

In the matter of Chepstowe Wind Farm
VCAT Reference No. 3249/2010
Expert Witness Statement of Grant Palmer

1 Name and address

Dr Grant Campbell Palmer
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2 Area of expertise

- (a) I hold the degrees of:
- Bachelor of Applied Science (Natural Resources Management)
 - Bachelor of Science (Honours)
 - Doctor of Philosophy
- (b) For the past 14 years I have had professional involvement in flora and fauna research and natural resource management in government and non-government sectors in Victoria.
- I have over 14 years experience in the survey and assessment of flora and fauna populations in southeast Australia. I have assessed the potential environmental impacts of infrastructure development and operation on fauna including for wind energy facilities, residential developments and road infrastructure.
- I have authored or co-authored approximately 55 reports relating to flora and fauna and natural resource management in Victoria and New South Wales and 12 publications on fauna and their habitats in national and international peer-reviewed scientific journals.
- (c) My qualifications and experience are detailed in Annexure A.
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3 Scope

3.1 Instructions

I, as an Environmental Scientist at the Centre for Environmental Management (CEM), have been commissioned by Future Energy Pty Ltd to undertake flora and fauna assessments of the proposed Chepstowe Wind Farm site. The first project undertaken by the CEM encompassed:

1. A review of existing, available information on flora, vegetation and fauna at the site and within the surrounding region.
2. An inspection of the site and the surrounding region to assess the flora and vegetation, and nature of fauna habitats present and potential fauna usage of the site and its surrounds.

The objectives of the assessment were to:

1. Identify the potential occurrence of any significant flora and fauna species at the site.
2. Identify remnant vegetation communities and its quality at the site.
3. Identify fauna habitat on or near the proposed wind farm site.
4. Identify species that may be adversely impacted during the establishment and functioning of the wind turbines based on the results of the desktop assessment and field inspection.

The findings of the assessment are contained in *Chepstowe Wind Farm Flora, Vegetation and Fauna Assessment* (CEM, June 2008) (hereafter referred to as **CEM (2008)** report).

The CEM was also commissioned to undertake an assessment of the proposed Chepstowe Wind Farm site and calculate the native vegetation offsets required. The objectives of the assessment were:

1. To quantify the extent of vegetation loss in habitat hectares due to the construction of the proposed Chepstowe Wind Farm.
2. To calculate the offset required in accordance with Victoria's Native Vegetation Management Framework.

The findings of the assessment are contained in *Chepstowe Wind Farm Native Vegetation Loss and Offset Calculation* (CEM, September 2010) report (hereafter referred to as **CEM (2010)** report).

3.2 Process and methodology

The flora and fauna attributes of the site were considered in line with the *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria 2003*. Specifically, consideration was made of:

- whether any species protected under the EPBC Act or the FFG Act were likely to be present;
- whether any such species or community were likely to be sensitive to the wind farm development; and
- the potential loss of habitat of species protected under the EPBC Act or FFG Act.

The desktop assessment involved:

- searches of existing flora (Flora Information System (**FIS**) (DSE 2004)) and fauna records (Atlas of Victorian Wildlife (**AVW**) (DSE 2004)) within a 5 km radius of the proposed wind farm site (using information supplied in an existing Biosis report). The FIS and AVW contain the most complete readily

accessible Victorian data on flora and fauna location records, including EPBC and FFG listed species.

- a search of the EPBC Act Database of Significant Locations (**EPBC Protected Matter Search**) was undertaken for that area within 10 km of the proposed site. The report generated from the search provides general guidance on matters of National Environmental Significance (**NES**) and other matters protected by the EPBC Act in the search area.
- DSE Interactive maps were also accessed and searched for information on ecological vegetation classes (EVCs; current and pre-1770's), important wetlands, bioregion classification and vegetation distribution.

The site was initially inspected on 5 February 2008, approximately between the hours of 0900 hours and 1700 hours. The site of the proposed wind farm and immediate surrounds was searched for flora and potential fauna habitats. Observations of fauna species were recorded. The ecological vegetation classes (EVC) present were identified and the quality of native vegetation was assessed using the Habitat Hectares method. Vegetation quality assessments were undertaken at selected representative sites across the proposed wind farm site.

The site was further assessed on 30 August 2010 to measure proposed native vegetation loss to calculate offset requirements. The ecological vegetation classes (EVC) present were confirmed and the quality of native vegetation was assessed using the Habitat Hectares method.

3.3 Reports reviewed to prepare initial study or statement

All documents and other materials considered in the preparation of my statement are referenced in the CEM (2008) and CEM (2010) reports.

3.4 Persons assisting with this work

I and my CEM colleagues, Janet Leversha (former) and Matthew Gibson, undertook all studies and assessments associated with the Chepstowe Wind Farm Flora, Vegetation and Fauna Assessment (CEM 2008) and Chepstowe Wind Farm Native Vegetation Loss and Offset Calculation (CEM 2010).

4 Findings

4.1 Summary of opinions

I adopt the CEM reports (2008, 2010) as the basis for my expert witness statement and evidence. A summary of my findings is contained within this statement.

It is my understanding that matters relevant to the Brolga are to be dealt with by an expert on Brolga ecology. Therefore my evidence will not consider matters relating to Brolga.

Findings of investigations in relation to the site

Flora identified on the site

The site comprises grazed paddocks. The pasture is a mix of native species and introduced species.

Based on the site inspections, a single EVC was recognised as occurring at the proposed wind farm site:

- EVC 132_61: *Heavier soils* Plains Grassland

For the 2008 assessment, the EVC applied was EVC 897_Plains Grassland/Plains Grassy Woodland. This EVC no longer has a valid benchmark, and current EVC mapping shows EVC 132 Plains Grassland and EVC 55 Plains Grassy Woodland as separately occurring at or near the site.

EVC 132 *Heavier-soils* Plains Grassland is considered endangered in the Victorian Volcanic Plain bioregion.

The FIS (DSE 2004) contained records of 9 significant flora within 5 km of the proposed wind farm site: White Sunray *Leucochrysum albicans* subsp. *albicans* var. *tricolor* (Endangered), Button Wrinklewort *Rutidosia leptorhynchoides* (Endangered), Swamp Everlasting *Xerochrysum palustre* (Vulnerable), Clover Glycine *Glycine latrobeana* (Vulnerable), Adamson's Blown-grass *Lachnagrostis adamsonii* (Endangered). Six species are listed under the FFG Act: Button Wrinklewort *Rutidosia leptorhynchoides*, Swamp Everlasting *Xerochrysum palustre*, Clover Glycine *Glycine latrobeana*, Adamson's Blown-grass *Lachnagrostis adamsonii*, Small Milkwort *Comesperma polygaloides* and Australian Anchor Plant *Discaria pubescens*. Species that are included on the *Advisory List of Rare or Threatened Plants in Victoria – 2005* (DSE 2005) include White Sunray *Leucochrysum albicans* subsp. *albicans* var. *tricolor* (endangered), Button Wrinklewort *Rutidosia leptorhynchoides* (endangered), Swamp Everlasting *Xerochrysum palustre* (vulnerable), Clover Glycine *Glycine latrobeana* (vulnerable), Wavy Swamp Wallaby-grass *Amphibromus sinuatus* (vulnerable), Adamson's Blown-grass *Lachnagrostis adamsonii* (vulnerable), Wetland Blown-grass *Lachnagrostis filiformis* var. 2 (poorly known in Victoria), Small Milkwort *Comesperma polygaloides* (vulnerable) and Australian Anchor Plant *Discaria pubescens* (rare).

The EPBC Act Protected Matters Search revealed seven species that may potentially occur within a 5 km radius of the proposed wind farm site (Appendix 2). Of these seven species, one species, Spiral Sun-orchid *Thelymitra matthewsi*, occur in heathy woodland and forest vegetation communities, and therefore would not be expected to occur at the proposed wind farm site. Six species occur in grassland habitats in the Victorian Volcanic Plain. The proposed wind farm site may provide potential habitat for these species, including Curly Sedge *Carex tasmanica*, Trailing Hop-bush *Dodonaea procumbens*, Clover Glycine, Hoary Sunray *Leucocrysum albicans* var. *tricolor*, Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* and Swamp Everlasting *Xerocrysum palustre*.

A total of 56 flora taxa were recorded from the proposed wind farm site during the 2008 field inspection (34 native taxa and 22 introduced taxa). The CEM (2008) report contains a detailed description of the vegetation across the site.

There were no significant flora species observed during the field inspections.

Native vegetation quality on the site

In February 2008, six sample points were assessed to identify flora taxa present and to determine the condition of the remnant vegetation. The vegetation was considered to be in poor to fair condition (Habitat score range 0.20 to 0.44).

In August 2010, 11 sample points, including all proposed turbine locations and access tracks, plus potential sites for staging areas, were assessed to quantify the extent of vegetation loss in habitat hectares due to the construction of the wind farm. Again, the native vegetation was considered to be in poor to fair condition (Habitat score range 0.19 to 0.43).

While the August 2010 assessment was a precise assessment of areas of proposed native vegetation removal, the February 2008 assessment was an initial assessment of native vegetation quality of the proposed wind farm envelope. There were substantial changes in the measured vegetation quality of the site between assessments. This was attributed to seasonal differences in the timing of the survey and environmental conditions. In 2008, the site was extremely dry, while in 2010 the sites had recently received substantial rainfall. Weed cover was substantially greater across the site in the 2010 assessment.

It is important to note that following consultation with Future Energy and DSE (24th September 2010), it was agreed to round up quality scores for several sites to 0.30 (specifically sites Turbine 2, Turbine 3, Track 2, Track 3, Track 6 and Track 5), in order to better reflect the average scores of the two CEM assessments (2008 and 2010), as well as those calculated by Biosis Research following an assessment of the site in 2008. This change in Habitat Scores did not result in a change in the conservation significance for these sites following Table 5 Determining Conservation Significance in DNRE (2002).

Fauna identified on the site

The CEM (2008) report used fauna data presented by Biosis Research (2005) based on an AVW search within a 5km radius of the proposed wind farm site. The CEM performed a similar search to confirm fauna records.

The AVW (DSE 2004) contained records of 15 fauna species recorded within a 5 km radius of the proposed wind farm site. The AVW (DSE 2004) contained records of four significant fauna within 5 km of the proposed wind farm site (Biosis Research 2005), while CEM (2008) also noted an AVW record of Striped Legless Lizard within 5km of the proposed wind farm site. The EPBC Protected Matters Search revealed 19 species predicted to occur in the study area. One of these, Latham's Snipe, had previously been recorded within 5km of the proposed wind farm site. A further four species were assessed as potentially occurring at the proposed wind farm site based on the presence of potential habitat: Golden Sun-moth *Synemon plana* (CE) (subsequently determined that the site provides unsuitable habitat) and Striped Legless Lizard *Delma impar* (V), as well as migratory species White-throated Needletail and Fork-tailed Swift.

A total of 18 fauna species was observed at the proposed wind farm site during the field inspection. This included 16 birds (15 native species and one introduced species) and two introduced mammals. There were no significant fauna species observed during the field inspection.

Potential threats associated with proposed wind farm

Flora

Plains Grassland EVC is considered endangered in the Victorian Volcanic Plains bioregion and Natural Temperate Grassland of the Victorian Volcanic Plain has been recently listed under the EPBC Act. Any impact on native flora is likely to be restricted to the construction phase of the development. The proposed wind farm is likely to result in the loss of relatively small areas of native vegetation (0.676 ha in total) of high to very high conservation significance.

This vegetation was used for grazing at the time of inspection. Vegetation quality assessments at the proposed turbine locations and along proposed access tracks received habitat scores of 0.19 to 0.43 in August 2010. The native vegetation therefore has a conservation significance of 'Very high' to 'High' according to Table 5 of *Victoria's Native Vegetation Management Framework* – based on the assessed habitat score for an endangered EVC (DNRE 2002).

Fauna

The proposed Chepstowe Wind Farm, comprising three turbines, is likely to present a low risk to fauna. This assessment is based on the small number of turbines involved, the low level of habitat disturbance expected and the known and expected use of the site by fauna, and in particular significant fauna species. There were no major drainage lines in close proximity to the wind farm site that could function as important corridors for faunal movement in close vicinity to turbines, nor were there any major vegetation corridors or patches of remnant native vegetation that would be expected to provide important passages for faunal movement through the landscape.

Some components of the habitat present at the proposed wind farm site may provide potential suitable habitat for significant species, in particular the Striped Legless Lizard. There was at least one AVW record (DSE 2004) of this species within 5 km of the proposed site. It was recommended that an intensive search (i.e. tile survey) of the proposed works areas, particularly in native vegetation and rocky areas, be carried out for the Striped Legless Lizard prior to construction. If present any impact on this species is likely to occur during the construction phase of the proposed wind farm development and should be avoidable.

The fauna habitats at the proposed wind farm site are unlikely to provide significant habitats for fauna species that may be considered sensitive or more prone to adverse impacts associated with the construction and operation of wind turbines (e.g. flocking wetland birds, birds of prey and bats). As a result there is low potential for large concentrations of such species in the immediate vicinity of the proposed wind farm site at any time.

The proposed wind farm would also be expected to have an insignificant impact on bird species protected under the EPBC Act that are predicted to occur in the Chepstowe area. The flight behaviour of listed migratory species considered likely to frequent the site at various times, the White-throated Needletail and Fork-tailed Swift, may present some risk to these species, however the small scale of the proposed development means any impact to these species is likely to be low even if they do fly over the area.

Based on their flight behaviour, birds of prey (e.g. eagles, falcons, kites, harriers, goshawks, etc.) are widely considered to be at increased risk of collision with wind turbines. Wedge-tailed Eagles have been observed soaring in the immediate vicinity of the proposed wind farm site. These are not considered threatened in

Victoria. The presence of wind turbines may present some potential risk to local birds. It is unlikely that the site of the proposed wind farm is significant at a species level for Wedge-tailed Eagles, or other bird of prey species, and the potential impacts associated with the proposed wind farm would be low and restricted to local populations.

There are no large wetland habitats within 5 km of the wind farm site that are likely to regularly support significant concentrations of wetland birds that would be expected to have a regular flight path affected by the proposed wind farm. As the potential for large concentrations of wetland birds, including communal roosts, to regularly occur in close vicinity to the turbines is considered low, the impact to these species will be low.

Bat activity and abundance at the site is likely to be low when compared to areas supporting more native tree cover. Assuming that bat activity and bat abundance is significantly reduced in the open farmland area for bat species that would be expected to occur in the district, the proposed wind farm is likely to have a low impact on bats. It is acknowledged that the impact of wind turbines on bats and bat activity is poorly understood in Australia.

4.2 Any additional work undertaken since exhibition of application

I have not undertaken any additional work since the completion of the CEM (2008, 2010) reports. The assessments undertaken included both a desktop assessment and field assessment (i.e. one day field inspection). These assessments complement each other and provide coverage of known (i.e. FIS and AVW records, field inspection observations) and predicted (i.e. EPBC Protected Matters Search, field inspection of potential fauna habitats) flora and fauna information for the site. The limitations associated with the assessments are detailed in the CEM (2008, 2010) reports.

Based on this approach, I am confident that the CEM (2008, 2010) reports were based on correct information and that the assessment of risk associated with the proposed development was accurate for the flora and fauna matters investigated, based on known information.

4.3 Proposed Permit Conditions

Recommended permit conditions that would be applicable to native vegetation management and the proposed Chepstowe Wind Farm include:

Before the development starts, a Native Vegetation Management Plan must be prepared to the satisfaction of the Responsible Authority, in consultation with the Department of Sustainability and Environment. This plan once finalised must be endorsed by the Responsible Authority.

The Native Vegetation Management Plan must include a detailed site layout plan showing the locations of scattered native trees and patches of native vegetation where they may be affected by buildings and works. The plan must 'avoid' and 'minimise' the need for removal of native vegetation in accordance with the principles of *Victoria's Native Vegetation Management – A Framework for Action* (DNRE 2002). The Native Vegetation Management Plan must include a *Native Vegetation Offset Plan* which contains:

- a) quantification of native vegetation losses (see CEM 2010);
- b) details of the proposed offsets which will achieve a net gain in quality and quantity of native vegetation;
- c) comprehensive plans (drawn to an appropriate scale), which clearly show the locations, boundaries and title details of all offset sites. The plans must also clearly show the boundaries of any different management zones and the location of any proposed fencing;
- d) type of offsets to be provided for each location;
- e) details of revegetation including number of trees, shrubs and other plants, species mix and density (consistent with the characteristics of the relevant ecological vegetation class);
- f) methods of managing and restoring the vegetation, such as fencing, weed control, enhancement planting and other habitat management actions;
- g) pest plant and animal control methods;
- h) a statement of the need to source local seed stock and options available for sourcing of local seed;
- i) a statement of the need for revegetation works to be carried out by a suitably qualified ecological specialist;
- j) methods of permanent protection for the offsets, such as the registration on title of a covenant under section 3A of the *Victorian Conservation Trust Act 1972*, or an agreement under Section 173 of the *Planning and Environment Act 1987*, or an agreement under section 69 of the *Conservation Forests and Lands Act 1987*, or (subject to agreement) transfer of the land to the responsible authority or the Crown;
- k) persons responsible for implementing and monitoring the offset plan; and
- l) a schedule of offset management actions.

5 Declaration

I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Tribunal.

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28 January 2011

Annexure A - Qualifications

Qualifications

I am an Environmental Scientist employed by the University of Ballarat within its Centre for Environmental Management. My specific area of expertise is fauna and landscape ecology. I hold the degrees of:

Bachelor of Applied Science (Natural Resources Management)

Bachelor of Science (Honours)

Doctor of Philosophy

Professional associations

My professional associations include:

Memberships

Birds Australia

Ecological Society of Australia

Bird Observation and Conservation Australia

Australian Bird Study Association

Australian Bird and Bat Banding Scheme

Membership on Committees

University of Ballarat Animal Ethics Committee

Clarkesdale Bird Sanctuary Advisory Committee

Clarkesdale Bird Sanctuary Strategy Committee

Southwest Fire Ecology Committee

Employment history and achievements

I have been employed as an Environmental Scientist at the Centre for Environmental Management, University of Ballarat since February 2005. Prior to this I was employed as a Project Officer at the Victorian Environmental Assessment Council (formerly Environment Conservation Council) from 2000 to 2005.

I have completed seven years of PhD research investigating the habitat requirements of bird assemblages in forest landscapes in southeast Australia. I have published research findings in international and national peer-reviewed scientific journals and have presented research findings at international and national scientific conferences.