), based on the considerable extent and complex nature of the proposed project the proposed wind turbine and construction pad locations as well as access tracks were microsited to avoid and minimise impacts on native vegetation and threatened flora. As part of the previous assessment (BLA 2009) an eight metre wide impact area for the proposed access tracks was used to calculate the offset requirements under the Framework, and this compares with a 12.5 metre wide area for the smaller access tracks and a 13.5 metre wide area for trunk access roads, which were used to calculate the total area of remnant native vegetation proposed to be removed and the associated offsets for the WEF footprint under the Guidelines.

A summary of the extent, quality and the proportion of remnant native vegetation proposed to be impacted is provided below (

Table 16).

Table 15. Extent and quality of remnant native vegetation proposed to be impacted by the amended WEF footprint.

Vegetation quality	Amended WEF	Proportion of total vegetation proposed to be removed
Habitat score <0.3	22.32 hectares	66%
Habitat score >0.3	11.46 hectares	34%

6.2 Amendment of Planning Permit Conditions

It is recommended that several conditions of the Permit (Planning Permit No. PL-SP/05/0548) should be amended, including changes to Permit Conditions 3, 6f, 6g, 6h, 9, 10 and 14. The primary reason for the recommended amendments is that detailed targeted surveys have been undertaken to ascertain the presence, distribution and any likely impact(s) to significant species (e.g. Spiny Rice-flower, Striped Legless Lizard, Golden Sun Moth) and ecological communities (i.e. NTGVVP). A detailed explanation of the proposed changes are outlined in Appendix B.

6.3 Recommendations

Recommendations under the relevant environmental legislation and policies associated with the proposed development are provided below (Table 16).

Table 16. Recommendations associated with development of the study area

Relevant Legislation	Implications – Permitted WEF	Implications – Amended WEF	Further Action
Environment Protection and Biodiversity Conservation Act 1999	Removal and/or disturbance of approximately 0.55 hectares of NTGVVP. Potential loss of several White Sunray plants along Eurambeen Stratham Road (Figure 1a). Potential loss of Matted Flax-lily along Cheesemans Road (Figure 1c and 1f); Removal and/or disturbance of approximately 2.67 hectares of known Golden Sun Moth habitat across Property 4 (Figure 2b). Loss and/or disturbance to low-medium quality Striped Legless Lizard habitat.	Removal and/or disturbance of approximately 0.06 hectares of NTGVVP. The avoidance of populations of the EPBC Act-listed White Sunray along Eurambeen Stratham Road (Figure 1a) and Stockyard Hill Road (Figure 1d and 1e); The avoidance of Matted Flax-lily along Cheesemans Road (Figure 1c and 1f); Avoidance of known Golden Sun Moth habitat across property 4 (Figure 2b) which will lead to a reduction of approximately 1.1 hectares in the amended WEF footprint compared with the permitted WEF footprint; and Loss and/or disturbance to low-medium quality Striped Legless Lizard habitat.	Given the amended WEF footprint is considered a different 'action' under the EPBC Act, and is likely to impact matters of National Environmental Significance (namely a known population and approximately 1.57 hectares of suitable Golden Sun Moth habitat, 0.06 hectares of NTGVVP and up to 37.13 hectares of medium quality Striped Legless Lizard habitat), the project should be re-referred to the DoE for assessment under the EPBC Act. It is important to note that Striped Legless Lizard has not been confirmed in areas of medium quality habitat. Due to the small area of proposed impact to confirmed Golden Sun Moth habitat and NTGVVP, and that Striped Legless Lizard can be managed through onsite mitigation measures and offsets, a likely outcome of the EPBC Act referral is a 'non controlled action – particular manner' decision. The particular manner provisions of the EPBC Act allow the decision-maker to take into account such practices, design features and mitigation measures which avoid or reduce significant impacts on matters protected by the Act, and this is what has been demonstrated for this project (i.e. detailed surveys to accurate document the extent of matters of NES, and adjustments to the development footprint to avoid impacts to EPBC Act-listed species and ecological communities). As a result a not controlled action particular manner decision should be taken, and assessment and approval under the EPBC Act is not necessary to ensure that the objectives of the Act are met. The particular manner will need to be set out in detail in the initial referral, or in any additional information provided by SHWFPL in order to make clear the manner in which the action is proposed to be taken. It is understood that SHWFPL has discussed the proposed changes to the WEF footprint with DoE and the measures that will be undertaken to avoid, minimise and offset the impacts to matters NES.
Flora and Fauna Guarantee Act 1988	There is suitable habitat within the study area for several species listed or protected under the FFG Act. A permit under the FFG Act will be required as the study area is located on public land.	There is suitable habitat within the study area for several species listed or protected under the FFG Act. A permit under the FFG Act will be required as the study area is located on public land.	Prepare and submit a FFG Act permit application to DELWP.
Environment Effects Act 1978	31.991 hectares of remnant native vegetation proposed to be impacted.	34.415 hectares of remnant native vegetation proposed to be impacted.	The definition of Very High conservation significance relates to the former Framework (NRE 2002) and does not apply to the Guidelines. The majority of the remnant native vegetation within the amended WEF footprint that is proposed to be impacted is of very low quality (i.e. out of a total of

Relevant Legislation	Implications – Permitted WEF	Implications – Amended WEF	Further Action
			34.415 hectares proposed to be removed approximately 66% of vegetation has a habitat score of 0.3 or less). The project will not lead to the potential long-term loss of a significant proportion (1-5% depending on conservation status of species) of known remaining habitat or population of a threatened species within Victoria. The project will not lead to the loss of the following: - Matters listed under the FFG Act: - Potential loss of a significant area of a listed ecological community; - Potential loss of a genetically important population of an endangered or threatened species; - Potential loss of critical habitat; or, - Potential significant effects on habitat values of a wetland supporting migratory birds. As such, no further action required under the EE Act.
Planning and Environment Act 1987	The study area is within Location C, with 39.452 hectares of native vegetation proposed to be removed. As such, a permit application would have fallen under the High Risk-based pathway The offset requirement for native vegetation removal is 4.172 General Biodiversity Equivalence Units (BEU), along with Specific units for Button Wrinklewort (1.044 specific BEUs), White Sunray (1.853 specific BEUs) and Matted Flax-Lily(1.252 specific BEUs).	The study area is within Location C, with 35.160 hectares of native vegetation proposed to be removed. As such, the permit application falls under the High Risk-based pathway. The offset requirement for native vegetation removal is 5.176 General Biodiversity Equivalence Units (BEU). There are no Specific units required.	Prepare and submit an application to amend Planning Permit No. PL-SP/05/0548 In accordance with permit Condition 14 of the permit, before the clearing of any native vegetation starts a Native Vegetation Offset Management Plan will be prepared.