Environment Effects Act 1978

Planning and Environment Act 1987

EES Inquiry and Planning Permit Applications Panel Report

Dundonnell Wind Farm

11 January 2016

VICTORIA State Government | Planning Panels Victoria

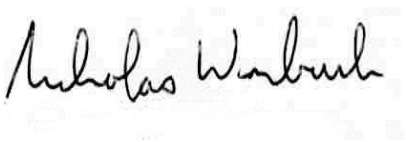
Environment Effects Act 1978

Planning and Environment Act 1987

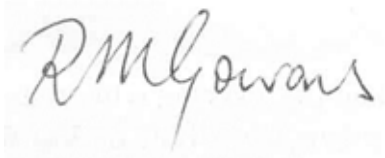
EES Inquiry and Planning Permit Applications Panel Report

Dundonnell Wind Farm

11 January 2016



Nick Wimbush, Chair



Rod Gowans, Member

Doug Munro, Member

Contents

List of Tables

Page

List of Figures

Page

List of Abbreviations

CHMP	Cultural Heritage Management Plan
CRM	Collision Risk Modelling
DELWP	Department of Environment, Land, Water and Planning
DEPI	Department of Environment and Primary Industries (former)
DEWHA	Department of Environment, Water, Heritage and the Arts (Cth)
DTPLI	Department of Transport, Planning and Local Infrastructure (former)
EEA	*Environment Effects Act 1978* (Vic)
EES	Environment Effects Statement
EPA	Environment Protection Authority
EPBC	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EVC	Ecological Vegetation Class
FFG	*Flora and Fauna Guarantee Act 1988* (Vic)
LPPF	Local Planning Policy Framework
LVIA	Landscape and Visual Impact Assessment
MNES	Matters of National Environmental Significance
MPS	Mortlake Power Station (existing gas fired power station)
MRSDA	*Mineral Resources (Sustainable Development) Act 1990* (Vic)
MSS	Municipal Strategic Statement
MW	Megawatts
NIA	Noise Impact Assessment
ODV	Over Dimensional Vehicle
P&E Act	*Planning and Environment Act 1987* (Vic)
PPG	*Policy and planning guidelines for development of wind energy facilities in Victoria*, June 2015
PVA	Population Viability Analysis
RAP	Registered Aboriginal Party
SLO	Significant Landscape Overlay
SPPF	State Planning Policy Framework
SWVLAS	South West Victoria Landscape Assessment Study
TIA	Traffic Impact Assessment
TMP	Traffic Management Plan
TOR	Terms of Reference

Executive Summary

The Dundonnell Wind Farm is a proposal for a large wind farm of 104 turbines up to 165 metres high at Dundonnell, about 20 kilometres north west of Darlington in western Victoria.

The proposal comprises many elements including an on-site quarry, on-site groundwater abstraction, significant internal access tracks, an on-site electrical substation and a 38 kilometre power transmission line to an off-site substation to connect to the electricity grid near Mortlake.

Given the potential for effects on biodiversity, including Brolga, the project was determined to require assessment under the *Environment Effects Act 1978*. Three planning permits are also required under the *Planning and Environment Act 1987*.

This Inquiry was appointed to consider submissions to the Environment Effects Statement and to also advise the Minister for Planning as to whether the planning permits should be issued.

The Inquiry considered 135 written submissions, with approximately 60% opposing the project, and conducted a nine day hearing in western Victoria. Issues raised in submissions included:

- Impacts on biodiversity, and in particular Brolga
- Noise
- Public health
- Traffic
- Economic impacts (positive and negative)
- Land use impacts
- Impacts on surface and groundwater
- Landscape values and visual impact
- The efficacy of wind farms as renewable energy
- Fire fighting.

The Inquiry's reporting task on environment effects in the Terms of Reference provided by the Minister for Planning are as follows:

- *Findings on the likelihood and significance of environmental effects (impacts) of the different components of the project documented in the EES, including impacts on matters of NES protected under relevant controlling provisions of the EPBC Act.*
- *Advice regarding the availability and effectiveness of proposed feasible mitigation measures or controls to prevent, minimise or compensate for environmental effects (including on relevant matters of NES), in the context of relevant standards, objectives and guidelines established under relevant legislation.*
- *Recommendations on any necessary modifications to the project and/or specific design measures required to prevent, minimise or compensate for adverse effects, (including on relevant matters of NES).*

- *Recommendations on appropriate approval conditions that could be applied under Victorian law, necessary to achieve acceptable environmental outcomes in the context of applicable legislation and policy.*
- *Recommendations on the draft framework for environmental management for the project described in the EES, including any necessary controls, procedures or mechanisms.*
- *Conclusions on whether the project will substantially meet evaluation objectives and deliver an appropriate balance of environmental, economic and social outcomes, having regard to the conclusions on the effects of the project, public submissions, and the principles and objectives of ecologically sustainable development.*
- *Relevant information and analysis in support of the Inquiry's conclusions and recommendations.*
- *Description of the proceedings conducted by the Inquiry and a list of those consulted and heard by the Inquiry.*

These elements are addressed in Part B of this report. Part C contains consideration of Commonwealth environmental matters and Part D contains consideration of the planning permits.

After considering the environment effects and hearing submissions and evidence from many parties, the Inquiry finds that the adverse effects can be managed, and the positive effects of the project should see it proceed.

Recommendation in Chief

The Inquiry recommends in chief:

1. **The environment effects of the Dundonnell Wind Farm project can be managed to an acceptable level and the relevant project approvals should be granted subject to the recommendations in this report.**

The Inquiry makes the following other recommendations:

Biodiversity

2. **The Department of Environment, Land, Water and Planning establish a region-wide biodiversity monitoring program for threatened bird and bat species that are known to be susceptible to colliding with wind turbine blades, and publicly report on the results.**
3. **Include a new mitigation measure (in Table 25-8 or 25-9 of the Environment Effects Statement) that ensures the water storage dam, if one is needed, will be designed with advice from an ecologist to minimise its attractiveness to waterbirds.**
4. **The project be modified in accordance with Figure 2-3 – *Indicative Alternate Site Layout Plan* and modified further to show:**
    - **The removal of turbines T073, T081 and T084**
    - **A breeding site turbine free buffer applied to wetland 117 in accordance with the Brett Lane and Associates methodology.**

5. **The full extent of home ranges for the five breeding sites within 3.2 kilometres and the seven non-breeding sites within 5 kilometres of the wind farm site be mapped clearly showing the turbine free areas and made publicly available through the project website.**
6. **The Department of Environment, Land, Water and Planning coordinate a regional response to Brolga habitat planning, restoration and management to ensure the species survival in Victoria, including the coordinated mapping of Brolga turbine free buffer areas.**
7. **Adopt the alternative transmission line layout (Proposed transmission line layout comparison plan dated 16 October 2015) in the vicinity of Boonerah Estate Road to minimise the removal of mature River Red Gums.**
8. **The strategy to avoid the Spiny Rice-flower population as described on Page 2 of the BL&A letter dated 16 October 2015 (Attachment to Document 61) be investigated with a view to adoption.**

Geoscience

9. **Include specific reference to the specific findings and recommendations in Section 7.1.1 – 7.1.26 of the report *Proposed Dundonnell Wind Farm Geoscience Features of Significance and Sensitivity Assessment August 2014* and the correspondence dated 30 September 2015 (Document 14 in the hearing) in the mitigation measures in Table 25-4 of the Environmental Management Framework.**

Noise and Air Emissions

10. **Include the requirement for a Construction Noise Management Plan in the planning permit conditions for the wind farm.**
11. **That when the final turbine model is selected noise predictions be repeated using data specific to that model to assess any change in noise sensitive locations.**
12. **That the Work Plan include an assessment of air emissions for quarry operations under EPA Publication 1191 *A Protocol for Environmental Management for the Mining and Extractive Industry.***

Surface Water and Groundwater

13. **That the Glenelg Hopkins Catchment Management Authority consider the following when issuing permits for works on waterways:**
    - **Include conditions to ensure the protection of wetland and waterway habitat within and adjacent to the wind farm site.**
    - **Include conditions to ensure the protection of wetlands and waterway habitat within and adjacent to the transmission line route.**
14. **In considering an application for the extraction of groundwater, Southern Rural Water, should develop conditions that:**
    - **Ensure the protection of spring discharges and their contribution to groundwater dependent ecosystems in and adjacent to the wind farm site**

- **Ensure that existing registered groundwater supply bores are not impacted by groundwater abstraction by the proposed windfarm project.**
- **Require the establishment of an appropriate monitoring program for both existing groundwater supply bores and groundwater dependent ecosystems and develop thresholds to provide early warning of incipient impacts.**
- **Require the establishment of a contingency plan and mitigation measures to limit potential impacts on other groundwater users and groundwater dependent ecosystems.**

Fire

15. **Include the additional consultation and fire planning measures recommend in paragraph 4.4 of the expert witness statement of Mr John Nicholson dated 23 September 2015 in the development of the Fire Prevention and Emergency Response Plan for the project.**

Planning Permit Applications

16. **Issue planning permit 2015/23858 for the Dundonnell Wind energy facility subject to the application of permit conditions as shown in Appendix E.**
17. **Issue planning permit PL 15/075 for the Dundonnell Wind Farm transmission line subject to the application of permit conditions as shown in Appendix E.**
18. **Issue planning permit PL 15/074 for the Dundonnell Wind Farm off-site substation subject to the application of permit conditions as shown in Appendix E.**

PART A: BACKGROUND

1 Background

1.1 The proposal and project area

Dundonnell Wind Farm Pty Ltd[1] (the Proponent) proposes to construct a wind farm and associated elements at Dundonnell, approximately 23 kilometres north east of Mortlake in the Moyne Shire. The project includes:

- A 104 turbine wind energy facility[2] with blade tip height up to 165 metres, and a generating capacity of approximately 312MW[3]
- Access tracks, an on-site substation, up to four permanent meteorological masts, up to two concrete batching plants and a construction compound
- An on-site quarry and associated crushing plant, materials stockpiling, and water storage[4]
- A 38 kilometre, 220kV transmission Line that will connect to a proposed substation adjacent to the Mortlake Power Station (MPS)
- A 1 kilometre, 500kV transmission line between the substation and the MPS.

The project area includes the wind farm site, transmission line corridor and off-site substation. The subject site has an area of approximately 4,200 hectares, comprising 11 separate land holdings and is mostly used for grazing. Four dwellings, all of which are owned by participating landowners, are located on the subject site. The site location and proposed turbine layouts are shown in Figure 1 and 2.

1.2 Project approvals

(i) State environmental matters

On 21 January 2013, the Minister for Planning advised the Proponent that an Environment Effects Statement (EES) was required for the project under the *Environment Effects Act 1978* (Vic) (EEA). The reasons for requiring an EES were, in summary:

- Potential effects on biodiversity values including Brolga, protected migratory bird species and the Yellow-bellied Sheath-tail Bat
- Potential effects on the volcanic scientific and landscape features
- Cumulative impact on biodiversity and landscape
- To provide for an integrated risk based assessment of effects.

Under Section 8C of the EEA, approval decisions under other legislation can not be made until the Minister has prepared an assessment of environmental effects and they have been considered by the decision-maker.

---

1 A wholly owned subsidiary of Trustpower Holdings Australia Pty Ltd.

2 'Wind energy facility' is the planning definition. The Inquiry uses the more commonly understood term 'wind farm' in this report.

3 A revised layout of 96 turbines was provided in the hearing.

4 A possible water storage dam is shown in the quarry Work Authority area in the EES. The Inquiry had little information on this feature and whether it may require specific approvals such as a planning permit (building and works) or a licence from Southern Rural Water. The flora and fauna assessment considered the dam and provided specification to minimise its attractiveness to fauna.

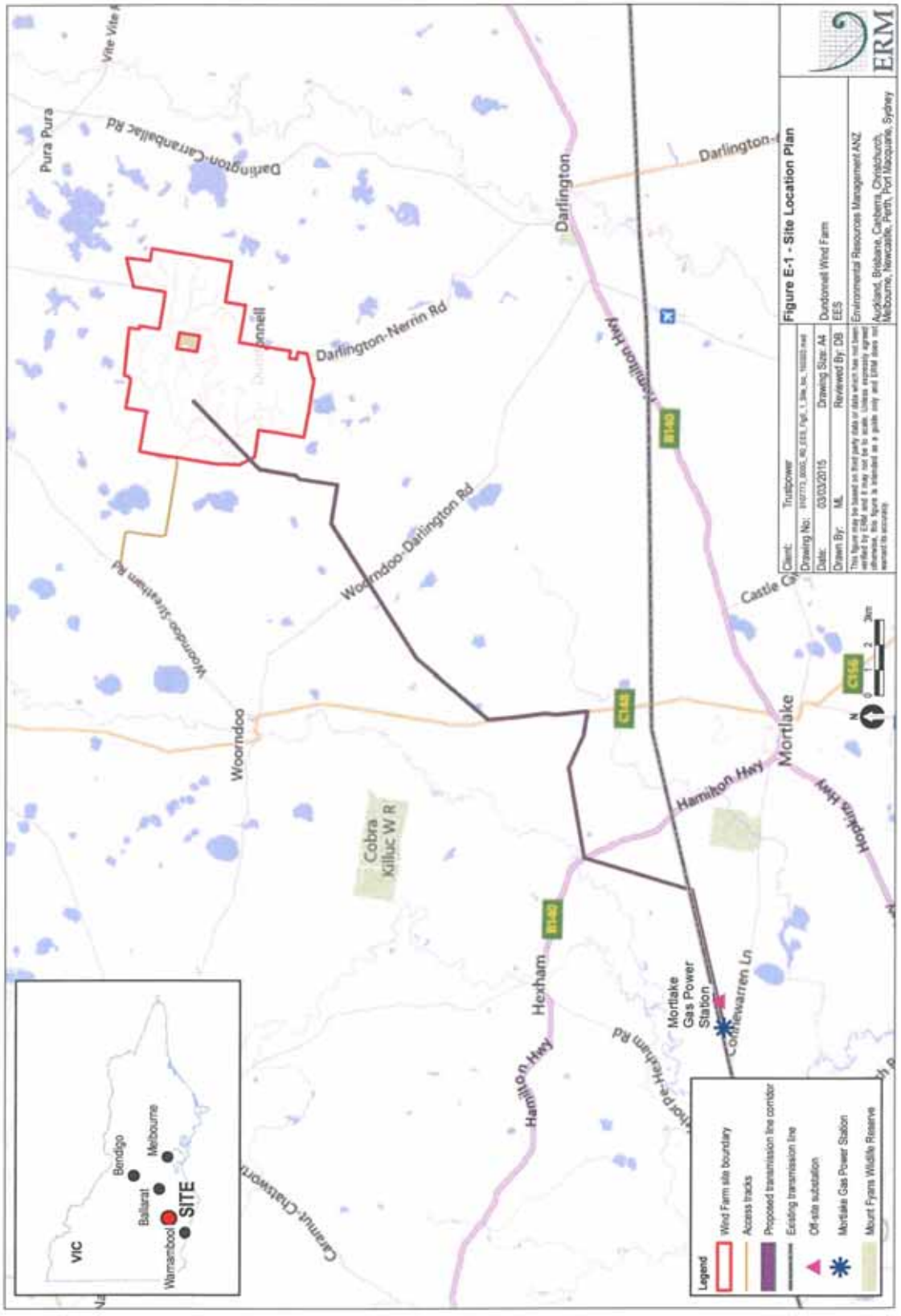


Figure 1 Site Layout Plan[5]

[5] Figure E-1 from the EES.

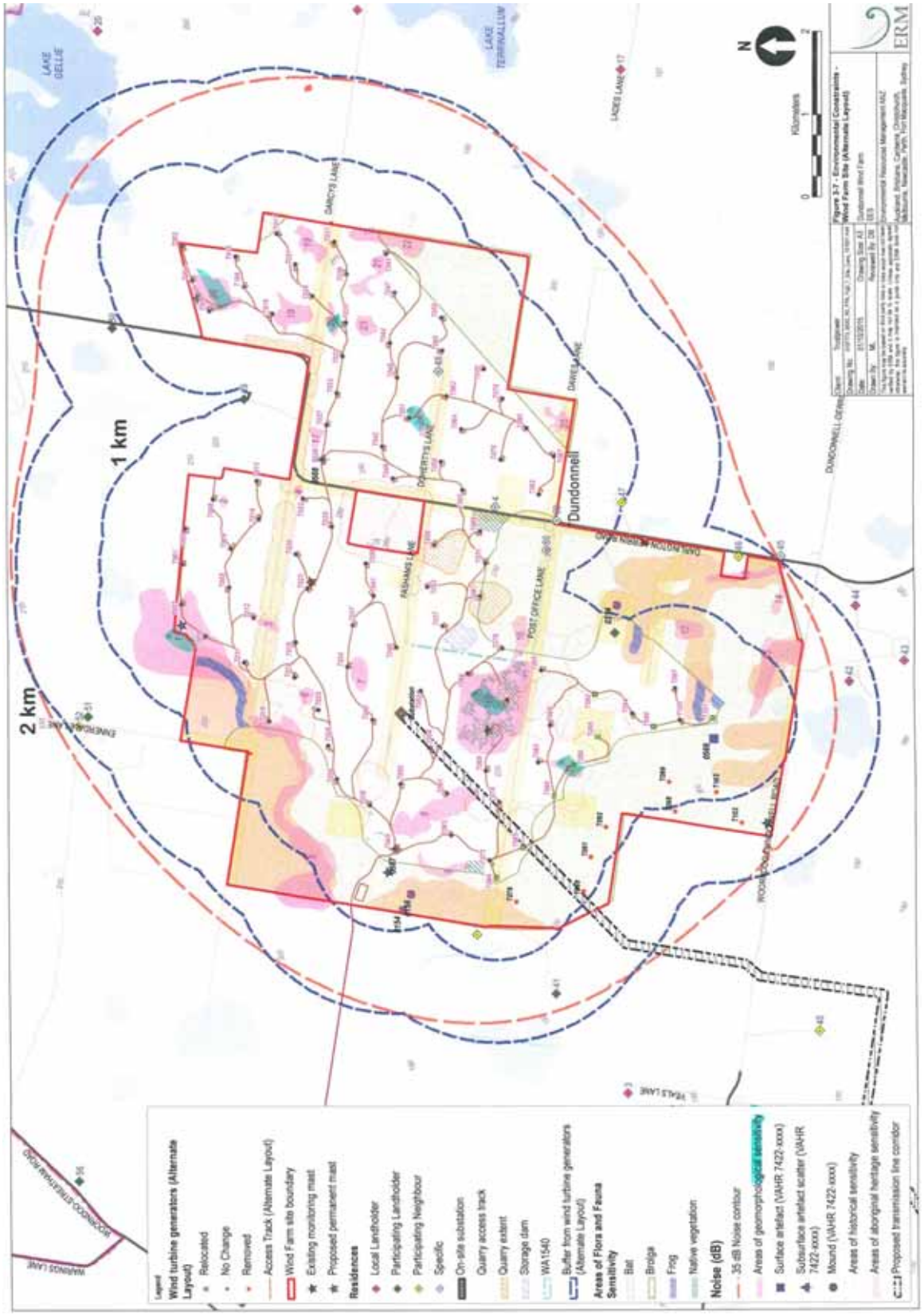


Figure 2 Revised Turbine Layout[6]

[6] Figure 3-7 as tabled in the hearing, Part of Document 9.

(ii) Commonwealth environmental matters

The project was referred to the Commonwealth under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) and determined to be a 'controlled action' on 3 December 2012 to be assessed under the bilateral agreement between the Commonwealth and Victoria.

The particular Matters of National Environmental Significance (MNES) are listed threatened species and communities (Sections 18 and 18A) and listed migratory species (Sections 20 and 20A).

The approval, as opposed to the assessment, under the EPBC Act (if granted), will be undertaken by the Commonwealth.

(iii) Planning approval

The project requires a number of approvals under the Moyne Planning Scheme, itself a subsidiary instrument of the *Planning and Environment Act 1987* (P&E Act). The permit requirements were outlined in the EES as follows:

- *Use and development of a wind energy facility, comprising up to 104 WTGs, main site access track, internal tracks, on-site substation, electrical reticulation, up to four wind monitoring masts, permanent operations/maintenance facility, temporary concrete batching plants and site office buildings; removal of native vegetation; business identification signage; and alterations to roads located in a Road Zone Category 1* ***(Permit 2015/23858).***
- *Use and development of a utility installation (power lines designed to operate at 220,000 volts or more) for a length of approximately 38 kilometres and associated removal of native vegetation, to enable the connection of the Dundonnell Wind Farm to an off-site substation and subsequent connection into the electricity grid at the Mortlake Gas Power Station* ***(Permit PL 15/075).***
- *Use and development of a utility installation associated with the off-site substation*[7] ***(Permit PL 15/074).***

The Minister for Planning is the Responsible Authority for the wind farm permit application under the Moyne Planning Scheme. The Moyne Shire Council (the Council) is the Responsible Authority for the power line and substation permit applications under the scheme; however the Minister for Planning called in these permits at Council's request. The planning approval is discussed in Chapter 12.

(iv) Quarry approval

The proposed on-site quarry does not require a planning permit but a work plan and work authority for extractive industry are required for the project under the Victorian *Mineral Resources (Sustainable Development) Act 1990* (MRSDA).

[7] EES Volume 1, pvii.

(v) Aboriginal heritage

The project requires the preparation of a Cultural Heritage Management Plan (CHMP) or Plans under the Victorian *Aboriginal Heritage Act 2006*. This must be prepared and approved by the Registered Aboriginal Party under the Act prior to statutory approvals being issued.

(vi) Other approvals

The project will require likely require other approvals such as works on waterways under the *Water Act 1989* and licensing of bores by Southern Rural Water. Where relevant these are addressed in this report.

1.3 Inquiry process

(i) Exhibition and submissions

The EES, together with the three planning permit applications, was exhibited between 13 July and 21 August 2015. One hundred and thirty five submissions were received including three late submissions. Issues raised in submissions included, in summary:

- Environmental benefits of the proposal
- Social and economic impacts both positive and negative
- Biodiversity including native vegetation, terrestrial fauna and birds and bats
- Agricultural impacts including effects on groundwater and limitations on aerial agriculture
- The significance of the volcanic landscape and views
- Quarry construction and operation
- Wind farm construction including roads and traffic
- Wind farm operation noise
- Constraints on aerial firefighting operations
- Impacts on health.

A complete list of submitters is included in Appendix A. Approximately 53 submissions supported or conditionally supported the project while 81 were opposed.

(ii) Appointment of Inquiry and Panel

The Inquiry into the potential environment effects of the project was appointed by the Minister for Planning under the EEA on 13 August 2015 and consisted of:

- Nick Wimbush
- Rod Gowans
- Doug Munro

The same members were appointed by the Minister on the same date under Part 8 of the P&E Act as a Panel to consider submissions to the three planning permit applications.

(iii) Terms of Reference

Terms of Reference (TOR) for the Inquiry were approved by the Minister for Planning on 9 August 2015 and are attached at Appendix B. The primary purpose of the Inquiry was to:

…inquire into and provide an integrated assessment of the potential effects of the proposed Dundonnell Wind Farm Project (the project).

(iv) Inquiry hearings and site inspections

A directions hearing was held in relation to the EES on 9 September 2015 at Glenormiston College, Glenormiston South. The main hearing was held at the same venue from 6-9 October, 13-16 October and 20 October 2015.

The Inquiry conducted an accompanied site inspection of the project area and surrounds on the morning of the 8 October 2015. Members conducted additional unaccompanied inspections from the public domain at other times.

Parties to the hearing are listed in Table 1.

Table 1 Parties to the Inquiry hearing

Party	Represented by
Department of Environment Land Water and Planning (DELWP) Impact Assessment Unit	Julie Hallyburton
The Minister for Planning as Responsible Authority	Michael Juttner of DELWP
Dundonnell Wind Farm Pty Ltd	Tim Power of Herbert Smith Freehills Lawyers assisted by Jennifer Meek of HSF, who called the following expert witnesses: - Mr Stephen Hunt in Traffic - Mr Allan Wyatt in Landscape/Visual - Mr Christophe Delaire in Acoustics - Mr Brett Lane in Flora and Fauna - Mr Ian Smales in Peer Review of Brolga Assessment - Prof Garry Wittert in Health - Dr Tamie Weaver in Hydrogeology - Mr John Nicholson in Fire
Adorina Pty Ltd	John McIntosh, who called the following expert witness: - Mr Les Huson in Acoustics
Moyne Shire Council	Aaron Moyne assisted by Michelle Grainger, Leah Johnstone, Vicki Askew Thornton, Richard Hodgins and David Madden
Department of Economic Development, Jobs, Transport and Resources – Earth Resources Regulation	Bessie Abbott
Brolga Recovery Group	Susan Dennis
Hamish Cumming	

Noel Dean	
Andrew Lang	
Keith Staff	
Lou Thomas	
David Allen	
Jane Hayes	
Vincent and Donna Gedye and family	Vincent Gedye
Sue Mudford	
James Leishman	
W A Molan and Sons	Peter Molan
Peter Mitchell	
John and Loyis Gedye	

(v) Issues dealt with in this report

The Inquiry considered all written submissions, as well as submissions presented to it during the hearing. In addressing the issues raised in those submissions, the Panel has been assisted by the information provided to it as well as its observations from inspections of specific sites.

This report deals with the issues in the following sections:

- Part A - Background
- Part B – Environment Effects Assessment
- Part C – Commonwealth Matters
- Part D –Planning Permits

PART B: ENVIRONMENT EFFECTS ASSESSMENT

2 Approach to the assessment of environment effects

2.1 Introduction

The assessment of environment effects of the project by this Inquiry will inform the Minister for Planning's 'Minister's Assessment' of the project. This assessment will be provided to the relevant decision makers who hold the specific powers under their legislation, as outlined in Section 1.2.

2.2 Evaluation objectives

The project was provided with Scoping Requirements that set the framework for assessment of environment effects. Included in the Scoping Requirements is a set of draft evaluation objectives which are to:

> *…identify desired outcomes in the context of potential project effects. They provide a framework to guide an integrated assessment of environmental effects, in accordance with the Ministerial Guidelines.*

The Inquiry has used the evaluation objectives to frame its consideration of the environment effects in each section of this chapter, where relevant.

The Inquiry then concludes on each evaluation objective at the end of each section prior to consideration of the integrated assessment in Section 10.

2.3 Environmental Management Framework

The Environmental Management Framework (EMF) provided in Chapter 25 of the EES is critical as it provides the overall approach to managing down environmental impacts through the construction and operation of the project.

The EMF outlines how the numerous plans and sub-plans work together with mitigation measures proposed by the Proponent. In a planning and legal sense, the EMF is called up in the relevant planning permit conditions for the various project elements.

Where necessary and relevant, the Inquiry comments on the EMF and mitigation measures through the individual issue sections. Where mitigation measures are not specifically addressed this should be read as support for the measure by the Inquiry.

3 Flora and fauna

3.1 Introduction

EES evaluation objective:

To avoid or minimise adverse effects on native vegetation and listed flora and fauna species and ecological communities including those listed under the FFG Act[8] or EPBC Act[9], and address opportunities for offsetting potential losses consistent with the relevant policy.

The following key issues were identified in the EES Scoping Requirements.

- Loss of native vegetation and associated vegetation communities and flora, including Spiny Rice–flower, Basalt Greenhood, Button Wrinklewort, Fragrant Leek-orchid, Small Golden Moths orchid, Clover Glycine, and Natural Temperate Grassland of the Volcanic Plains, Grassy Eucalypt Woodland of the Victorian Volcanic Plain and Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains
- Loss of, or degradation to, habitat for species of fauna listed under the FFG and EPBC Acts in particular Brolga, Latham's Snipe, Corangamite Water Skink, Growling Grass Frog, Striped Legless Lizard, Southern Bent-wing Bat and Yellow-bellied Sheath-tail Bat and relevant migratory species
- Cumulative effects on listed species of fauna in particular Brolga from the project in combination with other wind energy facilities.

A discussion on Matters of National Environmental Significance (MNES) under the EPBC Act is presented separately in Chapter 11 of this report.

3.2 Wind farm

3.2.1 Flora and native vegetation

(i) Background

Components of the wind farm that have the potential to impact on flora and native vegetation are:

- The construction of wind turbines, access tracks to wind turbines and a network of underground distribution cables
- The major site access track from the Woorndoo-Streatham Road
- Construction of a sub-station, lay-down areas, site office and up to two temporary concrete batching plants
- Construction of two on-site quarry pits
- The potential need to upgrade the Woorndoo-Streatham Road.

Information about the flora and native vegetation relating to the wind farm and main access track is contained in the Brett Lane & Associates (BL&A) Flora and Fauna Assessment, 2015.[10]

[8] *Flora and Fauna Guarantee Act 1988.*

[9] *Environment Protection and Biodiversity Conservation Act 1999.*

[10] EES, Volume 2, Annex L, Chapter 2. Flora and Fauna Assessment Report, BL&A, 2015.

The report indicates that the location of the wind farm components has been chosen to avoid most of the native vegetation on the site. A total of 187 remnant patches and mosaics with an area of 136.4 hectares occur on the wind farm site and major site access track. An area of 0.262 hectares is proposed to be removed from within the wind farm site and an area of 1.023 hectares is proposed to be removed along the major site access track. No native vegetation will be removed in the construction of the quarry pits.

The construction of the major site access track will result in the removal of 1.023 hectares of Natural Temperate Grassland of the Victorian Volcanic Plain, which is critically endangered under the EPBC Act. This will also result in the clearing of 1.023 hectares of Western (Basalt) Plains Grassland Community listed under the FFG Act. No EPBC Act or FFG Act listed flora species were found during targeted surveys in areas of native vegetation to be impacted by the wind farm and the major site access track.

A total of 11 patches native vegetation was detected within the road reserves along 7.5 kilometres of the Woorndoo-Streatham Road, Bolac Plains Road and Woorndoo-Ararat Road. The proposed wind farm development will not require vegetation removal from these areas.[11]

(ii) Evidence and submissions

Prior to the Inquiry commencing the Proponent presented a proposed alternative turbine layout in the south west corner of the wind farm site involving the re-location of eight turbines and the deletion of eight turbines. This proposal had no additional implications for vegetation removal.

Submitters raised the following issues:

- The clearing of remnant native grasslands as there is so little remaining (Documents 43, 59).
- The loss of native grasslands cannot be offset by protecting existing grasslands elsewhere. No amount of protection for existing grassland somewhere else will replace the destroyed grassland (Submission 112).

DELWP[12] advised that the issues of minimising vegetation loss have been well addressed in the EES and indicated that it would not object to a permit for vegetation removal subject to certain conditions including an approved offset management plan. Advice to the Inquiry that the Proponent was negotiating to secure vegetation offsets was provided in a letter from Vegetation Link Pty Ltd.[13]

The Inquiry queried the design width of 20 metres for the main access track to the wind farm site that was used to determine the area of vegetation removal. The Proponent subsequently advised that the access track will be up to 12 metres wide. The reduction in the proposed width of the access track will reduce the area of native grassland removal from 1.023 hectares to 0.666 hectares.[14]

[11] Ibid, p226.
[12] Document 22.
[13] Document 30.
[14] Attachment to Document 61.

No EPBC Act or FFG Act listed flora species were found during targeted flora surveys of native vegetation potentially to be impacted by the proposed wind farm and the major site access track.[15]

Moyne Shire Council in their submission[16] sought an upgrade to the pavement width to sections of the Woorndoo-Streatham Road. The Proponent in agreeing to undertake the upgrade, indicated however, that there would be no removal of native vegetation and that pavement widths may be narrower, in some locations, to that sought by Moyne Shire Council so as to avoid impacts on native vegetation.[17]

(iii) Discussion and conclusions

The Inquiry acknowledges the concerns of submitters about the removal of native grassland. However the Proponent is required to undertake this assessment in accordance with the government policy on permitted clearing of native vegetation and offsetting.

The Inquiry considers that the Proponent has demonstrated an attempt to minimise native vegetation removal. Of the 136.4 hectares of native vegetation remnants across the site, the majority will be avoided with 0.928 hectares proposed to be removed, 0.262 hectares for the wind farm site and 0.666 hectares for the main access track. The siting of the proposed quarry sites avoids the removal of native vegetation. No vegetation will be removed in the works associated with the Woorndoo–Streatham Road. The Inquiry accepts that there will be no EPBC Act or FFG Act listed flora species impacted by the proposed wind farm or access track. The Inquiry notes DELWP advice regarding a permit for vegetation removal and notes that under the native vegetation guidelines[18], offsets are required to be established prior to removal of native vegetation. The Proponent advised the Inquiry that it is negotiating to secure the appropriate offsets.

(iv) Finding

The Inquiry finds:

- That native vegetation loss for the wind farm should be able to be managed to an acceptable level subject to the development of a Native Vegetation Management Plan and the provision of native vegetation offsets.

Planning permit conditions are recommended in Appendix E accordingly.

3.2.2 Fauna (other than Brolga)

(i) Background

The wind farm has the potential to impact on fauna in several ways:

- Habitat loss as a result of construction of the various components of the facility

[15] B Lane, EWS, September, 2015, p 13.
[16] Document 40, p19.
[17] Document 61, p3.
[18] *Permitted clearing of native vegetation: biodiversity assessment guidelines*, Department of Environment and Primary Industries (DEPI, now DELWP), 2013.

- Collision with wind turbines and meteorological mast guy wires (birds and bats)
- Disturbance from increased human and vehicle activity during construction and operations of the wind farm.

Information about fauna (other than Brolga) survey methods and results is provided in the flora and fauna assessment in the EES.[19]

The report describes the wind farm site as predominantly agricultural land that due to its extensive modification is of low quality for fauna. Small remaining areas of shrubland, grassland, wetlands and creek lines may provide moderate to high quality habitat for certain fauna species. A summary of the fauna assessment is provided below:

- The Corangamite Water Skink (EPBC Act, FFG Act) has previously been recorded at two wetlands south of the wind farm boundary. The majority of the wind farm (95%) does not provide habitat for the Corangamite Water Skink. Potential habitat (low to moderate quality) for this species was found on the wind farm site. This habitat will not be impacted by the proposed wind farm as most of the potential habitat lies within a turbine exclusion buffer. In addition a 55 metres turbine free buffer has been applied to wetlands and drainage lines considered to be potential habitat[20]
- Following targeted surveys of potential habitat on the wind farm site, no Growling Grass Frogs (EPBC Act, FFG Act) were detected. A 55 metre buffer has been applied to areas of potential habitat[21]
- No Striped Legless Lizards (EPBC Act, FFG Act) were detected during targeted surveys of the wind farm site and no significant impacts are expected on this species from this project[22]
- One Fat-tailed Dunnart listed on the DEPI advisory list[23] was recorded during targeted surveys and is vulnerable to impacts of the proposed wind farm. Mitigation measures are proposed where suitable habitat for this species is proposed to be removed[24]
- Targeted migratory bird surveys conducted within the wind farm site show that overall activity is relatively low. Common Greenshank and Latham's Snipe were the only two listed migratory species recorded in the site. They were recorded in low numbers and no turbines or related infrastructure will be built near habitats where they were recorded. Habitats where most migratory birds are found occur several kilometres from the wind farm site. A White-bellied Sea Eagle (FFG Act) was observed flying across the wind farm site[25]

[19] EES, Volume 2, Annex L, Flora and Fauna Assessment, BL&A, 2015.
[20] Ibid. Chapter 9, p197.
[21] Ibid. Chapter 8, p191.
[22] Ibid. Chapter 7, p181.
[23] Advisory List of Threatened Vertebrate Fauna in Victoria, DEPI, 2013.
[24] EES, Volume 2, Annex L, Flora and Fauna Assessment, BL&A, 2015, Chapter 7, p181.
[25] EES, Volume 2, Annex L, Flora and Fauna Assessment, BL&A, 2015, Chapter 5, p115.

- Baillon's Crake (FFG Act) was recorded in a drainage line in the south-eastern corner of the site. This habitat will not be impacted by the proposed development[26]
- Bat surveys indicated the majority of bat activity across the site was attributable to common species. Ten common secure and widespread species and two threatened species Southern Bent-wing Bat (EPBC Act and FFG Act) and Yellow-bellied Sheath-tailed Bat (FFG Act) were recorded. Survey results indicated low activity levels for the threatened species on the proposed wind farm site compared with the common and widespread species. The assessment concluded that as the two threatened species do not occur at the site in numbers of significance, at a population level, the operation of the wind farm is unlikely to put their population at significant risk[27]
- The bird utilisation survey found that the most common birds frequenting the proposed wind farm site were common farmland birds. Four species of raptors (Brown Falcon, Nankeen Kestrel, Black-shouldered Kite, Peregrine Falcon) were recorded during surveys. An estimate of bird mortality of between 0.7 to 3.3 birds per turbine per year was provided based on studies at several Australian wind farms[28]
- An area of potential habitat for the Golden Sun Moth (EPBC Act, FFG Act) was recognised in one section of the wind farm site. This area will be excluded from access by wind farm personnel and vehicles and wind farm infrastructure will be located so as to not impact on this area.[29]

(ii) Evidence and submissions

Submitters raised the following concerns about the fauna assessment of the wind farm site:[30]

- The impact on Mt Fyans Wildlife Reserve has not been adequately considered. It is a significant site for nesting Peregrine Falcons. The area should be buffered to provide protection from turbines and quarry activities. A 5 kilometre buffer should be provided for the Peregrine Falcon (Document 17, Submissions 1, 4, 5, 15, 32, 36, 44, 104, 116, 135).
- The quarry will impact on important flora and fauna habitat (Document 59, Submissions 22, 112).
- The results from the Macarthur Wind Farm Bat and Avifauna Mortality Monitoring Report indicates that a significant number of raptors were killed. Suggestions about improving the accuracy of the surveys should be adopted. Data from such mortality monitoring should be made available to the public (Submissions 32, 36, 44, 116).

[26] Ibid, Chapter 3. p84.
[27] Ibid. Chapter 6. p141.
[28] Ibid. Chapter 3. p111.
[29] Ibid. Chapter 10. p217.
[30] The proposed alternative turbine layout has no further implications for the fauna assessment.

- Raptor populations are significantly at risk from the wind farm (Submissions 36, 68, 70, 80, 88, 90).
- The migratory bird surveys underestimate the significance of the Dundonnell area, particularly for Latham's Snipe and the Sharp-tailed Sandpiper (Document 56, 58, Submissions 1, 32, 104, 115, 116).
- Bat populations will be impacted both from air pressure from rotating blades and from being struck (Submissions 112,116).
- Creation of a water body on the wind farm site will attract migratory and other birds (Submission 32, 128).
- A larger buffer should be considered for the Growling Grass Frog as it can travel some distance from water (Document 59).
- Other relevant data sources should have been used such as Atlas of Living Australia and eBird. Some records were ignored and other relevant observations missed. These sources would have provided better information on species such as Little Egret (FFG Act) and Gull-billed Tern (FFG Act) (Document 45).

The Inquiry sought advice from DELWP about the natural values of the Mount Fyans Wildlife Reserve and matters relevant to the proposed operation of a quarry as part of the wind farm project. DELWP's response[31] provides some history of the acquisition of the land and indicates that they have no information on the Reserve's natural values. With respect to quarry operations disturbing the Peregrine Falcons, Mr Lane[32] indicated that based on overseas information, there could be a short interruption to normal behaviour from blasting. In response to questions at the Inquiry, Mr Lane indicated that the Peregrine Falcon was widespread, was not considered a threatened species in Australia and no particular measures such as buffers are required. In his expert evidence, Mr Lane[33] indicated that raptors are more susceptible to collision with turbines because of their flight behaviour. However, raptors observed at the wind farm site are common and widespread species (including Peregrine Falcon) and populations of these species would not be significantly affected as a result of mortality by collision with turbines.

Regarding the potential impact of the quarry location, Mr Lane[34] advised that the quarry sites were chosen in areas that do not support native vegetation or habitat for threatened species.

[31] Document 21.
[32] B Lane, EWS, September, 2015, p50.
[33] Ibid.p72.
[34] Ibid, p50.

The Inquiry was provided with reports[35] from the Macarthur Wind Farm bat and bird mortality monitoring for 2014[36] and 2015[37]. The results for 2015, when the frequency of carcass searches was increased from monthly (2014 monitoring) to weekly, show an annual mortality of native birds at 3.31 birds per turbine including 1.1 raptors per turbine per year and 3.08 bats per turbine per year. Across the wind farm, this equates to an estimate of 464.02 (+/- 109.20) native birds of which 154.88 (+/-39.20) are raptors and annual bat mortality of 431.20 (+/- 235.20). The 2015 report indicated that 75.3% of bird mortality was for introduced species.

The Inquiry was advised that the proposed storage dam in the central part of the proposed wind farm site will be constructed with steep rock edges to the water body to minimise its attractiveness to waterbirds and to reduce fringing vegetation from developing.[38]

The BL&A[39] report describes the survey methods for migratory birds. The Commonwealth guidelines for migratory bird surveys[40] state that four surveys are required between October and March, including replicate surveys. The BL&A report indicates the survey approach taken complies with the Commonwealth requirement with eight surveys conducted, twice as many as required. Between 2011 and 2013, eight survey periods involving 31 separate days were undertaken. Mr Lane[41] indicated that surveys found that the overall activity of migratory birds within the wind farm site was low because of limited suitable habitat. However, Common Greenshank and Latham's Snipe do utilise small areas of wetland and creeks in the west and south west of the site. Twenty Latham's Snipe were recorded once near the western boundary in 2013 and this wetland will be included in the turbine free buffer. Other survey results have recorded low numbers of this species.

BL&A[42] recognises that the Dundonnell region is of international significance for the Sharp-tailed Sandpiper. Mr Lane[43] indicated that wetlands identified that support larger numbers of migratory shorebirds are located several kilometres to the north east of the proposed wind farm site and routine movements of these shorebirds within these wetlands would not bring them near wind farm infrastructure. As such the proposed wind farm is unlikely to significantly affect the population of any migratory species.

Four bat survey programs were undertaken between 2009 and 2013 that involved 23 weeks of survey and 9,532 Anabat-hours. BL&A[44] indicates that 12 species of bats were recorded during the four survey periods of which 10 are common widespread species. Two

35 Attachments to Document 61.

36 *Macarthur Wind Farm, Bat and Avifauna Mortality Monitoring*, March 2013 to February 2014, Australian Ecological Research Services, 2014.

37 *Macarthur Wind Farm, Bird and Bat Avifauna Mortality Monitoring*, March 2014 to February 2015, Australian Ecological Research Services, 2015.

38 Attachments to Document 61 and BL&A Flora and Fauna Assessment p138.

39 EES, Volume 2, Annex L, Flora and Fauna Assessment, BL&A, 2015. Chapter 5, p118.

40 Department of Environment, Water, Heritage and the Arts, *Significant Impact Guidelines for 36 migratory shorebird species – Migratory Species: EPBC Act Policy Statement* (3.21), 2009.

41 B Lane EWS, September, 2015, p18.

42 EES, Volume 2, Annex L, Flora and Fauna Assessment Report, BL&A, 2015, Chapter 5, p124.

43 B Lane, EWS, September, 2015, p18.

44 EES, Volume 2, Annex L, Chapter 6, Flora and Fauna Assessment, BL&A 2015, Chapter 6, p141.

threatened species the Southern Bent-wing Bat (EPBC Act and FFG Act) and Yellow-bellied Sheath-tailed Bat (FFG Act) were recorded on the proposed wind farm site. During the four survey periods calls of the Southern Bent-wing bat were recorded 21 times and none during two survey periods. The Yellow-bellied Sheath-tailed Bat was recorded 11 times and none during two survey periods. A maternity cave for the Southern Bent-wing Bat is located approximately 70 kilometres south west of the wind farm site and the species migrates between there and winter roosting caves in western and south western Victoria.

Table 2 Percentage bat activity across the wind farm site[45]

	2009 November	**2011 March**	**2013 Summer/Autumn**	**2013 Spring**
Southern Bent-wing Bat	Not detected	0.4%	0.3%	Not detected
Yellow-bellied Sheath-tailed Bat	0.5%	Not detected	2.4%	Not detected
Southern Bent-Wing/Forest Bat Complex	Not detected	1.5%	9.8%	5.6%

Mr Lane[46] indicated that given the low levels of activity of the two threatened bat species at the proposed wind farm site, the operation of the wind farm is unlikely to put their population at risk. DELWP considered this a reasonable conclusion.[47]

Targeted surveys involving 3,900 tile checks did not detect the Striped Legless Lizard and no significant impacts are expected on this species from this project.[48]

No Growling Grass Frogs were detected during targeted surveys and they are considered unlikely to occur on the proposed wind farm site. As there is a historical record (1992) from the site however, a 55 metre buffer has been applied to all dams and waterways to minimise impacts as a precautionary approach.[49] Some evidence indicates that the frog is capable of moving up to a kilometre or more from water sources and as such the buffer proposed may not be adequate if the species is present.

Regarding the issue of data sources, the Inquiry was advised that although many of the records on eBird would be legitimate, they are not checked systematically before being made publicly available. The site contains a very large number of unverified third party records and is not a reliable information source.[50] The Atlas of Living Australia (ALA)

[45] EES, Volume 2, Annex L, Chapter 6, Flora and Fauna Assessment, BL&A 2015, Chapter 6, derived from tables 6.5, 6.6, 6.8 & 6.10.
[46] B Lane, EWS, September 2015, p19
[47] Document 21.
[48] EES, Annex L, Flora and Fauna Assessment, BL&A, 2015, Chapter 7, p181.
[49] B Lane, EWS, September, 2015, p20.
[50] Attachment to Document 61.

assembles information from Birdlife Australia's Atlas of Australia's Birds and the Victorian Biodiversity Atlas (VBA), the two main sources of bird information in the ALA for Victoria and both sources were accessed in preparing the EES. Both the Gull-billed Tern and Little Egret are indicated as occurring or likely to occur on the wind farm site.[51]

(iii) Discussion and conclusions

While noting that DELWP had no information on the natural values of Mt Fyans wildlife Reserve, the Inquiry is satisfied that there will be no direct impacts on the Reserve. However it is clear that the nesting Peregrine Falcons in the Reserve will be at risk from the proposed wind farm development. Evidence was provided that raptors are particularly more susceptible to collision with turbines because of their flight behaviour. Mortality studies at the Macarthur Wind Farm indicate that approximately 30% of the native birds killed per turbine per year are raptors. While particular permit conditions to address the impact on non-threatened species are beyond the scoping requirements of the Inquiry, the cumulative impact on regional raptor and other bird populations is a matter that requires consideration in the avifauna mortality monitoring plan and by DELWP. Consistent standards for mortality studies are required to facilitate comparative studies between wind farms and to better understand cumulative impacts at the population level.

The Inquiry is concerned that DELWP, in their correspondence of 17 November 2015, have indicated that they are not collating data on bird (and bat) mortality from wind farms, and consider that a project by project assessment of impacts satisfies any cumulative impact concerns.

The Inquiry considers this is an inadequate scientific approach to population impacts; it discounts any possibility of regional scale effects on avian fauna mortality as the numerous wind farms that are already approved are progressively constructed. For example if the mortality rates at Macarthur for raptors were repeated at all major wind farms, it may have a significant effect on the regional population that goes undetected using a project by project assessment.

At the very least the Inquiry considers that DELWP should be co-ordinating a monitoring program, possibly funded by the industry, that provides enough information to confirm their view that population effects are acceptable.

Bat mortality at the proposed wind farm is to be expected, but given the low level of activity of the two threatened bat species, the Inquiry is satisfied that the proposed wind farm does not represent a significant threat to the population of either species. The Inquiry notes that of the bat calls from the three different mast heights at the two meteorological masts, 2.2% were recorded from 50 metres above ground, 14.4% from 25 metres above ground and the remaining 83.4% at ground level. The Inquiry also notes that Mr Lane's assessment of Rotor Swept Height (RSH) assumed a 'blade tip at lowest point' distance of 23 metres above ground level; while the RSH for the turbines being considered for the proposed wind farm commences from 'blade tip at lowest point' 47 metres above ground level up to 'blade tip at

[51] Attachment to Document 61.

highest point' at 165 metres (117 metres diameter). Thus estimates of potential impacts of bats exposed to RSH are conservative.

The quarry will be sited in an area where there is no native vegetation and as such no fauna habitat will be impacted. The Inquiry is satisfied that the design for the storage dam can incorporate the requirements so that avifauna are not attracted to the location. The Inquiry notes that Mr Lane's prescription for the storage dam design does not appear to have made it into the mitigation measures and has included a recommendation accordingly.

The Inquiry accepts that the most important wetlands for migratory birds (e.g. Sharp-tailed Sandpiper) are located some distance from the wind farm site and the that routine movements of these migratory birds is such that it is unlikely that the proposed wind farm will significantly affect any migratory species' populations. However it is accepted that certain small areas of the wind farm site may be utilised by migratory species (Latham's Snipe) from time to time.

The Inquiry considers that there will be no significant impacts on Fat-tailed Dunnart, Striped Legless Lizard, Growling Grass Frog and Corangamite Skink and that the proposed buffers provide core areas for protection. Mitigation measures are proposed for the Fat-tailed Dunnart and Striped Legless Lizard[52] and other fauna[53] and these should be incorporated into the Environmental Management Plan. The presence on-site during the micrositing of turbines and during the construction phase of a suitably qualified ecologist would facilitate implementation of appropriate mitigation measures.

As all potential habitat for the Golden Sun Moth on the proposed wind farm site will be retained, the Inquiry is satisfied that targeted surveys are not required and that there will be no significant impacts on this species from this proposal.

(iv) Findings and recommendations

The Inquiry finds:

- That impacts on fauna (other than Brolga) should be able to be managed to an acceptable level subject to implementation of the mitigation measures and development and implementation of the Environmental Management Plan.

Planning permit conditions are recommended in Appendix E accordingly.

The Inquiry recommends:

The Department of Environment, Land, Water and Planning establish a region-wide biodiversity monitoring program for threatened bird and bat species that are known to be susceptible to colliding with wind turbine blades, and publicly report on the results.

Include a new mitigation measure (in Table 25-8 or 25-9 of the Environment Effects Statement) that ensures the water storage dam, if one is needed, will be designed with advice from an ecologist to minimise its attractiveness to waterbirds.

[52] EES, Volume 2, Flora and Fauna Assessment Report, BL&A, Chapter 7, p190.
[53] Ibid. Chapter 5, p140.

3.2.3 Fauna (Brolga)

(i) Background

Information about Brolga is contained in the Brolga Assessment[54] and in the Additional Brolga Assessment[55]. The Brolga Guidelines[56] describe a recommended approach to the assessment and mitigation of potential impacts of wind farms on Brolga. The Brolga Guidelines indicate that wind farms impact on Brolgas in three key ways:

- Direct effects, particularly mortality resulting from collision with turbines
- Indirect effects, including habitat avoidance
- Barrier effects.

As recommended in the Brolga Guidelines, the Proponent undertook a three step assessment approach.

- Level One Assessment: Initial Risk Assessment (Desktop studies of known and potential habitat; Site inspection; Community consultation and landowner surveys)
- Level Two Assessment: Impact Assessment (Breeding and non-breeding season surveys)
- Level Three Assessment: Mitigation and Offset (Avoid impacts, Collision Risk Analysis, Population Viability Analysis, compensation strategies).

Historical information on Brolga activity was derived from the VBA, Birdlife Australia's Atlas of Australia's Birds, BL&A records and landholder surveys. A breeding season ground survey was undertaken in 2009 and a breeding site aerial survey was conducted in 2010. Fortnightly roaming surveys were undertaken from 2011-2015 to search for breeding and flocking birds.

A total of 47 sites were identified as having been used for breeding within the 10 kilometre radius of investigation (ROI) of the wind farm site and 22 traditional flocking sites were located within the wind farm ROI. Five breeding sites were identified within 3.2 kilometres of the turbine layout and seven traditional flocking sites were identified within 5 kilometres.[57] For the purposes of avoiding or mitigating impacts on Brolga, breeding home ranges were defined based on a habitat modelling approach to habitat use around 5 breeding sites within 3.2 kilometres of the wind farm.[58] The approach to defining non-breeding (flocking site) home ranges[59] is predicated on specific site investigations rather than the default 5 kilometre buffer as described in the Brolga Guidelines. Three traditional flocking sites were identified as requiring turbine free buffers. Collision Risk Analysis (CRA) predicts one Brolga fatality for every two years (95% avoidance) including transmission line collision estimates (The transmission line impacts on Brolga are discussed in 3.2.2 of this

[54] EES, Volume 2, Annex M, Brolga Assessment, BL&A, 2014.
[55] Additional Brolga Assessment, BL&A, June 2014 to August 2015, 2015.
[56] *Interim guidelines for the assessment, avoidance, mitigation and offsetting of potential wind farm impacts on the Victorian Brolga population*, DSE 2011, Revision 2012.
[57] EES, Volume 2, Annex M, Brolga Assessment, BL&A, 2014, Table 15, p79
[58] Ibid. Fig 20, p88
[59] Ibid. p87-90

report). Population Viability Analysis (PVA) based on an expected minimum population of 809 birds, demonstrates that to achieve 'zero net impact' will require the replacement of between 1 and 13 birds (depending on the avoidance rate) over the life of the project.[60] A compensation plan is proposed with the aim of achieving zero net impact.

(ii) Evidence and submissions

Submitters raised a number of issues as follows:

- The Brolga Guidelines default buffers of 3.2 kilometres and 5 kilometres radius should be applied to breeding sites and flocking sites respectively (Document 43, 56 58).
- The EES does not comply with the default buffers in the Brolga Guidelines. At least five breeding sites and eight flocking sites are located within 3.2 kilometres and 5 kilometres, respectively, of multiple turbines (Submission 133).
- A breeding pair of Brolgas have been recorded in the wind farm site and this wetland (wetland 117) should have an appropriate buffer (Submission 128).
- The EES identifies six confirmed traditional flocking sites surrounding the wind farm but proposes only three for turbine free buffering. The flocking sites around the wind farm have not been adequately buffered (Documents 43, 56, 59).
- There is no clear method for determining the flocking home ranges and hence the turbine free buffers (Document 43, 56, Submission 128).
- Data about use of the landscape by Brolgas has been selectively applied (omission of flights to grain trails, omission of irregular flights, omission of stony rise areas, inclusion of arable areas) Ignores the year to year variability of Brolga site utilisation (Document 58).
- Not all Brolga records and observations have been utilised, e.g. Atlas of Living Australia, eBird. Records have been ignored and Brolga observations have been missed (Document 45).
- The Dundonnell region surrounding the wind farm, within the ROI, contains many key wetlands and wetland complexes that are used adaptively by Brolga depending on seasonal conditions (Documents 43, 56, 59, Submission 128).
- The Brolga assessment demonstrates the high level of Brolga activity for both breeding and flocking within the ROI. It is evident this area is likely to be important for the conservation of the Victorian Brolga population (Submission 133, Document 58).
- There is considerable inter-annual variability in Brolga usage of wetlands and the surrounding landscape for foraging and breeding. The concept of Brolgas using discrete well defined breeding or flocking wetlands is not well founded (Submission 133).
- The Brolga assessment was undertaken during wet years. The relative importance of refuges for Brolga during drought periods and how they use the

[60] EES, Volume 2, Annex M, Brolga Assessment, BL&A, 2014, p94-95

landscape within the ROI, in particular, their flight patterns, is not known (Submission 133).

- The wetland mapping in the EES is incomplete. Many small ephemeral wetlands, together with creeks springs and drainage lines have not been mapped (Document 45, 56, 59, Submission 32).
- The basis of the population estimate in the PVA analysis is unclear. Departmental population counts suggest the population is much smaller (Document 57, Submission 25).
- Approximately 80 to 100 Brolga use the Dundonnell landscape and so approximately 20% of the southern Victorian Brolga population is exposed to the wind farm development (Submission 32, Document 59).
- Stony rises should be included in turbine free buffers as these areas are utilised by Brolgas. Brolgas feed in these habitats (Document 43, 56, Submission 32, 128).
- Brolga displacement by the wind farm has not been adequately addressed in the EES (Document 43, 45, 57, 58, Submission 25, 32, 104, 133).
- The survey effort for the Brolga utilisation survey is inadequate (Document 45, 59, Submission 128).
- There is no methodology provided for how the compensation for the predicted Brolga mortality (up to 13 birds) will be measured. Recruitment is hard to achieve (Document 43, 56, 58 Submission 128, 133).
- Brolgas and other waterbirds have been shown to respond well to restoring wetland water regimes (Submission 128, 15).
- Predictions from collision risk analysis need to be treated with caution as they can be wrong as the Tasmanian Woolnorth experience demonstrated (Document 58).
- The number of movements between breeding and non-breeding areas should be estimated and incorporated in to the collision risk (Submission 128).
- No assessment of the cumulative effects has been provided. Bird mortality data from existing wind farms should be collected to provide trend information and assist in the assessment of new wind farm proposals (Document 17, 40, 58, Submission 32).
- Permit conditions should provide for monitoring including providing practical measures if operational turbines are found to have unintended or unacceptable impact on the local Brolga population (Document 40).

In her submission to the Inquiry, Ms Veltheim (Submission 128) provided information on Brolga movements from her research.[61] She indicated that the 10 kilometre area around the proposed Dundonnell wind farm was important habitat for Brolgas in south western Victoria and includes both breeding sites and non-breeding (flocking) areas. The results of her Brolga GPS studies within the ROI, indicate that the overall patterns of movement are similar to

[61] Ms Veltheim is undertaking a PhD project *The South West Victoria Brolga Research Project* funded by a range of State and National agencies, Bird Observation and Conservation Australia and the wind industry. The study includes GPS tracking of Brolga movement. More information is available at the project website: www.victorianBrolgastudy.com.au

those reported in the Brolga report,[62] with high use areas to the west, south east, east and north east of the proposed wind farm within a 10 kilometre radius. Her results detected Brolga movements (five Brolga fitted with transmitters for a total of 33 paths) across the proposed wind farm site from June 2011 to August 2012. Brolga utilisation of stony rise habitat for foraging, including switching their diet from grain to invertebrates, was observed during her investigation.[63]

In his EWS, Mr Lane[64], referred to the results of the 2015 flocking season and the dispersal of Brolga from wetland 139 across the south west of proposed wind farm. As a consequence of this, Mr Lane[65] proposed an expanded turbine free buffer which would remove the 16 turbines within this buffer, relocate eight turbines outside the buffer and delete eight turbines. Mr Lane[66] also proposed that the results of the 2014 Brolga survey not be used as a basis for defining a buffer around wetland 139. In 2014 flights of Brolga were observed from wetland 139 into the southern part of the wind farm site, and Mr Lane[67] indicated that this was due to grain trails being laid for stock forage, while recognising some of the flights were of unknown destination. He advised that this practice has now ceased under an agreement between the landowner and the Proponent and the driver for these Brolga movements is therefore not considered to persist.

The breeding site (wetland 117) identified by Ms Veltheim (Submission 128) is considered by Mr Lane[68] to be an infrequent breeding site with a limited chance of supporting a successful breeding outcome because of its drainage history. He concluded that given that the landowner intends to undertake maintenance of the existing drain which would prevent it from holding water, it would then be considered permanently drained and would no longer be a future Brolga breeding site and therefore would not need to be buffered. In his main submission,[69] Mr Power, accepted that if the wetland was not drained it could be eligible for a turbine free buffer which would exclude a further eight turbines. Rather than automatically applying a turbine free buffer to wetland 117, Mr Power proposed an approach that involved the granting of a permit subject to a condition that the development plans for the wind farm must exclude these turbines unless the Responsible Authority is satisfied the wetland has been permanently drained.

62 EES, Volume 2, Annex M, Brolga Assessment, BL&A, 2014.
63 Ms Veltheim, Email to Inquiry, 15 October, 2015.
64 B Lane, EWS, September 2015, p43.
65 Ibid. Figure 8.
66 Ibid. p 43.
67 Ibid. p 43.
68 B Lane, EWS, September 2015, p 42.
69 Document 39, p23.

Several aspects of the Proponent's approach to determination of breeding and non-breeding home range were raised by submitters. Submitters advocated for the application of the default turbine free buffer distances as described in the Brolga Guidelines because of the many uncertainties, including the importance of the Dundonnell area for Brolgas, the seasonal variability in the use of the landscape by Brolgas and the use of and movement across the wind farm site by Brolgas. Mr Lane[70] indicated the Brolga Guidelines[71] allow for reduced buffer areas providing that they can be shown to meet the objectives set for breeding and non-breeding habitats. As a consequence of detailed data collected on Brolga movements around the proposed wind farm site and based on extensive targeted data collection from breeding and flocking sites revised buffers were developed.[72] Mr Lane indicated that the methods and findings of the BL&A Brolga work have been reviewed by DELWP and they did not object the approach adopted. Mr Lane[73] advised that a habitat modelling approach was used to define breeding site home ranges and turbine free buffer areas. Turbine free buffers for flocking sites were identified based on results of site-specific field observations of Brolga behaviour while using flocking sites.

In his submission to the Inquiry,[74] Mr Power advised that between 2011 and 2015 over 3,700 hours of Brolga field surveys had been undertaken that involved 35,000 kilometres of driving. In responding to suggestions from submitters that not all Brolga observations and movements had been detected, Mr Lane[75] indicated while it has not been possible to observe all of the Brolga in the ROI all of the time, the survey work involving four years of detailed investigation provided a high level of confidence to identify well established patterns of movement and habitat choice to inform identification of turbine free buffers.

Several submitters described how Brolga use the Dundonnell region adaptively depending on seasonal conditions and there is variability in the use of wetlands and the landscape and this seasonal variation has not been captured by the assessment. The Brolga assessment[76] indicates that 2010 and 2011 were years of above average rainfall and that these two years had the highest rainfall in the 20 years of readily available Brolga records, with the majority of wetlands and lakes filling in the region. Rainfall in 2012, 2013 and 2014 was below average, resulting in a reduced number of wetlands in the ROI that held water.[77] Mr Lane[78] indicated that wetland 139 became more suited to Brolga as conditions became drier and this was not observed until 2014.

A number of submitters expressed confusion about the lack of a clear method for defining non-breeding home ranges and turbine free buffers. The BL&A Brolga assessment[79] provides a description of the approach and indicates that the flocking (non-breeding) home

[70] Ibid. p 58.
[71] At p8.
[72] EES, Volume 2, Annex M, Brolga Assessment, BL&A, 2014, p 86-90.
[73] B Lane, EWS, September 2015, p 42.
[74] Document 39, p20.
[75] Attachment to Document 61.
[76] EES, Volume 2, Annex M, Brolga Assessment, BL&A, 2014, p50.
[77] Additional Brolga Assessment, June 2014 to August 2015, BL&A, 2015, p8.
[78] B Lane, EWS, September 2015, p71.
[79] EES, Volume 2, Annex M, Brolga Assessment, BL&A, 2015, p90.

range buffers form a component of the turbine free buffers shown in Figure 21 of the assessment. Mr Lane[80] indicated that for this project a suitable flocking site home range buffer has been set in a way that avoids disrupting Brolgas moving from flocking sites to surrounding foraging habitats, and indirect effects on them such as disturbance. A set of A3 plans[81] showing flocking site home range and buffers was provided as an attachment to the reply submission from Mr Power on the last day of the hearing.

Mr Smales[82] undertook a peer review of the BL&A Brolga assessment[83] He also undertook a review of the additional Brolga assessment[84] which he provided in his expert evidence[85]. He concluded that overall the BL&A assessment has addressed all the items related to potential effects on Brolga as specified in the EES scoping requirements and has addressed all three levels of assessment as set out in the Brolga Guidelines. With reference to mitigation measures, while not providing comment on the BL&A method for determining breeding home ranges to allocate turbine-exclusion zones, Mr Smales indicated that the BL&A assessment had identified key areas within and adjacent to the proposed wind farm through which Brolga were more likely to fly. This specific information has been used to determine buffer zones for the exclusion of turbines, and this according to Mr Smales is an appropriate primary mitigation measure to reduce impacts on Brolga.

Brolga Utilisation Surveys were undertaken in 2012, 2013 and 2015 for a total of 115 hours.[86] A total of 27 Brolga were observed during formal counts (12 of which were flights) and five incidental Brolga observations. While suggesting that the survey effort was relatively low, Mr Smales[87] indicated that the primary purpose of the utilisation surveys was to inform scenarios for turbine risk modelling. He concluded that the assumptions used to determine input values for the collision risk modelling, including the number of flights per day, to be appropriate.

Submitters suggested stony rise areas can be important for Brolga. Utilisation of stony rise habitat by Brolga was observed during the 2013 Brolga utilisation survey.[88] However, Mr Lane[89] advised that anecdotal evidence indicates that Brolga prefer aquatic habitat and are very rarely observed in stony areas.

Submitters suggested that the wetland mapping was incomplete. The Proponent advised that the source of wetland data for the EES is the DELWP wetland layer supplemented with BL&A observations.[90] Waterways were not included but all wetlands within the wind farm site regardless of size were surveyed during all migratory bird surveys. In relation to other data sources such as the Atlas of Living Australia and eBird, some submitters suggested

[80] B Lane, EWS, September 2015, p42.
[81] Document 62.
[82] EES, Volume 2, Annex N, Brolga Assessment Peer Review, Biosis, 2014.
[83] EES, Volume 2, Annex M, Brolga Assessment, BL&A, 2014.
[84] Additional Brolga Assessment, June 2014 to August 2015, BL&A, 2015
[85] I Smales, EWS, September 2015.
[86] B Lane, EWS, September 2015, p61.
[87] I Smales, EWS, September 2015, p4.
[88] EES, Volume 2, Annex M, Brolga Assessment, BL&A, 2014, p71.
[89] B Lane, EWS, September 2015, p62.
[90] Attachment to Document 61.

Brolga records were ignored. Although many of the records on eBird would be legitimate, Mr Lane submitted they are not checked systematically before being made publicly available.[91] He suggested the website contains a very large number of unverified third party records and is not a reliable information source. The Brolga Guidelines provide advice on relevant data sources emphasising that third party records of breeding sites should be accompanied by documentary evidence. BL&A advised that the ALA assembles information from Birdlife Australia and the VBA, the two main sources of bird information in the ALA for Victoria and both sources were accessed in preparing the EES.[92]

The Brolga Guidelines indicate that indirect effects of wind farms may include displacement where suitable habitat becomes unavailable, and if Brolga avoid approaching turbines or associated infrastructure. Several submitters raised concerns about displacement. In his submission in reply,[93] Mr Power provided two reports on the utilisation of habitat by Brolga within the Macarthur Wind Farm for 2014[94] and 2015.[95] In the 2013-2014 monitoring period, the report indicates that breeding was attempted at two wetlands located on the wind farm. Both nests were located within 300 metres of turbines and birds were observed foraging within 100 metres of turbines. Brolga observed in flight were not obstructed by turbines and avoided the turbines by flying between them. No flocks of Brolga were found within 5 kilometres of the wind farm during the flocking season. In the 2014-2015 monitoring period there was one breeding attempt on a wetland on the wind farm located approximately 200 metres from a turbine. Brolgas were observed on several occasions foraging within 100 metres from turbines. On two occasions Brolgas were observed to fly below the RSH and on one other occasion were observed diverting course to fly between turbines. Based on these observations the monitoring report concludes that the wind farm does not appear to have had any detrimental impact on the local Brolga population either from direct impact with turbines or displacement from habitat. No Brolga mortalities have been reported as a result of the avifauna monitoring program for 2014 and 2015 at the Macarthur Wind Farm.

Mr Lane[96] advised that the Collision Risk Modelling (CRM) was repeated following the results of the 2015 Brolga utilisation and roaming surveys, and provides similar results to that undertaken in 2014. Assuming a 95% avoidance rate, it is predicted that one bird would be killed every two years (0.47 birds per year). A further CRM based on the alternative layout with 96 turbines, predicted that (at 95% avoidance rate) one Brolga would be killed every two and a half years (0.38 bird per year).

In responding to concerns from submitters about the lack of assessment of cumulative impacts, Mr Lane[97] advised that it is possible that construction of other wind farms could lead to an increased risk of collisions. However, as each of these wind farms has been

91 Ibid.
92 Attachment to Document 61.
93 Document 61.
94 *Utilisation of habitat by Brolga within the vicinity of the Macarthur Wind Farm*, Australian Ecological Research Services, 2014
95 *Utilisation of habitat by Brolga within the vicinity of the Macarthur Wind Farm*, Australian Ecological Research Services, 2015.
96 B Lane, EWS, September 2015, p46.
97 Ibid. p64.

assessed for its impact on Brolga in different ways, it is not possible to aggregate the impacts to provide a definitive answer. He indicated that these earlier assessments pre-date the Brolga Guidelines which for current and future projects have established a consistent framework for cumulative assessments.

There was some discussion at the hearing as to the input number for the Population Viability Analysis (PVA) (809 Brolgas). Submitter 104, [98] provided counts from DSE said to include a range between 2010 and 2015 of approximately 200 birds to nearly 900 birds. The input number to the PVA is important in calculating the effect on the Brolga population.

Mr Lane in his expert evidence confirmed that he is satisfied with the population input number of 809 Brolgas. In their correspondence of 17 November 2015, DELWP[99] in relation to Brolga numbers indicated they are happy with the Proponent's approach on this issue.

DELWP in this submission also noted that the stronghold for the Brolga is northern Australia and that the population as a whole is not at risk.

DELWP also noted that the Brolga Guidelines are administrative only and have no statutory basis, but nevertheless are the *appropriate guidance document* for consideration of Brolga.

(iii) Discussion and conclusions

The Brolga's status

The Inquiry comments that it was irrelevant and unhelpful for DELWP in their submission of 17 November 2015 to submit that the Brolga has a stronghold in northern Australia and that the population as a whole is not under threat. The Inquiry's understanding is that the Brolga is listed under the FFG Act and has a published Action Statement in Victoria, many of the actions on which appear to be as relevant today as when the statement was published in 2003.

Assessment approach

The Inquiry is satisfied that the Brolga assessment has been undertaken in accordance with the three step process outlined in the Brolga Guidelines. The Inquiry note that some 3,700 hours of Brolga surveys were undertaken between 2011 and 2015. Combined with the historical information, this represents a detailed sampling of the landscape.

Utilisation of the Dundonnell region by Brolga

The Inquiry accepts that the 10 kilometre area around the proposed Dundonnell wind farm, is an key habitat area for Brolga in south western Victoria containing both breeding and non-breeding (flocking) areas. The Inquiry also notes that the overall movement patterns within the region described in the Brolga assessment are similar to those independently described by Ms Veltheim in her submission with the exception of wetland 139. There are high areas of use to the west, south east, east and north east of the wind farm site within a 10 kilometre radius. Flocking activity was not observed at wetland 139 until 2014, three years after survey activity commenced. It was suggested to the Inquiry[100] that the water level in

[98] Document 59, para 33.
[99] Contained in Appendix D to this report.
[100] B. Lane, EWS, p71.

wetland 139 was unusually high following above average rains in 2010 and 2011; however the level dropped under drier conditions and the wetland provided more suitable habitat, suggesting the opportunistic use of areas by Brolga depending on seasonal conditions.

The Inquiry understands there is Brolga movement across the wind farm site as Brolga flights were tracked by Ms Veltheim, flights were observed during the Brolga Utilisation Surveys, as well as flight paths of unknown destination from wetland 139. Such flights represent a collision risk for Brolga and contribute to the residual risk. Regarding use of stony rise country by Brolga, the Inquiry accepts that Brolga may utilise such habitats within the wind farm site but it is less certain whether they do so preferentially if there are other foraging habitats available.

Definition of home ranges and turbine free buffers

The Inquiry understands that the breeding home range model was applied to the five breeding sites within 3.2 kilometres (Table 15 Brolga Assessment) of the turbine layout and the polygons representing the breeding home ranges are provided in Figure 21 of the Brolga Assessment.[101]

The Inquiry considers that there is a lack of clarity in the translation of non – breeding home ranges to turbine free buffer areas. The Brolga Assessment does not provide a map of non-breeding home ranges stating only that flocking home range buffers form a component of the turbine free buffer (in Figure 21). It is not clear what traditional flocking sites have been considered for home range determination and where the boundaries are. Maps of the flocking site home ranges and turbine free buffers tabled (Document 62) on the last day of the Inquiry show the home ranges for seven sites within a 5 kilometre radius of the wind farm and where they intersect with the wind farm site. The Inquiry would have benefited from a presentation of this regional scale mapping (1cm to 1km approximately), together with an explanation, for both breeding and non-breeding home range mapping at the start of its deliberations. Presumably this mapping could have depicted, at the regional scale, the turbine free areas and where they intersected the wind farm site. In the absence of this rigour there was confusion about how the buffer boundaries on the wind farm site had been arrived at.

The Inquiry recognises that the Brolga Guidelines are neither an incorporated document nor a reference document in the Planning Scheme. However the Guidelines provide a policy approach for the assessment and mitigation of impacts on Brolga from individual wind farms and the Inquiry has relied upon them on this basis. The Brolga Guidelines state on page 8:

> *As a general recommendation, these guidelines, recommend that a 3.2 km and 5 km radius turbine-free buffer from breeding sites and flock roost sites respectively, will adequately meet the objectives set for these habitats. However, recognising that the spatial requirements of Brolgas are not well understood, a Proponent may propose reduced buffer areas providing they can be shown to meet the objectives set for breeding and non-breeding habitats. Proposed buffer distances should meet with the satisfaction of DSE.*

[101] EES, Volume 2, Annex M, Brolga Assessment, BL&A, 2014.

Furthermore the Brolga Guidelines state on page 11:

> *Brolga breeding and non-breeding home ranges are likely to vary with local habitat and extent and seasonal conditions. Unless site specific investigations can show with a high degree of confidence the size and shape of home ranges for a project, the DSE's default breeding and flocking site home ranges should be used for the project. Proposed site-specific buffer distances should be agreed by DSE.*

The objectives for breeding and non-breeding habitats are provided in the Brolga Guidelines.[102] They are summarised as follows:

- Breeding habitat. Turbine siting should be designed to exclude significant reduction in breeding success caused by turbines
- Non-breeding. Turbine free buffers should be designed to exclude any significant impact on the survivorship of Brolgas while occupying the flocking site.

These objectives are achieved by locating wind turbines (page 11) to:

- Avoid Brolga breeding home range (Level 2 assessment, i.e. identified in site specific assessments) or use the generic guideline of 3.2 kilometres
- Avoid the Brolga non-breeding home range (Level 2 assessment, i.e. identified in site specific investigations) or use the generic guideline of 5 kilometres
- Avoid an additional 300 metre radius around each home range to avoid disturbance effects.

Having reviewed the evidence and submissions the Inquiry considered two approaches to determining home ranges.

Firstly to adopt the method proposed by the Proponent for the following reasons:

- The proposed habitat model method to defining breeding home range and zones for turbine free buffers is acceptable at this location. While recognising that it this is not based on specific investigations at Dundonnell, it is based on observations at other wind farms
- The specific investigations (3,700 hours) over a number of seasons (2011-2015) provide sufficient confidence that the major movement corridors and habitat utilisation around the wind farm site have been documented
- The method proposed for defining non-breeding home ranges which relies on flight path movements and habitat utilisation for turbine free buffers at the Dundonnell wind farm will satisfy the objectives for this habitat as outlined in the Brolga Guidelines
- That the major Brolga movement patterns within the ROI have been assessed by Ms Veltheim's research and that these patterns and high use areas are similar to those reported in the Brolga assessment
- While there will be other Brolga movements across and within the wind farm site (e.g. stony rise habitat), these flights depart from the regularly observed

[102] At page 8.

flight directions and routes and this is part of the residual risk of the project and this is assumed to be addressed in the CRM

- The residual risk has been adequately assessed through the CRM and the predicted impact on Brolga mortality is low and this is acceptable
- Grain feeding in the wind farm site can be managed and the 2014 flight path information can be excluded for home range mapping on this basis
- Progress toward zero net impact can be achieved with the implementation of a Brolga compensation plan.

Alternately, adopt the default position in the Brolga Guidelines for the following reasons:

- The Dundonnell region is a key area for both breeding and flocking (20% of the Brolga population) and the default position is more likely to accommodate the Brolgas spatial use of the landscape at this location
- A conservative approach to defining breeding and non-breeding home range is required to account for the adaptive use and the inter-annual seasonal movements and habitat use of the Dundonnell area by Brolga. Not all Brolga flight movements have been recorded and mapped
- Stony Rise habitats should be included in home ranges. Brolga utilise these areas and may do more or less frequently depending on seasonal conditions.
- Land use management to control grain feeding of stock within the proposed wind farm site will be problematic in dry seasons
- Flight path data show flights into and over the wind farm site. Brolgas utilise the wind farm site and will be at risk from wind turbines
- There is uncertainty about CRM and its predictions. There are no empirical data on Brolga behaviour and wind turbines. The model has not been validated at an operating wind farm.

On balance the Inquiry considers that the approach proposed by the Proponent should be supported in this case. In proposing this response the Inquiry is mindful that the Brolga Guidelines clearly provide for the development of turbine free buffers based on-site specific investigations. The Proponent has undertaken detailed investigations and on the basis of this work has proposed alternative non-breeding buffer arrangements to the default home range buffers. The investigations on Brolga flight directions and routes within the ROI were assessed as part of another project and similar patterns of movements were reported. The Inquiry considers that the approach proposed by the Proponent to defining breeding and non-breeding home ranges and turbine free buffers will satisfy the objectives for these habitats as defined in the Brolga Guidelines in this case. There is residual risk associated with use of the wind farm site by Brolgas, however the Brolga Guidelines clearly allow for a residual risk of Brolga mortality assessed through CRM and addressed through PVA and a compensation plan. The Proponent has applied these tools as suggested in the Brolga Guidelines.

There are residual uncertainties associated with the approach proposed by the Proponent, including the flight path movements from wetland 139 in the southern part of the site.

The Proponent proposes an expanded turbine free buffer across the south west area of the proposed wind farm which would remove the 16 turbines within this buffer, relocating 8

turbines outside the buffer and deleting 8 turbines. The Inquiry notes that the indicative location of turbines is along the buffer boundary and it considers that in the micro-siting of turbines (100 metres) adjacent to this buffer, the turbines including the rotors, must not encroach into the buffer zone.

The Inquiry also notes that the relocation of turbines out of this area appears to have moved some of them relatively close together and the Inquiry is not convinced this is technically feasible from a wind farm operation point of view.

Furthermore in applying an added level of conservatism, the Inquiry proposes that an additional 3 turbines be removed (T84, T81 and T73) along the buffer boundary.

Wetland 117

The breeding site (wetland 117) was identified by Ms Veltheim (Submission 128). In his main submission, Mr Power[103] accepted that if the wetland was not drained it could be eligible for a turbine free buffer. The Inquiry considers that wetland 117 should be considered as a breeding site, given its past use as such, and a turbine free buffer applied. The Inquiry understands this will exclude eight turbines.[104] The Inquiry notes that there are potential opportunities for wetland habitat restoration in this area to enhance the Brolga breeding.

Displacement and barrier effects

The Inquiry notes the results from the Brolga monitoring from the Macarthur Wind Farm. While the observations are from a small number of birds, they show that Brolga do utilise the wind farm site for foraging under favourable wetland conditions and attempt breeding although no chicks were fledged for various reasons. The results also demonstrate that Brolga exhibit avoidance behaviour albeit from a small observation sample. The Inquiry notes that these observations only relate to breeding behaviour as there were no flocking events near the wind farm.

Collision Risk Modelling

The Inquiry notes the results of the CRM and accepts the modelling is a valid tool for assessing the risks to Brolga. It is aware that apart from the Macarthur Wind Farm there is no operating wind farms where Brolgas interact with turbines and there is no empirical data on the behaviour of Brolga and their avoidance of turbines. Consequently avoidance rates from overseas studies of cranes has informed the modelling. The results from Macarthur Wind Farm presented to this Inquiry, illustrate that the Brolgas observed, demonstrated a capacity to avoid turbines and that no Brolga mortalities from turbines have been recorded. However more comprehensive studies are required to develop an understanding of Brolga avoidance rates.

The Inquiry notes that the CRM was undertaken based on a rotor diameter of 126 metres and a minimum distance from the ground to blade tip at lowest point of 30 metres. The Inquiry understands that the turbine proposed for Dundonnell will have a diameter of 117 metres and the low part of the rotor sweep will be approximately 47-48 metres from the ground. Consequently the CRM modelled results may be an over-estimate of the impact.

[103] Document 39, p23.
[104] Ibid, para 122.

All that being said, the Inquiry notes that the CRM/PVA approach has not been tested 'in the field' for Brolga in western Victoria. Thus its use should be treated with some conservatism and the predictive accuracy will not be known for some time after wind farm operation commences.

The Inquiry has some concerns about DELWP's views on the issue as the appear to hold very strong views that the CRM approach and PVA as put forward can be accepted almost without question. It is unfortunate that DELWP were not present at the hearing to observe the vigorous discussions which took place on these issues. We consider that DELWP's view has been unhelpful in that it does not appear to be well considered or balanced; it relies almost entirely on material supplied by the Proponent. Given this, it is surprising they do not accept the advice of the proponent's principal expert (Mr Lane) in his view that the alternate layout with removal of eight turbines and moving of eight more out of an expanded turbine free buffer will provide a better response to Brolga issues.

Population Viability Assessment and mitigation measures

The Inquiry accepts that PVA is an appropriate tool to model population scenarios given the impacts from CRM and to set targets for compensation and offset measures to achieve zero net impact. The analysis predicts that up to 10 Brolga (alternative layout) would need to be raised to adulthood over the 25 year life of the project.

The Inquiry supports the development of a Brolga Compensation Plan that incorporates the actions in the Brolga Report[105]. Submitters to the Inquiry described examples of successful wetland rehabilitation programs and the Inquiry considers such programs need to be co-ordinated by government in regional clusters on a catchment wide basis. There are practical difficulties in understanding if zero net impact has been achieved, for example tracking 10 birds to adulthood from an individual wind farm proposal. The Inquiry considers that to give greater certainty that offsets are being achieved, the compensation plan should clearly define the accountabilities, the outcomes to be delivered, identify the interim milestones, incorporate regular monitoring and require regular public reporting. Financial support to landholders to provide habitat improvements and management would also provide a pathway for investment by wind farm proponents. However rather than structure responses on individual wind farms, regional programs of wetland habitat restoration and management including stock management and predator control would provide a more effective vehicle for investment and delivery.

The Inquiry notes a number of submitters also expressed the view that establishing Brolga breeding success is fundamentally difficult. The 'offset' task should not be underestimated.

Cumulative impacts

The Inquiry considers that cumulative impacts would be more effectively addressed through a regional co-ordinated response to wetland enhancement. The difficulty in understanding if zero net impact on Brolga has been achieved on an individual wind farm basis is discussed in the preceding section. A regional response to habitat restoration and management[106] and

[105] EES, Volume 2, Annex M, Brolga Assessment, BL&A, 2014, p100.

[106] The Inquiry considers the major impacts on Brolga regional population to be habitat loss and predation. On any drive across western Victoria the results of wetland 'conversion' to pasture or crop can be seen.

the development of metrics to report on performance is required.. The Inquiry suggests that when available, the South West Victorian Brolga Research Project be utilised to provide a basis for directing strategic regional scale actions for Brolga management. In addition the collection of bird mortality monitoring data from other wind farms and the assessment of the implications of mortality statistics at the population level should be undertaken. The Inquiry considers such monitoring data should be made publicly available.

An understanding of the location of turbine free buffer areas associated with each wind farm proposal would assist in obtaining a better understanding of the regional implications of wind farm proposals and help planning for regional responses to habitat restoration. In this Inquiry the Proponent focused on the wind farm site and the total area of exclusion for breeding and non-breeding home ranges was not presented in a coherent and understandable way. The Inquiry considers that this should be provided in this project and in future projects.

(iv) Findings and recommendations

The Inquiry finds:

- The approach to planning for Brolga is reasonable and acceptable but uncertainties remain in the likely impact on Brolga
- The Inquiry concludes that the project should proceed subject to the recommendations below and the development of:
  - A Brolga monitoring and response plan
  - Contingency planning if Brolga fatality are higher than predicted
  - A Brolga compensation plan.

Planning permit conditions are recommended in Appendix E accordingly.

The Inquiry recommends:

The project be modified in accordance with Figure 2-3 – *Indicative Alternate Site Layout Plan* and modified further to show:

- **The removal of turbines T073, T081 and T084**
- **A breeding site turbine free buffer applied to wetland 117 in accordance with the Brett Lane and Associates methodology.**

The full extent of home ranges for the five breeding sites within 3.2 kilometres and the seven non-breeding sites within 5 kilometres of the wind farm site be mapped clearly showing the turbine free areas and made publicly available through the project website.

The Department of Environment, Land, Water and Planning coordinate a regional response to Brolga habitat planning, restoration and management to ensure the species survival in Victoria, including the coordinated mapping of Brolga turbine free buffer areas.

3.3 Transmission line

3.3.1 Flora and native vegetation

(i) Background

The transmission line between the wind farm and the Mortlake Power Station (MPS) has the potential to impact on flora and native vegetation primarily as a result of vegetation removal for the power pole footprint construction zone and the access track which will run along the length of the transmission line.

An overview assessment of the native vegetation was undertaken in May 2012 along a 100 metre wide transmission line corridor.[107] Subsequently a more detailed assessment was undertaken in 2015.[108] A 12 metre wide zone along the proposed transmission line route was assessed. The report indicates that a total of 111 remnant patches of native vegetation totalling 18.19 hectares were identified. The construction of the transmission line will result in the removal of up to 4.285 hectares from remnant patches, the loss of 12 scattered trees and the removal of five individual Spiny Rice-flowers. Eighteen EPBC Act and/or FFG Act listed flora species were considered as having the potential to occur within the areas of remnant vegetation along the transmission line. The construction will result in the removal of 1.028 hectares of Natural Temperate Grassland of the Victorian Volcanic Plains (NTGVVP) and up to 2.056 hectares of Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (SHWTLP), both critically endangered under the EPBC Act. It will also result in the loss of up to 0.901 hectares of the Western (Basalt) Plains Grassland Community (WPGC) which is listed under the FFG Act.

(ii) Evidence and submissions

Submitters (Submissions 112,135, Documents 40, 43 and 59) identified the following issues:

- Loss of endangered listed communities and plants (Spiny Rice-flower) (Submission 112, Document 40, 59).
- Loss of mature River Red Gum trees and no alternatives routes explored. The transmission line should be relocated (Submission 112, Document 40)
- Need for an access track along the entire length of the transmission line is unnecessary (Document 40).

In his expert evidence,[109] Mr Lane revised the area of native vegetation in the corridor to 17.18 hectares of which 4.196 hectares is to be removed. This would result in the loss of up to 0.906 hectares of NTGVVP, up to 2.057 hectares of SHWTLP and up to 0.758 hectares of WPGC. The impact on River Red Gums (12 scattered trees) and Spiny Rice-flower (five plants) remained as described initially.

As discussed in Section 3.1.1 of this report, DELWP[110] advised that the issues of minimising vegetation loss have been well addressed in the EES and indicated that it would not object to

[107] EES, Volume 2, Annex L, Flora and Fauna Assessment, BL&A, Chapter 12, 2015.
[108] Transmission Line, Flora and Native Vegetation Assessment, BL&A, 2015.
[109] B Lane, EWS, September, 2015, p30.
[110] Document 22.

a permit for vegetation removal subject to certain conditions including an approved offset management plan.

In response to submissions the Proponent investigated and made adjustments to the southern part of the transmission line route to avoid the River Red Gums. The alternative proposal[111] indicates that the proposed changes will result in retention of eleven of the twelve scattered trees as well as retention of two patches of remnant vegetation previously considered removed.

Also in response to submissions, a strategy to avoid the removal of five Spiny Rice-flower plants was investigated. A feasible alternative access approach was proposed[112] to avoid the plants but the effectiveness of this strategy would need to be confirmed through a pre-construction survey for the Spiny Rice-flower.

Eighteen EPBC Act and or FFG Act listed flora were considered to have the potential to occur within the remnant vegetation along the transmission line. Targeted winter surveys for four species (Spiny Rice-flower, Basalt Rustyhood, Dense Greenhood and Leprechaun Greenhood) only detected Spiny Rice-flower. Before construction commences, spring surveys along the transmission line route will be required for the remaining 14 listed flora species.[113]

In response to questions from the Inquiry about the need for an access track along the entire transmission line, the Proponent advised that this would not be a formed road and that post construction, access would only be required for occasional maintenance. As such the estimate of native vegetation loss was a worst case scenario. Mr Lane[114] advised that indicative pole positions had been moved to avoid native vegetation and will be further micro-sited during detailed design prior to construction to minimise impacts on native vegetation and threatened species, where possible.

(iii) Discussion and conclusions

The inquiry acknowledges the efforts of the Proponent to avoid impacts on scattered trees and the endangered Spiny Rice-flower, however it considers that this advice from the biodiversity experts should have been provided to the Proponent much earlier in the EES process.

The Inquiry considers that the Proponent has demonstrated an attempt to minimise native vegetation impacts. Of the 17.18 hectares of native vegetation in the transmission line corridor, it is proposed that 4.196 hectares will be removed. The Inquiry notes that this is considered as an upper limit. However, this removal will impact on two communities listed as critically endangered under the EPBC Act and one community listed under the FFG Act. The Inquiry also notes that DELWP has indicated it will not object to a permit for vegetation removal subject to certain conditions including an approved offset management plan.

The Inquiry accepts that targeted surveys are required for a number of EPBC Act and /or FFG Act flora species along the transmission line route prior to construction, including for Spiny

[111] Document 61, BL&A attachment, 16 October 2015.
[112] Document 61, BL&A attachment, 16 October 2015.
[113] Transmission Line, Flora and Vegetation Assessment, BL&A, 2015, p41.
[114] B Lane, EWS, September, 2015, p 31.

Rice-flower and supports the micrositing of pole positions prior to construction to minimise the impacts on native vegetation and threatened species. The Inquiry also considers the presence of a suitably qualified ecologist during the construction phase and the micrositing of power poles would assist in the implementation of mitigation measures.

(iv) Findings and recommendations

The Inquiry finds:

- That subject to the recommendations below implementation of mitigation measures and the development and implementation of the Environmental Management Plan, the impacts of the transmission line on native vegetation and flora can be reduced to an acceptable level.

Planning permit conditions are recommended in Appendix E for the transmission line.

The Panel recommends:

Adopt the alternative transmission line layout (Proposed transmission line layout comparison plan dated 16 October 2015) in the vicinity of Boonerah Estate Road to minimise the removal of mature River Red Gums.

The strategy to avoid the Spiny Rice-flower population as described on Page 2 of the BL&A letter dated 16 October 2015 (Attachment to Document 61) be investigated with a view to adoption.

3.3.2 Fauna (including Brolga)

(i) Background

The transmission line has the potential to impact on fauna mainly through vegetation clearance and loss of habitat and mortality resulting from bird collision with the transmission line.

Information about fauna (other than Brolga) along the transmission line route is contained in the EES. The report found that 33 EPBC Act and /or FFG Act listed fauna species had the potential to occur along the transmission line route.[115]

Information about Brolga along the transmission line route is contained in the EES[116] and in the Additional Brolga Assessment.[117] The EES[118] indicates that most of the historical Brolga records are located in the northern section of the transmission line route. The historical records show that there are 10 breeding sites within 3 kilometres of the proposed route and 33 between three and ten kilometres. Two flocking sites occur within 5 kilometres and 7 flocking sites between 5 and 10 kilometres of the proposed route. The results from the 2014 survey[119] show that three wetlands were utilised for breeding within 3.2 kilometres and 19 sites were utilised by Brolga within 10 kilometres of which five were within 5 kilometres. In

[115] EES, Annex L, Flora and Fauna Assessment, BL&A, 2015, Chapter 12, p285.
[116] EES, Annex M, Brolga Assessment, BL&A, 2014.
[117] Additional Brolga Assessment, June 2014 to August 2015, BL&A, 2015.
[118] At page 76.
[119] Ibid. Table 12, p 34-35.

the 2015 non-breeding season 29 sites were utilised by Brolga within 10 kilometres of proposed route of which 12 were within 5 kilometres.[120]

(ii) Evidence and submissions

Submitters identified the following issues:

- Loss of native grassland habitat impacts on endangered species and should be avoided (Documents 40, 43 &59)
- The transmission line route directly cuts through Brolga breeding wetlands increasing the collision risk including a proposed turbine free buffer area (Submission 112, Documents 43, 58, 59)
- Brolga are known to collide with powerlines (Document 58, 59, Submissions 4, 5, 17, 25, 32, 44, 112, 116, 127, 128, 133)
- It is not clear how the transmission line collision risk has been estimated. No detailed assessments have been made of the frequency of habitat use along the transmission line (Submission 128)
- Powerlines should be placed underground near existing Brolga breeding sites (Document 59)
- Transmission line marking should be required at Brolga hot spots (Document 59, Submissions 116, 128).

Mr Lane[121] indicated that the transmission line corridor did not represent key habitat for any of the listed species. However impacts may occur as a result of habitat removal for the Striped Legless Lizard and Golden Sun Moth. Pre-construction surveys were recommended for these species to enable the micro-siting of poles to avoid significant removal of habitat.

The EES states that there has been no empirical measurement of the extent of interaction between powerlines and Brolga.[122] The EES also recognises that there are specific instances of Brolga being killed by powerlines but the rate of mortality is not known. Powerline CRM was undertaken as part of the EES. Based on studies overseas the chance of a Brolga dying when flying over a powerline was assumed to be one in ten thousand.[123] Powerline crossings were estimated for breeding and non-breeding seasons separately and a modelled result of 0.044 power line collisions per year was predicted.[124]

In response to the 2015 roaming surveys which reported Brolga dispersal over the south west corner of the wind farm site, the Proponent[125] proposed an additional turbine free buffer in this area. A section of the transmission line is located within this turbine free buffer zone. In an email to the Inquiry dated 15 October, 2015, Ms Veltheim expressed concern about the potentially higher collision rate and mortality of Brolga as a result of the location of the powerline in this area and considered mortalities from powerline collision for the wind farm had been underestimated. In responding to this concern, Mr Lane (Document

[120] Ibid.
[121] B Lane, EWS, September 2015, p 29.
[122] EES, Annex M, Brolga Assessment, BL&A, 2014, p 98.
[123] Ibid. Appendix 6, p2.
[124] Ibid, Appendix 5, p2.
[125] B Lane, EWS, September 2015, p 43.

61, BL&A attachment) relied on the modelled results which predicts a very low mortality from powerline collisions. The Inquiry also notes that the EES proposes a monitoring mast will be located within this turbine free buffer zone and guy wires pose a collision risk to birds and bats.

The Brolga Guidelines[126] propose the collision risk proposed by new powerlines to be quantified as part of the CRM and suggest that reducing mortalities from power line collision by marking powerlines be considered. Mr Lane[127] indicated that it is proposed to mark powerlines within 3 kilometres of breeding sites.

(iii) Discussion and conclusions

The Inquiry agrees that pre-construction surveys for the Striped Legless Lizard and Golden Sun Moth to avoid significant removal of habitat should be undertaken. However the proposed removal of grassland habitat will need to be addressed in the native vegetation management plan and offset strategy.

The Inquiry notes the evidence of historical and current habitat use by Brolga along the transmission line route external to the wind farm site, including movements across the route in the south western corner of the wind farm site where a turbine free buffer is proposed. While submitters provided examples of specific instances of Brolga deaths from collisions with power lines and the Inquiry accepts that such events occur, the Inquiry notes that there is no empirical information on the rate of mortality. The Brolga Guidelines propose that with new powerlines that the additional collision risk be quantified. The Proponent has undertaken this with a predicted outcome of a low impact and the Inquiry accepts this.

The Inquiry supports the option for the use of powerline marking as a means of reducing potential for Brolga collisions. Marking should be considered in close proximity to known breeding and flocking sites including the powerline crossing the south western corner of the wind farm site. The Inquiry also considers that the guy wires on the meteorological masts in turbine free buffer areas should be marked. This includes PM4, PM3 and possibly PM1.

(iv) Findings

The Inquiry finds:

- Subject to the implementation of Environmental Management Plans and mitigation measures, including powerline marking for Brolga, the impact of the powerline on fauna can be reduced to an acceptable level.

Planning permit conditions on the powerline are recommended accordingly in Appendix E.

3.4 Procedural issue

The Inquiry was assisted by submissions at the hearing from the Planning Group in the Department of Environment, Land, Water and Planning (DELWP) including from the Impact Assessment Unit and the Planning Services area.

[126] *Interim guidelines for the assessment, avoidance, mitigation and offsetting of potential wind farm impacts on the Victorian Brolga population*, DSE, 2011, Revision 2012.

[127] Attachment to Document 61.

As is clear from the discussion in this chapter, arguably the most significant issue for the project and the Inquiry relates to impact on biodiversity, including native vegetation and threatened fauna species, particularly the Brolga.

The area of DELWP dealing with environmental matters provided a submission[128] on native vegetation as has been discussed earlier in this chapter in their role as a referral authority.

The Inquiry was surprised however that the part of DELWP dealing with environmental matters did not initially provide a submission on the other biodiversity issues, particularly Brolga, nor attend the hearing to assist the Inquiry understand their view and the biodiversity context for assessment. The Inquiry was surprised by this because:

- It was well known that environmental matters would be a significant part of the Inquiry's consideration
- That part of DELWP in the Inquiry's view is, or should be, the most capable of providing a professional technical view, independent of the Proponent, of the biodiversity values affected by the project and any risks posed
- The biodiversity arm of Government, in its previous iterations, has usually attended and provided important and sound input to assessment processes for wind farms and other major projects.

Noting that a submission had not been received, the Inquiry wrote to DELWP Environment requesting their views on the project and inviting them to attend the hearing to provide input. Whilst the invitation to attend was not responded to, a written response was received from the Regulation and Approvals area of DELWP. This in turn led to further correspondence between DELWP and the Inquiry. The chain of correspondence is included for information in Appendix D.

The final, and most substantive, response from DELWP on environmental matters was received on 17 November 2015, and raised a number of significant issues which could have been extremely useful if raised in the hearing context giving the opportunity for questions by the Inquiry.

The Inquiry has considered some of the merits of the DELWP correspondence in this chapter, but would like to record its disappointment at the difficulty it has experienced in eliciting a meaningful response on biodiversity issues, and particularly fauna, from DELWP. This frustration was shared by other participants in the hearing.

It has resulted in avoidable delays to the assessment process and made the assessment of important biodiversity issues more difficult.

[128] Document 22.

4 Landscape, visual amenity and geoscience values

EES Evaluation Objectives:

To avoid or minimise adverse affects on the landscape and geoscience values of the region.

To avoid or minimise adverse noise, visual and other amenity effects on nearby residents to the extent practicable.

4.1 Landscape and visual amenity

(i) Evidence and submissions

In his submission at the hearing, Mr Power for the Proponent submitted that measuring landscape impacts is subjective. He noted:

> *…residents and communities form an attachment to the local landscape which contributes to their sense of place, and that some people resent and will object to any proposal to change that landscape place.*[129]

Mr Power further noted that as wind farms are large structures, they will usually be visible and perhaps dominant within their locality. He submitted however that for the Dundonnell project there is nothing in the planning scheme that identifies the project area as a significant landscape or an area of significant visual amenity.

He identified two locations approximately 20 kilometres away in the Corangamite Planning Scheme that do attract the Significant Landscape Overlay (SLO); these being Mt Elephant and a location near Vite Vite.[130]

Mr Power also noted that there are other studies and issues in the area such as the South West Victoria Landscape Assessment Strategy (sic) (SWVLAS) and the Kanawinka Geopark. He submitted that while relevant, these have no status in the planning scheme and should not be given the status of a planning control.

The Proponent called expert evidence in landscape and visual impact assessment from Mr Alan Wyatt. Mr Wyatt also prepared the Landscape and Visual Impact Assessment (LVIA) prepared for the EES.

Mr Wyatt's view was that while the project will be visible for long distances in some directions, given the landscape context, lack of viewers and low level of landscape significance, the overall impacts on landscape and visual amenity are not significant. He also provided a number of AO size photomontages in the hearing for the Inquiry to view; some of which were also used in the field during site inspections.

In his expert witness statement, Mr Wyatt outlined his landscape assessment methodology and responded to issues raised in submissions. He concluded that:

> *If approved the Dundonnell Wind Farm and associated transmission line will have a landscape impact. The landscape will change from a rural landscape to*

[129] Proponent main submission pp 4-5
[130] Ibid, p6.

> *a rural windfarm landscape. However this assessment has shown that such a change is acceptable in this landscape and that the visual impact will largely be negligible to low…*

The Proponent commissioned a peer review of Mr Wyatt' work from Moir Landscape Architects.[131] Mr Moir was critical of Mr Wyatt's assessment, particularly in relation to lack of a quantitative methodology and resulting inconsistencies in conclusions. However he agreed with Mr Wyatt that the project is likely to have a low visual impact due to the relatively remote location and low number of viewers.

Mr Moyne for Council in their submission stated that:

> *The Moyne MSS identifies development pressure in the Shire relating to maintaining the landscape character including infrastructure pressures from wind farms and electricity towers throughout the landscape (clause 21.02).*[132]

He further highlighted that:

- *The construction of a wind energy facility in this location will have an irreversible impact on the landscape. The construction of extensive access tracks, removal of native vegetation, disturbance to the natural surface rock and drystone walls will permanently alter and fragment the significant features of the landscape at Dundonnell*
- *Wind turbines detract from a viewer's ability to absorb the landscape because the object and movement draws the eye*
- *Clause 21.06 of the Moyne MSS identifies the importance of views of the landscape from road corridors and principal tourist routes as an issue for the Shire*
- *…*
- *Visual amenity impacts from dwellings, businesses and local roads within 4 kilometres of the windfarm site can be mitigated by appropriate landscaping to create visual buffers so turbines cannot be seen from eye level*
- *There are concerns the approach to providing landscaping as a mitigation measure is focused on residents and property owners only and is offered post-construction on request.*

Council encouraged the Inquiry to consider the value of this landscape with regards to protection of Kanawinka Geopark as a significant resource to Moyne Shire.

At the hearing, Mr Juttner from DELWP for the Responsible Authority suggested the following measures to reduce the visual impacts of wind energy facilities:

- Siting and design to minimise impacts on views from areas used for recreation and from dwellings

[131] Volume 2, Annex S of EES.
[132] Moyne Shire Council submission p33.

- Locating arrays of turbines to reflect dominant topographical and/or cultural features, such as ridgelines, the coastline, watercourses, windbreaks or transmission lines
- Using turbine colour to reduce visual impacts from key public view points
- Limiting night lighting to that required for safe operation of a wind energy facility and for aviation safety
- Mitigating light glare from obstacle lighting through measures such as baffling
- Selecting turbines that are consistent in height and appearance and rotate the same way
- Spacing turbines to respond to landscape characteristics
- Undergrounding electricity lines wherever practicable
- Minimising earthworks and providing measures to protect drainage lines and waterways
- Minimising removal of vegetation
- Avoiding additional clutter on turbines, such as unrelated advertising and telecommunications apparatus.[133]

A number of submitters expressed the view that wind turbines in the landscape are not welcome. For example one submitter said that:

> *With respect to the visual impact of these turbines, they are not benign, they are huge manmade concrete, steel and fibreglass structures in large numbers being installed in rural areas; they cannot be considered as part of the natural environment.*[134]

Another submitter (Submission 66) at the hearing stated:

> *… that Visuals…cannot replicate the experience of seeing a wind farm in the Landscape, whether they are photographs, maps, sketches or computer generated visualisation.*[135]

Other submitters (such as Submissions 44 and 129) noted the 'open spaces' character of the area and how important that landscape is to them.

(ii) Discussion and conclusions

The Inquiry notes that since large wind farms were last assessed by Panels in Western Victoria a number of things have changed. Firstly the SWVLAS has been completed which, whilst not part of the planning scheme, identifies that the project area is not an area that contains views of State or regional significance. The closest areas are at Mt Elephant and Mt Shadwell at Mortlake.

Another thing that has changed, perhaps not surprisingly given the evolution of the technology, is that the wind turbines (including towers and blades) are getting bigger,

[133] Michael Juttner, DELWP submission p24.
[134] Submission 7, p4.
[135] Document 47.

particularly taller. The proposal is for a height to blade tip of 165m, and the Inquiry has heard of other projects where a blade tip height in excess of 185m is proposed.

Other issues have not changed. Landscapes and views not considered worthy of protection at the State or regional level may be highly valued by local residents, leading to concern when a landscape is 'talked down' by experts.

Given the scale of the projects, and Dundonnell in particular, the ability to mitigate impacts is minimal. The wind turbines are very large, if relatively slender, landscape elements and they are either there or not. They can not feasibly be shrunk or micro-sited to remove them from a fundamentally dominant position in the landscape. At-dwelling landscaping may provide some local mitigation, and this is supported in suggested conditions on the project, but turbines will primarily remain highly visual in all directions for many, many kilometres.

Like almost any landscape element, the view of turbines will evoke mixed responses from strong acceptance to neutrality to strong objection.[136] A recently retired Federal member of Parliament was reported as describing wind turbines as variously '*appalling*', '*utterly offensive*' and a '*blight on the landscape*'.

The Inquiry however must consider the project against the relevant planning controls and policy, rather than its own subjective view. On the submissions and evidence before the Inquiry, there is no impediment at this location for the project on landscape and visual amenity grounds. There are no specific landscape overlays in the planning scheme, the area is not identified as significant in the SWVLAS, and the site is not listed as one of the 'exclusion areas' in the PPG.[137]

The Inquiry also notes there were no specific submissions on the impact on landscape values of the power transmission line and quarry. The transmission line will also be a new, and to some undesirable, element in the landscape, albeit at a much smaller scale than the turbines themselves. The transmission line is a necessary corollary of the wind farm itself and are a common element in rural and urban landscapes.

On landscape and visual amenity the Inquiry concludes that the evaluation objectives have been adequately met. The landscape is not identified as one of being of State or regional significance in planning instruments; and site specific mitigation (screening) can be undertaken at nearby houses.

The mitigation measures proposed in the EES (Table 17-5) largely relate to wind farm design and screening of dwellings.

(iii) Findings

The Inquiry finds:

- The landscape at the project site, whilst attractive, has not been identified as one requiring specific planning protection
- The wind farm will be highly visual for a long distance in most directions; with varying viewer responses

[136] See *Cherry Tree Wind Farm Pty Ltd v Mitchell Shire Council & Ors* [2013] VCAT 521 at para 61.
[137] At Clause 2.2.4.

- Screening of local dwellings upon request should be undertaken.

Planning permit conditions are recommended in Appendix E accordingly.

The Inquiry makes no specific recommendation on this issue.

4.2 Geoscience values

(i) Evidence and submissions

A number of submitters raised the issue of geoscience values in the area. Mr Staff submitted that the wind farm site is in the *Lakes and Craters Precinct* of the Kanawinka Geopark.[138] The Geopark is described as 'Australia's most extensive volcanic province' in the Geopark brochure.

One submitter tabled[139] an *Energy and Communications Infrastructure Siting Policy* of 2009 published by the Kanawinka Global Geopark which expresses concern about inappropriately located wind farms and other energy infrastructure.

Another submitter[140] also raised the issue of the impact of the turbines on lava flows and other geological features.

The EES contained an assessment of geoscience values prepared by Dr Neville Rosengren.[141] This assessment identified a range of significant sites which are identified in his report and in Figure 8-3 of the EES itself.

Dr Rosengren, in summary, found that:

- On the wind farm site there is one site of State significance north of Post Office Lane (Site 10)
- A number of other sites within the project area ranging from Very High Regional Significance to Local Significance
- No sites within the project area of National Significance.

Dr Rosengren provided significance levels and constraint levels for each site, noting that Site 10 could have turbines placed on the flat plateau top areas provided damage to escarpments was minimised.

The essence of Dr Rosengren's recommendations have been carried across into Table 8-3 in the EES as mitigation measures, which then in turn are transferred into the Environmental Management Framework (EMF) in Chapter 25.

(ii) Discussion and conclusions

The geoscience values of the western volcanic plains are well known, particularly the distinctive volcanic cones such as Mt Elephant. Whilst some submitters expressed concern at the impact on geoscience values, the Inquiry is given some comfort from the work of Dr Rosengren, an acknowledged expert in the field of geomorphology.

[138] See Attachment H to Submission 66.
[139] Document 52.
[140] Submission 99.
[141] Volume 2, Annex E.

The Inquiry is satisfied that his assessment, which identifies no sites of international or National significance on the site, has thoroughly assessed and considered the geoscience values present, and where appropriate recommended management and protection measures.

The Inquiry also notes that Dr Rosengren has undertaken this task for the 'revised turbine layout' presented at the hearing.

The Inquiry does consider that the detail in some of his recommendations ('Sensitivity to disturbance and potential constraints') has been lost in the translation into the EES Table 8-3, and particularly mitigation measures. The Inquiry considers that the detail in his report should be included, either in a revised Table 8-3 (and Table 25-4), or in a separate recommendation in the planning permit condition relation to environmental management.

Subject to this change, the Inquiry considers that impacts on geoscience values can be managed for the project to meet the evaluation objective.

(iii) Findings and recommendation

The Inquiry finds:

- The project can be developed whilst protecting significant geoscience values on-site.
- The recommendations made by Dr Rosengren should be included in the mitigation measures in Chapter 25 of the EES.

The Inquiry recommends:

Include specific reference to the specific findings and recommendations in Section 7.1.1 – 7.1.26 of the report *Proposed Dundonnell Wind Farm Geoscience Features of Significance and Sensitivity Assessment August 2014* and the correspondence dated 30 September 2015 (Document 14 in the hearing) in the mitigation measures in Table 25-4 of the Environmental Management Framework.

5 Traffic and transport

EES Evaluation Objectives:

To avoid or minimise disruption and other adverse effects on local infrastructure (including roads), land use (including agricultural and residential) and to neighbouring landowners and road users during construction and operation of the project.

To avoid or minimise adverse noise, visual and other amenity effects on nearby residents and local communities, to the extent practicable.

5.1 Wind farm

(i) Introduction

The principal traffic issues are the impacts on the condition of roads from the very large amount of heavy vehicle construction traffic and its effects on road safety. The traffic will consist of over-dimensional vehicles (ODV) to bring wind farm components and large transformers; heavy duty vehicles carrying aggregate, sand, cement, reinforcing rod and water; service vehicles such as cranes including a heavy duty crane for turbine assembly and a range of trades vehicles and personal transport.

Operational traffic is expected to be minimal; in the order of 4-10 lights vehicle movements per day with an occasional heavy vehicle for maintenance.

The site location and the road network is shown in Figure 1.

The detailed assessment of traffic and transport matters is provided at Volume 2, Annex U of the EES, *Dundonnell Wind Farm, Traffic Impact Assessment, 2014* (TIA), prepared by Cardno. The conclusions of the TIA are presented in Chapter 19 of the EES and summarise the specialist assessment prepared by Cardno thus:

> *A Traffic Impact Assessment has been undertaken to assess the potential traffic impacts associated with the project and concluded as follows:*
> - *Subject to obtaining relevant approvals and permits from VicRoads, it is expected that over-dimensional (OD) vehicles will use haulage routes from Portland and the Port of Geelong previously approved for other projects, including the Mortlake Power Station and the Salt Creek Wind Farm.*
> - *From Woorndoo, the OD haulage route specific to the project is east via the Mortlake-Ararat Road, then Woorndoo-Streatham Road ending at the site access point south of Waring's Lane. This route utilises the shortest and safest route and consists of roads that are generally well-maintained with sufficient road widths and intersections to accommodate OD vehicles.*
> - *Based on the expected development timeframes and assumptions, construction traffic generated by the Project can be accommodated by Bolac Plains Road and Woorndoo-Streatham Road without significant upgrade works being required.*
> - *Four locations have been identified where localised road widening is likely to be required to accommodate OD vehicles.*

- *The majority of vehicle movements associated with the operation and maintenance of the wind farm will be internal to the wind farm site with minimal impacts on the surrounding road network.*
- *A Traffic Management Plan (TMP) will be prepared following Project approval and prior to the commencement of works. This will include detailed measures to address traffic generation, measures to minimise impacts to existing road users and to maintain and rectify haulage route roads and road infrastructure. The TMP will address any requirements for specific work stage construction traffic management plans; and contain any additional matters identified by VicRoads and Moyne Shire Council (p.19.1).*

(ii) Evidence and submissions

Proponent

Mr Power for the Proponent provided to the Inquiry a document titled *DWEF Traffic Generation Assumptions (EES TIA)* from Cardno.

Mr Stephen Hunt of Cardno gave evidence for the Proponent.

In relation to ODV his evidence accorded with the TIA in that ODV routes will need to be permitted by VicRoads and that previously used or approved over-dimensional routes could be used. In the case of local roads consent would be required from the relevant municipality.

He expected that from Portland the ODV route would be via the Princes, Henty and Glenelg Highways to Lake Bolac and thence south on the Ararat-Mortlake Road and through Woorndoo, as approved for the proposed Salt Creek Wind Farm. From Melbourne or Geelong, the route to the proposed off-site substation adjacent to the Mortlake Power Station would likely be the Princes Freeway, Princes Highway and Terang-Mortlake Road. To access the wind farm site approval would be sought to use the declared Ararat-Mortlake Road from Mortlake leading north to the Woorndoo-Dundonnell Road just east of Woorndoo.

He advised that a Traffic Management Plan will be prepared and endorsed for ODV movements.

In relation to construction traffic volumes Mr Hunt estimated average daily vehicle movements (movements = vehicle trips x 2) as 10 for ODV, 20 for heavy vehicles and 270 for general (light) vehicles.

Existing traffic volumes on Woorndoo-Dundonnell Road and Woorndoo-Streatham Road are such that construction traffic would increase total traffic volumes roughly three fold and heavy and ODV also three fold.

The *DWEF Traffic Generation Assumptions (EES TIA)* document from Cardno provides estimated traffic detail that underlies many of the data presented in the TIA and the evidence of Mr Hunt. It also provides estimates of external heavy vehicle traffic that might be generated if all raw materials, specifically aggregate and water, was sourced off the site. That analysis indicated heavy vehicle including ODV movements increasing from an estimated 30 per day to 110.

Mr Hunt also gave evidence that in his opinion an upgrade of Woorndoo-Streatham Road is not warranted, but he supported the Proponent being responsible for maintaining the condition of the road during the construction period and returning the road to its existing condition at the end of that period.

Nevertheless, Mr Power subsequently informed the hearing that the Proponent would, at its cost, upgrade the Woorndoo-Streatham Road from the Woorndoo-Dundonnell Road north east to the site entry to a 6.2m wide sealed pavement.

In his evidence responding to submissions, Mr Hunt:

- supported the proposal from Moyne Shire Council to appoint an independent auditor for traffic and transport matters
- agreed with the proposal from Moyne Shire Council that the TMP for the wind farm should be linked to those for the transmission line and the off-site substation but qualified the suggestion that they have equivalent permit conditions
- did not lend support to upgrading Woorndoo-Streatham Road but noted greater detail would become available during development of the TMP.

Moyne Shire Council

The Council made extensive submissions on traffic matters, driven to a large extent by negative experiences with impacts on the road network during the construction of the Macarthur Wind Farm.[142] The substance of Council's submission on traffic and transport issues was presented as:

> *The basis of Council's submissions is to ensure that any planning permits issued for the Dundonnell Wind Energy Facility contain the necessary permit conditions to ensure the roads required to service the project are safe and fit for purpose. Council does not consider that the provision of appropriate roads infrastructure can be adequately and solely dealt with via a Traffic Management Plan and requests that the Inquiry, by recommendations to the Minister for Planning, ensure permit conditions are included which require the Proponent to upgrade local roads prior to construction commencing.*[143]

Council also sought, and different to the model condition in the PPG, that they be given a role in *approving* the TMP(s) rather than just being *consulted* on them.

Council submitted that it has particular knowledge of the local road network, that it has road engineering and technical expertise on staff, and that it is responsible for ensuring compliance with the endorsed TMP. It argued that these factors put it in the best position to ensure that road conditions on local roads are appropriate.

---

[142] The *Macarthur Wind Farm Case Study Report*, May 2013 provided to the Inquiry noted that roads were a significant issue for all parties interviewed. The originally estimated 36,000 heavy vehicle movements on external roads escalated to an estimated 110,000 due to an off-site quarry being used. The damage to arterial roads (VicRoads) was estimated to have exceeded $50m.

[143] Council submission page 17.

Council noted the preferred access to the site via Woorndoo-Streatham Road and the commitment of the Proponent to upgrade the road to a 6.2 metre wide seal with 0.5 metre width shoulders before the wind farm construction phase commences at the cost of the Proponent. Council also noted its uncertainty with the estimates of traffic volumes, particularly for heavy vehicles. It noted that the estimates provided are premised on substantial resources of aggregate and water being sourced on-site and commented that the heavy vehicle volumes, excluding ODV, would be dramatically increased if this was not to be so. They requested:

> *…..the Minister include a permit condition requiring the Traffic Management Plan be amended where any change to the off-site sourcing of materials or water results in an increase in the projected traffic volumes provided by the Traffic Impact Assessment greater than 10%.*

Council also submitted that an 'independent' Road Quality Auditor should be appointed to oversee all aspects of traffic and transport associated with the development and construction of the project elements. It noted that this approach has been successfully used locally for the construction of two gas plants.

In relation to TMPs, they are required for each component of the project. Council submitted that the permit conditions should be integrated or the same such that traffic management for all three project elements can be coordinated.

Ararat Rural City

Ararat Council submitted in writing that the proposed wind farm site is close to the southern boundary of the Ararat municipality. In Submission 98 it commented that a number of local roads in Ararat could provide access to the site from the Glenelg Highway if current anticipated plans change. It asked that *'…..any condition regarding a traffic management plan include the requirement for consultation and agreement of Ararat Rural City'.*

VicRoads

VicRoads made a written submission in response to the planning permit applications.[144]

The submission stated that VicRoads would not object to the granting of a planning permit subject to the preparation of a detailed TMP; and the need for the Proponent to enter into a legally binding agreement with VicRoads for repairing any damage from construction vehicles to the arterial road network.

Individual submitters

A small number of individual submitters commented on traffic issues. They raised concerns about construction traffic for the project causing damage to roads with possible lack of maintenance and restoration, the later rectification of which may become an impost on the municipality. A further issue was the need to respect landholders' ability to continue to readily access their properties during the use of roads for wind farm construction traffic.

[144] Part Document 7.

(iii) Discussion and conclusions

The Inquiry concludes that traffic and transport matters can be adequately managed. These matters include road safety, shared use of roads, and the maintenance of the road assets. Whilst a number of likely traffic and transport routes have been defined in the EES, the detail of these issues will be addressed through the TMP required in the planning permit conditions.

Significant outcomes that have been agreed between the Proponent and in particular Moyne Shire Council include:

- Making the Council an approving authority for the TMP
- Pre-construction of the Woorndoo-Streatham Road
- Appointment of a road quality auditor to ensure road management is effectively undertaken.

The Inquiry notes and supports these points of agreement. The Inquiry considers they should avoid some of the pitfalls that were said to occur during the construction of the Macarthur Wind Farm.

The Inquiry also supports the provision of a TMP and has made recommendations that appropriate permit conditions be applied as shown in Appendix E.

In relation to the submission from VicRoads, the first permit condition request is included, that is, the development of a detailed TMP. The Inquiry does not support the second requested permit condition. The *Road Management Act 2004* at Section 112 already includes the power for VicRoads to recover costs for extraordinary road damage. The pre-construction surveys required in the TMP should assist with any enforcement in this regard.

The Inquiry notes that permission will be required for ODVs[145] from VicRoads separate to the planning permits recommended by the Inquiry.

The Inquiry also notes that the plan of the proposed wind farm indicates that there will be nine instances (exhibited planning permit application) where internal wind farm tracks cross public roads. These crossovers must be designed, constructed and maintained to the requirements of Moyne Shire Council. The Inquiry believes this should be specifically referenced in the TMP and has recommended accordingly in the permit conditions in Appendix E.

The Inquiry also notes Moyne Shire Council's submission in relation to changes in traffic volumes and how they might influence roads and traffic management. Moyne suggested a 10% change in predicted traffic numbers might trigger an update of the TMP, whilst the Proponent preferred a number of 20%. The Inquiry is not convinced that an arbitrary number is the correct approach as this may not actually have any significant impact on traffic and road outcomes.

The Inquiry considers that rather, the Road Quality Auditor could play a role in this area, and establish triggers for when an updated TMP is required. The Inquiry has suggested permit conditions accordingly in Appendix E.

[145] Technically Over Size and Over Mass Vehicles or OSOM.

(iv) Findings

The Inquiry finds:

- As with other major wind farm projects the Dundonnell Wind Farm is likely to generate significant heavy vehicle movements; mitigated to a great extent by the use of an on-site quarry
- The impacts on roads and roads users can be effectively managed by the development of a Traffic Management Plan, including a Road Quality Auditor
- The approval role of the Moyne Shire Council in this process should assist with the construction, management and maintenance of local roads affected by the project.

Permit conditions are recommended accordingly in Appendix E.

5.2 Quarry

(i) Introduction

An on-site hard rock quarry is proposed to quarry basalt and crush and screen that to produce aggregate for construction. Aggregate is needed to form the approximately 70 kilometres of internal tracks, to form the hardstand areas at each turbine location for assembly of components and for turbine erection, and for the concrete for turbine foundations. The Proponent has indicated an expectation of sourcing 80% of aggregate needed from the quarry.

Provision of aggregate from an on-site quarry is a major benefit for the project in that it substantially reduces heavy vehicle movements on external roads.

The quarry will be developed first to enable use of the aggregate to construct internal tracks, including the track westwards to the main site entry off Woorndoo - Streatham Road. The quarry itself will be established from the east via the Darlington - Nerrin Road.

(ii) Evidence and submissions

Proponent

In the TIA it states:

> *It is understood that establishment of the on-site quarry will be one of the first activities undertaken, and in the first instance will provide the material utilised for construction of the site access from Woorndoo-Streatham Road.*
>
> *Following completion of the access track, **all** external vehicle movements associated with the wind farm project will be from Woorndoo-Streatham Road and the **major** site access through to the internal track network.*
>
> *In the **interim**, traffic associated with establishment of the on-site quarry and ongoing operation is proposed to utilise Fashams Lane or Post Office Lane to **access the works** area* [146] *(*Inquiry emphases*).*

[146] Traffic Impact Assessment, page 23.

The EES and TIA both indicate that establishing the quarry will produce in the order of 16 heavy vehicle movements as mobile plant and equipment is brought on to the site followed by ongoing light vehicle movements for staff.

Mr Hunt's evidence statement indicated that the site establishment traffic would be 12 heavy vehicle movements per day and 70 light vehicle movements. These estimates are stated as being premised on eight heavy vehicles accessing the site across the first week, a peak of 50 workers on-site on any one day, and an establishment period of 12 weeks.

Moyne Shire Council

In its submission (Submission 40) Moyne Shire Council requested a permit condition to access Post Office Lane and Fashams Lane from the north to avoid environmental values further south.

The Council also submitted that there is not enough information to determine whether the proposed route for quarry development is appropriate or whether further road and intersection upgrades might be required.

(iii) Discussion and conclusions

The Inquiry supports the concept of sourcing as much aggregate and water as possible on the site because of the scope that this offers for a very substantial diminution of heavy vehicle transport on external arterial and local roads that would otherwise occur. This support is qualified by any adverse effects of this on-site sourcing on roads being minimal and any damage being able to be rectified.

The Inquiry is disappointed that the Proponent has not presented access arrangements for quarry establishment with greater certainty. However based on the information provided it is satisfied that the overall level of heavy vehicle movements should be relatively small. To provide more certainty for the management of traffic impacts from quarry establishment, the Inquiry recommends that the TMP:

- identifies and specifies the local roads to be used that provide suitable access, ensure road safety and least road damage, have regard to protecting sensitive ecological areas, and that where these roads might be in adjoining municipalities those councils are consulted
- unequivocally identifies the access point to the wind farm site
- requires that the access point used for the establishment phase be closed to any further use as soon as the main access track is open through to Woorndoo-Streatham Road
- ensure that road damage repair for wind farm access routes includes initial quarry access routes.

The independent Road Quality Auditor could play key role in developing these parts of the TMP. The Inquiry has provided recommended permit conditions in Appendix E accordingly.

(iv) Findings

The Inquiry finds:

- The number of heavy vehicle movements from the east associated with quarry establishment should be relatively small; all other movements must be from the main access roads to the west and via wind farm tracks
- The management of roads for the quarry can be provided for in the project Traffic Management Plan.

Permit conditions are recommended accordingly in Appendix E.

5.3 Transmission line and substation

(i) Introduction

Of the 38 kilometre length of the transmission line, about 10 kilometres will be on road reservations, with the balance through private property. About 4 kilometres of that line will be within the wind farm site boundary. It is intended that the transmission line will be above ground. The EES informs that the line will be carried largely on monopoles extending to about 32 metres above ground and carry single or double circuit conductors. It is anticipated that occasional duopoles may be used; presumably most likely where there is a sharp change of direction, of which there are about ten. It is expected that the poles will be spaced at about 200 metre intervals, although there is scope for some variation in that. The substation at the western end will be accessed by a track constructed from Connewarren Lane.

(ii) Evidence and submissions

Proponent

For the transmission line the EES reports:

> *It is anticipated that the majority of vehicles will access the transmission line corridor where it crosses existing roads, and travel along an access track running along the corridor. Therefore impacts on public roads along the transmission line corridor are anticipated to be minor and limited to a short period of time before construction progresses to a different location. Access management plans will be prepared in conjunction with Moyne Shire when required as works along the corridor progress.*

Document 55 *Responses to questions raised during the Panel hearing* from the Proponent explains that the access track would be rudimentary compared with wind farm tracks, in many cases no more than a wheel track. Under some circumstances pavement of 3.5 metres width and about 50 millimetres thick may be used.

The document *DWEF Traffic Generation Assumptions (EES TIA)* estimates 46 cubic metres of concrete being required per pole.

For the substation near to the Mortlake Power Station the EES reports that heavy vehicle access:

> *…..will be required during the main wind farm construction phase for the substation footing construction and substation installation. Construction*

> *materials required for the off-site substation will be sourced externally and involve in the order of 100 heavy vehicle movements across the construction period of 4-6 weeks (excluding OD vehicle movements). Heavy vehicle traffic associated with the substation construction will approach the site from Hamilton Highway via Connewarren Lane.*

It then points out that over-dimensional deliveries will be two approximately 130 tonne transformers. Those would be expected to use the same route from Melbourne or Geelong used for equipment for the Mortlake Power Station, and would require specific approval and permit as for over-dimensional vehicles accessing the wind farm site.

In his submission Mr Power said:

> *Both the EES and the evidence of Mr Hunt are of the view that the impacts from the construction of the transmission line and the off-site substation will be minimal.*

In *Responses to questions raised during the Panel hearing* from the Proponent, an estimate is provided that on advice from the Proponent, 500 cubic metres of coarse aggregate is expected to be required for the substation.

Moyne Shire Council submitted (Submission 40) that:

> *The TIA identified over-dimensional vehicles will be required for construction of the off-site substation but does not identify whether any roads or intersections would need to be upgraded.*

(iii) Discussion and conclusions

Understanding the possible traffic arising from the transmission line construction has proved difficult and uncertain. No estimates have been provided of vehicle numbers or where access from public roads to the transmission line corridor might be located and hence where vehicle use of public roads might be focussed. But of particular uncertainty is the proposed access track running along the corridor and the possible considerable vehicle movements on public roads needed to construct this lengthy track.

The Inquiry notes that from information provided by the Proponent that excavations for poles would generally vary from 3 to 15 metres deep and excavation diameters would be between 0.5 and 3 metres. The machinery needed for these excavations, the concrete needed, aggregate for access tracks and crossings from roads, and transport of poles and conductors suggests that the heavy vehicle impacts on local roads may be more than the 'minimal' suggested by the Proponent.

The Inquiry acknowledges the information that the poles will be steel or concrete delivered in sections and hence no over-dimensional transport would be required.

As with the wind farm site itself crossings from public roads would be subject to the same design and approval constraints.

Aggregate and construction materials will have to be brought in to construct the tracks and the substation pad. Given that Connewarren Lane connects with the Hamilton Highway that gives access to the arterial road system for heavy vehicle movements. The estimate of about

100 heavy vehicle movements may need refining since on the data provided it would appear that about 75 of these will be taken up by hauling the aggregate for the substation.

(iv) Findings

The Inquiry finds:

- Whilst there is some uncertainty about a number of these elements for traffic and transport for the transmission line, the Inquiry is satisfied that they can be managed through the Traffic Management Plans required in the planning permit conditions.

Permit conditions are recommended accordingly in Appendix E.

6 Noise and vibration

EES Evaluation Objective:

To avoid or minimise adverse noise, visual and other amenity effects on nearby residents and local communities, to the extent practicable.

Noise and vibration for the project are likely to be significant at different times, particularly for construction activities, quarrying and for wind farm operation.

There may be lesser impacts associated with construction of the transmission lines and operation of the off-site substation. The Inquiry is satisfied that these can be managed through the environmental mitigation measures in the EES and the environmental management plans required in permit conditions. The wind farm and quarry are addressed in detail below.

6.1 Wind farm construction noise

(i) Introduction

In the Noise Impact Assessment (NIA) within the EES reference is made to Environment Protection Authority publication 1254 *Noise Control Guidelines*, and specifically Section 2 of that, *Construction and Demolition-site Noise*. That document prescribes noise requirements applicable to the wind farm construction. The guideline is included in the EES at Table 25-10 but specific reference is not included in the planning permit conditions.

The NIA provides an estimate of construction noise. That uses data on sound power levels for heavy construction equipment likely to be used. The data is then used to predict likely noise levels at the nearest dwelling.

Predicted noise levels at stakeholder houses range from 30-35dB L_{Aeq} for the construction of the on-site substation to 60-65dB L_{Aeq} for access road construction and cable trench digging. For *local landholders* the results range from 25-30dB L_{Aeq} for concrete batching to 50-55dB L_{Aeq} for access road construction and cable trench digging.

The NIA indicates that there may be 'unavoidable works' that have to be carried out at night. Examples include turbine erection when wind speeds must be low, large concrete pours and delivery of some over dimensional loads.

The EES recommends the development and implementation of a Construction Noise Management Plan as a mitigation measure in Table 25-10 but this has not transferred into a permit condition as for other such management plans.

(ii) Discussion and conclusions

The Inquiry is satisfied that noise from the construction of the proposed wind farm and that from the associated construction traffic is able to be adequately managed. The greatest noise impact will be on *participating landholders* and *participating neighbours*, all of whom have a financial interest in the project. The absence of non-participating parties within 2 kilometres of the nearest turbine assists in reducing construction noise impact on those. A

Construction Noise Management Plan should be prepared and the Inquiry has included the provision of such a plan in the planning permit conditions in Appendix E.

(iii) Finding and recommendation

The Inquiry finds:

- Construction noise should not cause unacceptable impacts given the relative remoteness of the site provided mitigation measures and a Construction Noise Management Plan are implemented.

The Inquiry recommends:

Include the requirement for a Construction Noise Management Plan in the planning permit conditions for the wind farm.

A permit condition has been included in Appendix E accordingly.

6.2 Wind farm operational noise

(i) Introduction

Estimating noise from operating wind turbines requires noise emission data for a particular turbine. At the time of project design the turbine model is often not known. This challenge is overcome by considering:

> *… a turbine type which can be considered representative of the size, power rating, and noise emissions of turbines which may be considered for this site.*

In this case the representative turbine model used is the Vestas V117-3.3 MW, which the Proponent submitted is typical of the type of machine being considered. To assess the impact of wind farm noise the process defined in the NZS 6808:2910 *Acoustics – Wind Farm Noise* must be followed. The process in summary includes:

- Identification of noise sensitive locations within 5 kilometres of the wind farm site[147]
- Prediction of noise levels at noise sensitive locations based on the sound power output of the turbine and other factors such as topography and weather conditions
- Identification of noise sensitive locations that might be subject to wind farm sound level greater than 35dB $L_{A90(10\ min)}$ at 95% rated power
- Detailed predictions at those identified properties that can be assessed against the NZS 6808:2010 criterion of:
  - *… at any wind speed wind farm sound levels ($L_{A90(10min)}$) should not exceed the background sound level by more than 5 dB, or a level of 40 dB $L_{A90(10min)}$, whichever is the greater.*[148]

The measurement of background noise is important in this process for operational noise compliance monitoring. This process is described in NZS6808:2010 and includes defining the

[147] Usually, and in this case, dwellings.

[148] NZS 6808:2010, page 21. It is important to note that the criterion does not aim to make wind farm noise inaudible, but that it is reduced to the extent to minimise sleep disturbance and thus health impacts.

relationship between wind speed at hub height and background noise at ground level in the absence of the wind farm.

(ii) Results, evidence and submissions – Proponent

The detailed results and noise contour plots are presented in the NIA in the EES. In summary, four current dwellings, on or very close to the site boundary and close to proposed wind turbine locations, are nominated for *specific arrangement*. These are dwellings 4, 48, 59 and 60. Each owner has entered into an agreement with the Proponent that if the project proceeds to construction the dwelling will be vacated and made unsuitable for habitation. Hence, in that event, these dwellings could no longer be regarded as *noise sensitive locations*. They need not be considered further.

There are five dwellings within the modelled 35 dB $L_{A90(10\ min)}$ noise contour that are owned by *participating landholders*, i.e. landholders who own land on the wind farm site and whose dwellings will remain occupied. These are dwellings 2, 41, 49, 50 and 51. Dwelling 2 is within the site boundary.

There are also four dwellings within that noise contour owned by *participating neighbours*. These are dwellings 1, 46, 47 and 52. These landholders do not own land on the wind farm site but have an agreement with the Proponent.

There are no *local landholder* dwellings within that 35 dB $L_{A90(10\ min)}$ noise contour. These are landholders who have no contractual arrangement with the Proponent

The owners of all thirteen present dwellings within that nominated noise contour have provided statements of consent that they acknowledge that the proposed turbine(s) will be within 2 kilometres of their dwelling.

The owners of dwellings 2, 49 and 50 (*participating landholders)* and of 1 and 47 (*participating neighbours)* have provided letters to Moyne Shire Council that they accept higher than otherwise levels of noise.

An alternate wind farm layout was provided prior to the hearing to address Brolga issues. The impact on the noise assessment is that two dwellings will have reduced noise exposure and one dwelling will have a small increased exposure (0.6 dB).

It was noted previously that in the NIA and the expert witness statement of Mr Delaire (called by the Proponent) that certain data (octave band levels) were not available for the indicative Vestas V117-3.3 MW turbine at the time of preparing the EES and that data provided for the similar the Vestas V112-3 MW machine had been used in lieu.

During the hearing the Proponent advised that that sound power data was now available and a supplementary report, Document 16, was provided.

Appendix B at B1 'EES layout' (p.6) of that document gives the noise contours, including the 35 dB $L_{A90(10\ min)}$ contour for the original 104 turbine proposal. At B2 'Alternative layout' (p.7) the noise contours for the alternate 96 turbine layout are presented.

Table 1 (p.2) of Document 16 provides the revised predicted noise levels for both turbine layouts. The notable variation is that dwelling 42, to the south of the wind farm now falls

within the 35 dB $L_{A90(10\ min)}$ noise contour for the original (EES), but is outside that contour for the alternate layout.

Dwelling 42 becomes the only *local landholder* within that noise contour, and then only for the original layout.

Hence under the revised noise prediction for the original layout, the number of assessed receivers within that 35 dB $L_{A90(10\ min)}$ noise contour is ten, being five *participating landholders*, four *participating neighbours* and one *local landholder*.

At Table 1 of Document 16 on the revised predicted noise levels it is indicated that all ten assessed noise receivers on the original layout and all nine on the alternate layout comply with the appropriate predicted noise criterion.

The EES and NIA[149] both adopt the position that the noise criterion do not apply where a noise agreement exists. These are usually people who have entered into a financial agreement with the Proponent, effectively negotiating away their right to the protection provided by the criterion in the NZS 6808:2010. This approach is common to wind farm proposals and has been accepted previously by Panels. It is also accepted by this Inquiry.

The NZS 6808:2010 also provides for a higher level of amenity (that is a lower permitted noise level) in 'high amenity areas'. The procedure for applying this lower noise criterion is outlined in the Standard.

In his expert evidence to the Inquiry Mr Delaire said that the land is in the Farming Zone which does not require a high level of amenity, and hence a high amenity area noise limit is not applicable. He said that this was consistent with the decision of the Victorian Civil and Administrative Tribunal on the Cherry Tree Wind Farm case. In his main submission for the Proponent at paragraphs 133 to 143 Mr Power gives a comprehensive commentary.

NZS 6808:2010 also provides for the assessment of 'special audible characteristics'. The Standard defines these as possibly tonality, impulsive sounds, and amplitude modulation.[150]

In relation to background noise, the Proponent has carried out background noise monitoring at six locations. These are dwellings 2, 41, 48, 49, 52 and 60. Dwellings 2, 41, and 49 are *participating landholders*, dwelling 52 is a *participating neighbour* and dwellings 48 and 60 are *specific arrangement* dwellings. Leaving aside dwellings 48 and 60 since they cannot be candidate sites for post construction noise monitoring, the other four dwellings range in distance from the nearest proposed turbine on the EES layout from about 1,000 metres to 1,900 metres. The monitoring was done between 25 January and 27 February 2013.

The data collection program undertaken by Marshall Day Acoustics is presented in 5.2.2 and 5.2.3 of the NIA (pp.24-25). The noise measurements were made with Class 1 noise meters. Note that the wind speeds were extrapolated to a height of 110 metres from the data from anemometers mounted at several heights on the meteorological mast located on-site near Post Office Lane. The proposed hub height of the indicative turbine is 106.5 metres. It is noted that at one dwelling a rain gauge was fitted, and in line with standard practice noise and wind speed data during rain events was expunged from the record.

[149] At page 26.
[150] At para 14.5.

The results of the background noise monitoring are presented in section E3 of Appendix E of the NIA other than for dwelling 60 (pp.69-73). The noise levels as dB $L_{A90(10min)}$ are plotted against the wind speed measured at 84.5 metres extrapolated to 110 metres as metres per second (10min). For each dwelling, plots are provided for the data collected over the whole of the monitoring period, excluding periods of rain, and for the night time data from 11pm to 7am as a subset.

In each case the line of best fit, the lowest line in each graph, has been plotted. This curve, or regression line, is the statistic which shows the trend of the scattered data points. For that line the quadratic equation is given and the coefficient of determination, R^2. That statistical measure, R^2, indicates how closely the individual points are represented by the regression line.

The values of R^2 range from 0.02 to 0.24.

It will be seen that in each plot there are no noise data lower than about 17 dB. That represents the noise floor, the lowest noise level that can be measured by the noise meters.

In Appendix E5 of the NIA it is reported that a large number of data points were removed from the record for dwelling 41 because of extraneous noise from insects. That Appendix E4 also comments:

> *To complement the analysis of A-weighted noise levels in accordance with NZS 6808:2010, a sensitivity analysis of the measured one-third octave band noise level data had been carried out to identify any potential anomalies or atypical periods during the monitoring* (p.74).

The results of that are presented in Appendix E6 for all six dwellings (pp78-84). That work indicated that at some sites background noise levels were significantly affected by insect noise, particularly at dwelling 41. This extraneous noise has been filtered and revised data sets produced. These plots are presented in that Appendix for all time and night time noise for all six dwellings and with the coefficients of determination. For these revised data sets the value of R^2 ranges from 0.11 to 0.30.

The derived noise limits are developed from the background noise regression curves and the specified NZS 6808:2010 noise criterion. These noise limit curves are given in Appendix E5 of the NIA without the individual data points for the six monitored sites and for both the all-time and night time noise.

NZ6808:2010 also provides the procedure for operational noise compliance. The method requires noise measurement and analysis as per the background noise measurements followed by the construction of the regression curve. That wind farm noise regression curve, adjusted for any special audible characteristics, is then compared with the derived noise curve for the site. Compliance is demonstrated by that operational wind farm noise curve being lower that the noise limit curve at all wind speeds.

The Proponent made no specific submission on handling and managing any complaints about operating wind farm noise but suggested permit conditions on these issues.

(iii) Evidence and submissions – other parties

Moyne Shire Council

The Moyne Shire Council submission (Document 40) was supported by a peer review of the NIA commissioned from SLR Consulting Australia Pty Ltd by the Council. The focus of the Council's submission was noise compliance and the management of noise complaints.

Council submitted:

> *… that any permit issued should require a revised noise impact assessment at the time of final selection of the turbine model and that this assessment be peer reviewed and approved prior to the erection of a turbine as a condition of any planning permit.*

It suggested that any permit should consider the need for on/off testing to assess noise compliance. Further, Council submitted that compliance noise testing should be for the life of the project and that should be on a five yearly basis in addition to any testing done in response to noise complaints.

The Council expressed its disquiet with present practices of handling noise complaints. Specifically it said:

> *Commonly the complaint is recorded but the link to investigation, resolving the issue and reporting back to the complainant is less than required.*
>
> *A more effective system needs to be developed that provides for access to independent expertise or a statutory authority to resolve such complaints rather than all responsibility resting with the permit holder.*

The SLR peer review commented that *'…..the methodology and assessment of noise and vibration does follow industry process and address the New Zealand standard as required.'*

That report made a number of comments. It remarked on the very low background noise levels and suggested that consideration be given to the high amenity area noise provision.

It referred to the following item in the EES Evaluation Objectives:

> *Assess the potential for construction and operation of the project to increase noise levels and/or vibration at sensitive receptors. The assessment should include an estimation of noise (including tonal and infra-sound) from all project related sources at different times over a 24 hour cycle to establish the likely conditions to be experienced at sensitive receptors.*

The Council provided proposed permit conditions for noise complaints.

Mr L Huson

Mr Huson was called to give evidence on the NIA by Mr McIntosh of Adorina Pty Ltd.

Mr Huson submitted that because of the low background noise levels the base noise limit should be set as for a high amenity area. He argued that that the noise level for contracted parties should be that advocated in the draft National Wind farm Guidelines rather than that

typically used from the UK guideline ETSU-R-97, and lower than that for contracted parties if the high amenity area level is set for non-participating parties.

Certain aspects of the predictive noise modelling were questioned by Mr Huson including the ground absorption factor used, the uncertainties in the model and the application of the model itself. He suggested that consideration of these could lead to higher predicted noise levels at noise sensitive locations; an increase of 4 dB is suggested. He indicated that on/off testing for post-construction compliance might need to be considered.

He recommended that special audible characteristics be carefully assessed using a mix of contemporary objective methods and subjective evaluation to ensure that the noise was emanating from the wind farm and especially that tonality not be subjectively assessed.

Mr Huson drew attention to the challenge of obtaining reliable wind speed data for post-construction noise compliance testing given the influence of operating turbines on nearby anemometers. He suggested that the nearest wind turbines themselves could be the source of those data given that there is a known relationship between wind speed and turbine power output.

He provided information on on/off testing for noise compliance testing should that have to be considered.

Mr Huson's submission and evidence provided material on wind turbine emissions of low frequency sound, infrasound and vibration including possible infrasound induced vibration of lightweight structures. He presented material on measurements of these including the identification using sensitive instrumentation of the infrasound 'signature' of wind turbines at some tens of kilometres distance. These matters are considered further in Chapter 9.2 on 'Health effects'.

Submission 60

Mr Mitchell, founder and past chair of the Waubra Foundation made a submission to the Inquiry and provided a resource folder.

He was highly critical of the NZS 6808:2010 and suggested that it was 'incompetent' and could *cause cruel and inhuman damage to neighbours whilst also significantly violating their human rights*.

Mr Mitchell recommended a revised sound limit that embraces the frequency range 0.1 Hz to 20 kHz, thus embracing infrasound and low frequency sound in addition to audible sound and the application of that standard indoors and outdoors.

Mr Mitchell also submitted on health issue of wind farms. That is discussed in Section 9.2 of this report.

Submission 14

The submitter, a former neighbour of the Waubra Wind Farm shared his experiences and concerns about noise with the Inquiry. He provided highly detailed information in relation to the inadequacies of post construction noise compliance and the specific noise output character of turbines at Waubra.

Submission 66

The submitter made a wide ranging submission on various facets of wind farms including noise. He referred to the recommendations on the recent Senate Select Committee on Wind Turbines that included developing a national acoustic standard for wind farm operation and establishing a Wind Farm Commissioner to respond to wind farm noise complaints.

Other submitters

A number of written submissions made reference to wind farm noise and health issues.

(iv) Discussion and conclusions

The Inquiry is satisfied that the project as proposed is capable of meeting the required noise criterion for operational wind farm noise at dwellings of *local landholders* and believes that can be achieved when a final turbine model is selected.

The Inquiry notes the submissions raising issues of health impacts from noise (particularly infrasound) and this issue is discussed in Section 9.2. The Inquiry also notes the submissions that the NZS 6808:2010 is inappropriate or deficient and should not be used.

This is an issue that the Inquiry does not address in detail as NZS 6808:2010 is the applicable standard called up in the assessment to be used. Whether a new or different standard should be used is not a question for the Inquiry. It is important to note that the Inquiry has also not seen evidence that a new or different standard would be more appropriate.

The Inquiry does wish to comment on a number of detailed issues relevant to the implementation of NZS 6808:2010 and these are discussed below.

Predicted noise levels

The Inquiry recognises there is uncertainty in predicting noise levels and that there will be some uncertainty as to whether dwellings near the 35 dB $L_{A90(10\ min)}$ noise contour might be over or under that criterion. Further, the Inquiry notes that the differences in predicted noise levels at the dwellings of *local landholders* for the original turbine layout, the alternate layout and the assumed and actual turbine model noise levels are marginal.

When the final turbine model is selected and final turbine positions allowed by the micrositing allowance are resolved, the Inquiry considers the noise predictions should be repeated. That will show if further noise sensitive locations need to be included for assessment or some can be deleted.

Noise criteria

The matter of the application of the higher baseline noise limit for some contracted parties and not others is not clear.

The Inquiry has been supplied with copies of statements of consent from all nine *participating landholders* and *participating neighbours* whose dwellings are within 2 kilometres of the closest proposed turbine acknowledging that proximity. It appears that the relationship between that separation distance and the number of those dwellings is not altered by the alternate plan.

The Inquiry has received copies of five letters (three from *participating landholders* and two from *participating neighbours*) accepting the higher baseline noise levels.

High amenity area

As noted by Mr Delaire, the Tribunal in *Cherry Tree* found that in that case there was nothing in that planning scheme (Mitchell) to indicate a higher amenity standard should apply; and that the Farming Zone, as is the case at Dundonnell, does not imply that a particularly quiet environment should be preserved.[151]

The Inquiry is not persuaded that it would be appropriate to recommend that a high amenity noise environment be recognised.

The assessment of the special audible characteristics of a wind farm is an important component of determining noise compliance. The Inquiry understands special audible characteristics to be those distinct audible sounds that can be readily discerned from the more broadband noise from the wind farm. These sounds may be repetitive and of short duration or of a single frequency that may contribute little to the time averaged A–weighted noise measurement. Their distinctive character can be annoying.

Hence NZS 6808:2010 encourages wind farm design that ensures an absence of these special audible characteristics or, failing that, imposes a noise penalty.

The Inquiry believes that the assessment of special audible characteristics requires both objective, where possible, and subjective assessment; objective to measure the characteristic and subjective to ensure that the wind farm is indeed the source.

The Inquiry expects that a wind farm owner would be diligent in seeking to ensure minimal, if any, special audible characteristics since the application of the onerous penalty would be a burden to ensuring noise compliance.

It does not believe that it is appropriate to specify a methodology for the assessment of special audible characteristics as a permit condition; methods for that seem to be evolving. Rather it is better that a methodology be submitted to the Responsible Authority for approval.

The application of the penalty for special audible characteristics is an aspect of compliance assessment and is considered further there.

Background noise

The Inquiry is satisfied that the background noise measurements have been carried out as required by NZS 6808:2010 using calibrated instruments and that the results are appropriately presented, including the filtering of data to remove extraneous noise such as rainfall.

It is satisfied that, in principle, the monitoring at six sites distributed around the proposed wind farm site sufficiently characterises the background noise environment.

[151] *Cherry Tree Wind Farm Pty Ltd v Mitchell SC & Ors* (Includes Summary) (Red Dot) [2013] VCAT 521 at para 107-109.

It supports the separate evaluation for night time background noise. Examination of the regression lines show those for night time noise have lower noise levels than the all-time lines for the same locations. These lower noise levels can lead to lower noise compliance values at night when tighter noise limits are most needed; this is consistent with practice in other areas of acoustics with greater restriction on night time noise.

The Inquiry notes the very low values for R^2. A value of one indicates a perfect correlation between the two variables; a value of zero represents no correlation. The values reported indicate weak correlations at best.

This possibility of poor correlations is acknowledged by NZS 6808:2010. This can be an artefact of seeking a correlation between two parameters, one of which is measured near ground level and the other at an elevation of about 100 metres up to 4 kilometres or so distant. However, these weak relationships lead to limited confidence in the essential reference points against which post construction compliance monitoring is measured. This concern is somewhat mediated by the low background noise levels meaning that the base noise level (40 dB $L_{A90(10\ min)}$) will apply much of the time.

The Inquiry notes that the wind speed data have been presented for an elevation of 110 metres above ground level. When a final hub height is decided the data set could be recalculated using estimates for the actual hub height, although it is expected that would probably have only a minor effect on the background noise curves.

Compliance assessment

The Inquiry believes that the post construction assessment of the noise of the operating wind farm is a critical issue that requires special attention. The Proponent has demonstrated that the wind farm design can comply with the noise criteria. In practice it is vital that this is achieved and it must be done such that the results engender a high level of confidence.

The key question is what might be required for the Responsible Authority to be satisfied that the operating wind farm is in noise compliance. In principle the answer should be simple. The noise levels at noise sensitive locations owned by neighbouring parties that have no contractual link to the project, which is in this case the dwellings of *local landholders*, must unequivocally meet the specified noise criterion. In practice there are confounding matters to be considered.

It is not possible at this stage to define the compliance assessment program since much detail of the proposal remains to be resolved. However the Inquiry believes that before commissioning the wind farm a detailed noise compliance assessment program must be submitted to and approved by the Responsible Authority, and such a requirement is included in the planning permit conditions in Appendix E.

The Inquiry has a number of observations to inform that detailed plan.

An initial consideration is the confidence that can be had in the data from the noise monitoring programs. Establishing compliance depends on comparing two curves that are based on measurements. Comparing two such lines when one, or both, are qualified by some uncertainty does not give confidence in the relationship between those curves. Comment has been made previously that the coefficients of determination for the

background noise curves are poor. Hence confidence in the placement of those lines is compromised and consequently confidence in the noise level curves derived from them as well. That provides a poor basis on which to compare the curve of noise measurements post construction, more so if the coefficients of determination of those regression curves are also poor.

It could be that on/off testing may have to be resorted to. That is a process of turning those turbines near to the testing location on and off over a range of wind conditions to assess the noise levels with and without the turbine noise source. But this causes large variations in power supplied to the electricity grid which has to be managed with the grid operator.

The second matter is that of noise monitoring locations. A characteristic of this proposal is that it was developed under the previous wind farm policy whereby consent was required from owners of all non-participating noise sensitive locations to the presence of any wind turbine within two kilometres. At the planning permit application stage that policy had been varied to one kilometre. A consequence of that is that the owners of all dwellings within that two kilometre radius have entered into a commercial agreement with the Proponent as *participating landholders* or *participating neighbours*.

Background noise measurements have been carried out at two existing dwellings that are close to proposed turbine locations and will cease to be occupied if the wind farm is constructed. Those sites are not appropriate for compliance monitoring. The other four sites are contracted parties.

The dwellings of the nearest non-participants, the *local landholders* are a little over two kilometres distant, a distance at which compliance would be expected. However, the Inquiry believes that under these circumstances it is appropriate that some noise assessment be undertaken at a selection of such properties. Further, it may be feasible to carry out post commissioning noise assessments at some participating dwellings at greater distances from turbines where background measurements have been made and assessing the data for compliance with the 40 dB $L_{A90(10\ min)}$ criterion as a surrogate of compliance at *local landholder* properties.

The next consideration is the provision of the appropriate wind speed data. That used for the background noise measurements came from a meteorological mast on the site that had been put in place to explore the wind resource. That mast will be removed when the wind farm is built. Further meteorological masts will be erected along the site perimeter. The location of these will likely see wind speed measurements corrupted for some wind directions by the presence of turbines. In order that post commissioning noise levels can be properly compared with background noise measurements for compliance assessment the wind speed data must be able to be referenced to the original measurement location. There are ways of addressing that, some may require forward planning to achieve a data correlation with the existing mast. That too should be part of a detailed compliance assessment plan.

The final point is that the Inquiry recommends than an *environmental auditor* be appointed under the *Environment Protection Act 1970* to conduct an audit of the noise compliance assessment at the cost of the permit holder. Such an appointment is envisaged in *the Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria* . The role of

the auditor would include auditing the noise requirements of those guidelines and permit conditions. It might encompass reviewing the detailed compliance assessment plan, auditing further background noise measurements, the analysis and interpretation of those, the post commissioning noise measurements and the assessment of compliance. That must include the assessment of special audible characteristics.

The Inquiry considers compliance assessment must include as a minimum:

- Submission of a detailed noise compliance assessment plan to the Responsible Authority for approval
- Compliance testing, to the plan approved by the Responsible Authority should be carried out and the results with the environmental auditors report must be provided to the Responsible Authority
- In the event of non-compliance the permit holder must provide a plan to the Responsible Authority with actions to bring the wind farm into compliance and the further testing to demonstrate compliance. It must then implement that plan
- A detailed complaints response process
- The public reporting of all compliance assessment, monitoring and response.

The Inquiry suggests that the above proposals will lead to a clear resolution of whether noise compliance has been demonstrated and with a greater level of independence and confidence.

(v) Findings and recommendations

The Inquiry finds:

- That the noise assessment for the wind farm is in accordance with the requirements of NZS 6808:2010 and the operational noise impacts will be acceptable within the terms of the Standard
- A comprehensive noise assessment and monitoring program will need to be developed for wind farm commissioning to ensure compliance with the Standard.

Permit conditions are included in Appendix E accordingly.

The Inquiry recommends:

That when the final turbine model is selected noise predictions be repeated using data specific to that model to assess any change in noise sensitive locations.

6.3 Quarry

The phases of operation will encompass site development, quarrying rock using blasting, producing the aggregate and finally closure of the quarry and rehabilitation of the site.

The nearest dwellings to the quarry at present, 4, 48, 59 and 60, are all *specific arrangement* and will be vacated if the project proceeds. The nearest *participating landholder* is about 1.5 kilometres distant and the closest *participating neighbour* about 2 kilometres. The nearest local landholder to the quarry site appears to be about 4.5 kilometres away.

6.3.1 Noise

(i) Evidence and submissions

Evidence provided by the Proponent on construction noise for the wind farm itself has been presented in Section 6.1(i). That includes the application of EPA Publication 1254 which provides noise guidelines for construction activities.

Reference is made to Section 11.0 of the NIA (pp.42-46) on assessing construction noise. Table 22 of the NIA includes noise from rock crushing but not screening and items of machinery that would be used for quarrying (p.43). Table 24 contains an estimate for noise from the quarry. That shows a range of 50-55dB L_{Aeq} at the nearest dwelling, that of a *participating landholder*, and 35-40dB L_{Aeq} at the nearest *local landholder*.

The NIA advises that it is intended to operate the quarry during both the day and evening period, The noise is predicted to exceed the evening noise criterion. It recommends that operation of the quarry be restricted to the day time period initially until an assessment is made of noise and proposed mitigation measures to achieve evening noise compliance is submitted to and approved by the Responsible Authority. The NIA comments that for an operation exceeding 18 months an increment of 5dB above background noise level is permitted, and given that background noise levels are sometimes below 20dB L_{Aeq}, an evening noise level at *local landholders* of below 25dB L_{Aeq} may have to be sought.

The draft quarry Work Plan adopts the NIA advice for managing quarry noise.

(ii) Discussion and conclusions

The Inquiry agrees with the NIA that any proposed operation of the quarry during the evening be assessed from noise monitoring of the operating quarry and then developing and implementing mitigation measures to bring noise into compliance at dwellings of *local landholders.*

The Inquiry is conscious that managing noise from the quarry operations is identified in the draft Work Plan and that requirements for noise control will be determined through the Work Authority when issued. That will also provide for enforcement.

The Inquiry observes that the operation of the quarry would be expected to be a near continuous operation at a fixed location during working times over the wind farm construction period of 2-3 years. The wind farm construction noise sources will last for lesser periods at each site; at times construction work will be remote from the quarry, at other times close to and adjoining it.

It is not clear to the Inquiry if quarry noise has been added to wind farm construction noise to give an estimate of total construction noise at noise sensitive locations. If not it is suggested that that be done. The Inquiry acknowledges that controlling the cumulative noise from these sources may theoretically be less than straightforward since one source is controlled by a Work Authority, the other by permit.

Given that there is no EPA Publication 1254 day time noise criterion any noise control during that time might have to be assessed on the basis of reasonableness. If wind farm construction for unavoidable works has to be carried out in the evening and quarry evening

operation has been approved, the combined noise may require careful consideration and management.

(iii) Findings and recommendations

The Inquiry finds:

- That management of noise from the operation of the on-site quarry can be managed to an acceptable level through the quarry Work Plan
- The noise management regime in the draft Work Plan in the EES is acceptable.

6.3.2 Vibration

(i) Evidence and submissions

Blasting will have to be used for winning rock from the proposed quarry pits.

At Section 4.2 of the NIA recommended limit values for ground vibration are reported in Table 3 as peak particle velocities (pp.13-14). For impulsive vibration, as might be expected from blasting, the preferred value at dwellings for human exposure is 8.6 mm/s with a maximum of 17 mm/s.

Airblast is also considered as required by the Evaluation Objectives. The NIA presents this at Section 4.4 (p.15). Guidance for Victoria is provided by *Environmental Guidelines–Ground Vibration and Airblast Limits for Blasting in Mines and Quarries*. This recommends that airblast should not exceed 133dB L_{Zpeak} for 95% of all blasts at affected locations.

Vibration is assessed in the NIA in Sections 11.3 (pp.46-47) and 11.5 (p.49). These comment on the considerable uncertainty in predicting these effects.

For ground vibration from quarry operations the NIA reports that it is unlikely that vibration levels would exceed the recommended limit at the nearest dwelling, a *participating landholder* about 1.3 kilometres distant. The NIA comments:

> *…..the thresholds for human exposure to vibration are generally well below accepted thresholds for minor cosmetic damage to lightweight structures. Accordingly, vibration which complies with the criteria for human exposure does not pose a risk in terms of structure damage* (p.14).

For airblast the NIA predicts that it will be below 110dB L_{Zpeak} at the nearest *participating landholder* and less than 90dB L_{Zpeak} at the nearest *local landholder*.

A number of submitters, particularly landholders in the area expressed apprehension about blasting causing damage to the aquifer structure which reliably provides water vital for their farming operations. This is discussed more comprehensively at Section 9.2 of this report.

(ii) Discussion and conclusions

The Inquiry notes that the current version of *Ground Vibration and Airblast Limits for Blasting in Mines and Quarries - Environmental Guidelines* issued by the Victorian Department of Economic Development, Jobs, Transport and Resources is clear on criteria;

3.1 Existing Sites

At most existing sites, Work Authority or Licence conditions set limits for airblast and ground vibration measured at sensitive sites.

For existing sites the limits are as follows.

* *Ground vibration at sensitive sites should be below 10mm/s (ppv) at all times, and*
* *Airblast at sensitive sites should be below 120dB (Lin Peak) at all times.*

3.2 New Sites

At new sites, criteria at the site boundary or at other defined points may be set in Work Authority or License conditions to ensure vibration and airblast are below appropriate limits at the most affected sensitive sites.

New sites should meet the requirements of part 3.1 as well as the following:

* *Ground vibration at sensitive sites should be below 5 mm/s (ppv) for 95% of all blasts*
* *Airblast at sensitive sites should be below 115dB (Lin Peak) for 95% of all blasts.*

At Section 3.3.1 the Guidelines note that blasting at quarries should only occur between 9am and 5pm Monday to Saturday.

A particular, and effective, feature of this proposal is the distance of the dwellings of non-participating parties from the work areas. In this case because the proposed quarry is located centrally within the wind farm site the separation distance to those dwellings is considerably greater than it is from the nearest proposed wind turbine. Given that the dwelling of the nearest *local landholder* is over 4 kilometres away the Inquiry expects that effects of ground vibration and airblast from the quarry to be minor.

On the basis of the NIA assessment and the separation of *local landholders* from the proposed quarry the Inquiry believes that ground vibration and airblast levels at those dwellings will be well below recommended levels.

The Inquiry recommends that vibration and airblast, including any monitoring of those, be managed through the Work Authority that will have to be issued for the quarry rather than through a blasting management plan as a part of the Environmental Management Plan.

The Inquiry is cognisant of the concern expressed by a number of landholders that blasting could damage the aquifer from which they extract water. The Inquiry believes that a monitoring program including assessing water levels in off-site bores is required. This is discussed in the chapter on groundwater.

(iii) Findings and recommendations

The Inquiry finds:

- That the impact of vibration from quarrying is unlikely to be a significant impact and can be managed through the quarry Work Plan.

- The vibration assessment and management regime in the draft quarry Work Plan in the EES is acceptable.

6.3.3 Air emissions

Although not a noise or vibration matter, the issue of air emissions from quarry operation is included here for convenience.

(i) Evidence and submissions

The draft quarry Work Plan refers to dust suppression in terms of the quarry location remote from dwellings and control by dampening of roads, plant and stockpile areas and by covering of loads.

The submission from the Environment Protection Authority advises that:

- The proposed quarry is situated more than 500 metres from the closest dwelling, a distance consistent with that set out in EPA Publication 1518 *Recommended separation distances for industrial residual air emissions*.
- EPA Publication 1191 *A Protocol for Environmental Management for the Mining and Extractive Industry* is an incorporated document of the *State Environment Protection Policy (Air Quality Management) 2001* and provides statutory requirements for assessing and managing emissions to the air environment from extractive industries.

(ii) Discussion and conclusions

The Inquiry accepts that the location of the proposed quarry vis-à-vis occupied dwellings, a separation distance of greater than 1 kilometre is beneficial in managing the impact of air emissions, notably dust. Further, it acknowledges that water application will assist in reducing dust. However it appears to the Inquiry there is a requirement to comply with EPA Publication 1191 *A Protocol for Environmental Management for the Mining and Extractive Industry.*

(iii) Recommendation

The Inquiry recommends:

That the Work Plan include an assessment of air emissions for quarry operations under EPA Publication 1191 *A Protocol for Environmental Management for the Mining and Extractive Industry.*

7 Cultural heritage

EES Evaluation Objective:

To avoid or minimise adverse effects on Aboriginal and historic cultural heritage and associated values.

7.1 Aboriginal cultural heritage

(i) Introduction

Cultural Heritage Management Plans (CHMPs) are prepared under the *Aboriginal Heritage Act 2006* for significant ground disturbing activities to manage and protect Aboriginal cultural heritage. If a CHMP is required, approvals may not be given until the CHMP has been approved by the Registered Aboriginal Party (RAP).

Draft Cultural Heritage Management Plans (CHMPs) were provided in the EES for the wind farm[152] and the transmission line corridor[153]. The wind farm CHMP includes consideration of the Quarry.

The EES findings on Aboriginal cultural heritage included:[154]

- There are six known Aboriginal cultural heritage places within the wind farm site
- Ground disturbance at four sites of moderate archaeological potential on the transmission line route must be avoided
- Impacts on four of the sites will be avoided; the other two (artefact scatters) may be affected and salvage undertaken (sites VAHR 7422-0567 and VAHR 7422-0568)
- The two affected sites have been assessed as low significance
- Additional sites may occur and these will be identified through further assessment; for example as access track alignments are finalised
- The CHMPs contain contingency plans to identify and manage 'unexpected' site discovery.

(ii) Submissions

There were few submissions articulating concerns in relation to Aboriginal heritage. Ms Hallyburton from DELWP in her submission[155] indicated that during the preparation of the EES, the Office of Aboriginal Affairs Victoria (OAAV) expressed concern regarding the quality and extent of data collection in relation to Aboriginal heritage. As a result additional survey work was carried out and OAAV was satisfied that the EES could be exhibited.

Ms Hallyburton noted that the EES CHMPs both contain requirements for more assessment prior to works commencing.

[152] EES Volume 2, Annex H.
[153] EES Volume 2, Annex I.
[154] EES, Volume 1, page 11-1.
[155] Document 4, para 21.

Moyne Shire Council submitted that there is a risk in allowing the CHMPs to be approved post Inquiry as it may lead to significant changes to the wind farm beyond what the Inquiry had endorsed.[156] Council also submitted that micrositing should include consideration of areas of Aboriginal heritage sensitivity.

(iii) Discussion and conclusions

The Inquiry notes that no substantive submissions were received on the impact on Aboriginal cultural heritage. Having reviewed the available material, and particularly the EES and the draft CHMPs, the Inquiry is satisfied that the approach taken is acceptable.

In particular the Inquiry notes that the wind turbines have generally been kept out of the lower lying areas considered to be most sensitive in terms of Aboriginal cultural heritage.[157]

The mitigation measures in the EES include the avoidance of potential sites along the power transmission line.[158]

The provisions of the Aboriginal Heritage Act will continue to apply and the Inquiry is satisfied that the work undertaken to date in preparing CHMPs and the further work required identified in those plans will ensure Aboriginal cultural heritage can be protected and managed through project development.

The Inquiry notes Council's concerns in relation to the potential scale of changes post Inquiry driven by Aboriginal heritage protection, but does not consider any such changes are likely to fundamentally change the impact of the project.

(iv) Finding

The Inquiry finds:

- That the evaluation objective for Aboriginal cultural heritage has been met; subject to the successful implementation of CHMPs.

7.2 Historic cultural heritage

(i) Introduction

The EES identified historic cultural heritage places on the wind farm site and along the transmission corridors.[159] Of these places, the EES identified that the only ones impacted would be the Fasham House Complex (Heritage Inventory H7422-0006) on Fashams Lane, and potentially dry stone walls in various locations.

The EES mitigation measures describes a protocol for addressing stone walls which includes:

- Avoid where possible
- Use poorest section for gates and tracks
- Reconstruction of walls where necessary using traditional materials and methods, including using properly qualified dry stone wallers

[156] Document 40, para 181.
[157] See Figure 11-2 in the EES.
[158] Table 11-5, Impact Number 11-05.
[159] EES Volume 1, Table 11-8.

- A construction buffer around dry stone walls
- The depiction of dry stone walls on relevant work plans.

(ii) Submissions

As for Aboriginal cultural heritage, consideration of historic cultural heritage was not a strong theme in submissions or the hearing. The Proponent provided correspondence from their consultants, Archaeology at Tardis, dated 1 October 2015 in relation to the revised turbine layout and historic heritage.[160]

In essence this suggested that although the alternate layout for turbine T095 and part of the associated track are within the indicative areas of historic heritage sensitivity, they will not impact any known heritage places or areas of historic potential.

(iii) Discussion and conclusions

The Inquiry has reviewed the EES and notes that the overall impact on historic cultural heritage is low.

The Inquiry makes the observation that demolishing, removing or altering dry stone walls in Moyne Shire requires a permit under Clause 52.32, but there is an exemption for gates. This does not appear to cover demolition for other infrastructure such as cabling, and if that was proposed a planning permit may be required.

(iv) Finding

The Inquiry finds:

- That the mitigation measures in the EES are appropriate, and that the evaluation objective can be satisfactorily achieved.

[160] Document 15.

8 Surface and groundwater

8.1 Introduction

EES evaluation objective:

To protect catchment values and aquatic environments, surface water and groundwater quality, hydrology and receiving water environments, including avoiding effects on protected beneficial uses.

Components of the project that have the potential to impact on surface water and groundwater are:

- The construction of wind turbines, construction of access tracks to wind turbines and the network of underground distribution cables
- The construction of the major site access track from the Woorndoo-Streatham Road
- Construction of a sub-station, lay-down areas, site office and up to two temporary concrete batching plants
- Construction of a transmission line
- Construction of an on-site water storage dam
- Construction of two quarry pits
- The use and storage of hazardous substances.

Construction may impact on surface waters through increased stormwater, sediment and contaminant run off to receiving waterways and wetlands and a degradation of water quality. There is the potential for on-site activities to impact on groundwater supply, groundwater interactions with surface water, and groundwater dependent ecosystems. This could occur through potential leaks and spillages of chemicals to groundwater and the impacts to existing groundwater users (farm bores) and groundwater dependant systems (springs, wetlands) associated with groundwater abstraction for the purposes of water supply for construction. It is estimated that 180 ML of water will be required for the construction phase of which 80% (144ML) is expected to be sourced from groundwater.

It is proposed to construct two on-site quarry pits. The extraction area is 19.2 hectares and 17.8 hectares for the northern and southern pits respectively. Construction and operation of the quarry may result in increased stormwater, sediment and contaminant run off to receiving waterways and wetlands from stripped areas, roads and processing or stockpile areas. There is also the potential for the quarry pit base to intercept the regional water table as excavation proceeds.

8.2 Surface water

Information on surface water is provided in the EES, Surface Water Assessment.[161]

(i) Evidence and submissions

Submitters raised the following concerns about the management of surface water.

[161] EES, Volume 2, Annex G, Surface Water Assessment, Water Technology, 2014.

- The project involves construction of approximately 75 kilometres of internal access tracks. The EES does not indicate how drainage of stormwater will be addressed. Drainage should be contained on-site and covered by appropriate permit conditions (Document 40)
- It is not possible to determine if there will be unacceptable adverse surface water impacts as the EES does not provide an Environmental Management Plan (Document 17)
- Project impacts on wetlands and waterways have not been considered (Submission 128)
- Project impacts relating to construction of the power line on surface waters has not been addressed (Submission 128).

The Surface Water Assessment indicates that the wind farm is located in a high point in the landscape and there is no contributing external catchment. Water drains from the highest point and no runoff pools on-site.[162] Design of an on-site drainage system would be sufficient to control drainage for a 100 year ARI storm event and provide access for 4WD vehicles.[163] Drainage lines from the proposed two quarry pits shows that runoff is to the south. Drainage from disturbed areas associated with the quarry will be captured internally and directed to quarry drainage lines for redirection to a pit sump or to the storage dam. With appropriate design it is expected that there will be no increase in downstream sediment load or peak run-off.[164] It is proposed that these matters will be addressed in the quarry Work Plan.

It is intended that all runoff from the site will pass through sedimentation basins and/or open grassed area, no impact on wetland and waterways adjacent to the site are expected.[165] The submission from Glenelg Hopkins Management Authority (GHCMA) (Submission 100) indicates that it does not object to a permit being granted for the project provided appropriate sediment and erosion control measures are implemented during all phases of construction (as per EPA guidelines) and for operations post construction.

There are numerous minor designated waterways within the wind farm area. For works within 20 metres of the bed and banks of a designated waterway a Works and Waterways Licence is required from GHCMA under the *Water Act 1989*. The Surface Water Assessment indicates that none of the turbines, quarry or other facilities are within 20 metres of a designated waterway on the wind farm site.[166] However the transmission line intersects with a designated waterway at approximately 14 locations and a Works and Waterways licence will be required. GHCMA will be responsible for applying conditions relating to erosion protection and waterway health.

[162] EES, Volume 2, Annex G, Surface Water Assessment, Water Technology, 2014, p8.
[163] Ibid. p9.
[164] Ibid. p11.
[165] Ibid. p12.
[166] Ibid. p13.

(ii) Discussion and conclusions

The Inquiry is satisfied that mitigation measures can be developed and implemented through the Environmental Management Plan to protect environmental values of surface water bodies within and surrounding the wind farm site and transmission line.

(iii) Findings and recommendations

The Inquiry finds:

- The project should have minimal adverse impact on surface water subject to the development and implementation of the Environmental Management Plan and relevant sub-plans.

Permit conditions are included in Appendix E accordingly.

The Panel recommends:

That the Glenelg Hopkins Catchment Management Authority consider the following when issuing permits for works on waterways:

- **Include conditions to ensure the protection of wetland and waterway habitat within and adjacent to the wind farm site.**
- **Include conditions to ensure the protection of wetlands and waterway habitat within and adjacent to the transmission line route.**

8.3 Groundwater

(i) Evidence and submissions

Information on groundwater in the EES is provided in the Hydrogeological Study,[167] evidence and submissions.

Submitters raised the following concerns about the management of groundwater:

- The quarry is located in a significant spring water landscape and pit excavation will impact on farm water supplies (Submissions 1, 22, 66, 101, 112, Documents 17, 59)
- The quarry will affect spring water flows and spring fed watercourses and wetlands and will impact on flora and fauna (Submissions 22, 32, 112, 127, 128)
- Quarry blasting may result in disruption to groundwater flow paths and springs as well as damage existing bores (Submission 32, Documents 40, 45, 59)
- Turbine foundations and tracks will affect recharge (Submissions 32, 66)
- Quarry pits will hold water and attract Brolga (Document 45)
- Procedures and contingency plans for the management of hazardous substances to prevent contamination of groundwater have not been detailed (Document 40)
- Groundwater extraction for construction activities will impact on springs and farm water supplies (Submissions 1,22, 115, 127, Document 17).

[167] EES, Volume 2, Appendix F, Hydrogeological Study, Environmental Resources Australia, 2015.

Dr Tamie Weaver[168] gave evidence for the proponent and indicated that the construction of roads, turbine foundations and other site facilities are unlikely to impact significantly on groundwater as less than 10% of the site will be taken up by these facilities. Furthermore access tracks will be located away from stony rises where possible and locating foundations away from springs.[169] With regard to the potential effects of quarrying, Dr Weaver indicated that the design base of the quarry pits were unlikely to intercept the water table, with it being approximately 10 metres below the design base of the northern pit and two metres below the design base of the southern pit. Under these conditions neither pit is likely to become a permanent water feature and if needed the surface water storage facility would be available.[170]

With regard to water abstraction for construction activities, Dr Weaver advised that preliminary assessment of aquifer parameters indicate that the water supply requirement for the construction period was likely to be able to be provided from the aquifer on-site. She advised that based on the initial drilling and testing program there is the potential for groundwater to provide the on-site water supply while maintaining groundwater discharge to springs and wetlands surrounding the wind farm site. This could be managed by locating proposed pumping wells away from site boundaries and springs.[171]

There is the potential for impacts to existing groundwater supply bores where those bores are located in the vicinity of project abstraction bores. Mitigation measures, such as an alternate water supply, would be implemented if impacts to existing users occurred. Dr Weaver indicated that the based on the field program to date, the zone of influence from abstraction for the project could be managed so as not to affect existing bores off-site.[172]

The Proponent recognises that further detailed assessments are required prior to submitting an application to take and use groundwater. Southern Rural Water advised (email 28 September 2015) the Inquiry that in assessing an application for such a licence, it is required to ensure that the impacts on existing users and the environment are fully considered.

In response to a question from the Inquiry concerning the impact of wind turbine footings on groundwater the Proponent advised that the impact would be negligible as the ground pressure exerted by the turbines would keep the water below the foundations and water would continue to find the easiest path as it did prior to construction.

The Proponent was also asked by the Inquiry to address the issue of potential contamination of groundwater from grout used in conjunction with rock anchors for foundations if they are used. The Proponent advised that any grout in the anchor would be kept in place by the pressure exerted by the groundwater.

In his closing submission, Mr Power noted that the nearest non-participating landowner bores are well over 2 kilometres from the quarry site and should not be affected.[173]

[168] T Weaver, EWS, September, 2015, p14.
[169] Ibid. p14
[170] Ibid. p14.
[171] Ibid. p15.
[172] Ibid. p 15.
[173] Document 61, para 45.

(ii) Discussion and conclusions

The Inquiry is satisfied that mitigation measures can be developed and implemented to maintain the environmental values and beneficial uses of groundwater within and surrounding the site.

It recognises that further detailed work is required to support a licence to abstract groundwater and in considering a licence application Southern Rural Water is obliged to assess the impact on existing groundwater bore users and the impacts on flows from springs and groundwater dependent ecosystems.

(iii) Findings and recommendations

The Inquiry finds:

- Adverse impacts on groundwater can be effectively managed to produce acceptable outcomes on and off-site, subject to further assessment and conditions to be applied on extraction licences.

The Inquiry recommends:

In considering an application for the extraction of groundwater, Southern Rural Water, should develop conditions that:

- **Ensure the protection of spring discharges and their contribution to groundwater dependent ecosystems in and adjacent to the wind farm site**
- **Ensure that existing registered groundwater supply bores are not impacted by groundwater abstraction by the proposed windfarm project**
- **Require the establishment of an appropriate monitoring program for both existing groundwater supply bores and groundwater dependent ecosystems and develop thresholds to provide early warning of incipient impacts**
- **Require the establishment of a contingency plan and mitigation measures to limit potential impacts on other groundwater users and groundwater dependent ecosystems.**

9 Other issues

9.1 Land use and socio-economic effects

Evaluation Objective:

To avoid or minimise disruption and other adverse effects on local infrastructure (including roads), land use (including agricultural and residential) and to neighbouring landowners and road users during construction and operation of the project.

Traffic and transport are dealt with elsewhere in this report.

(i) Evidence and submissions

Submitters raised a number of issues around land use and socio-economic impacts. For example social impact and 'community division' was raised by submitters in Submission numbers 49, 110, 129 and others.

The potential for detrimental impact on land values was also raised by a number of submitters including in Submissions 44 and 110.

A specific matter related to land use was the potential for limitation on aerial agriculture. Mr McIntosh for Adorina submitted that aerial control of thistles is undertaken on his adjacent property to the east. He submitted that aerial spraying in the vicinity of the wind farm will not be possible; having been advised by a pilot that the pilot would not fly within 2 kilometres of a wind farm. Given the nature of the country, being very rough, alternative control methods are not feasible.

Mr McIntosh also submitted that the he could not understand why such a project would be countenanced on prime agricultural land.

The EES states that the project will involve a significant investment in the local community, and that the project will increase demand for products and services from local businesses. When the project commences operation, it is expected that staff will reside in the area and use local businesses.

The EES further states that the project will contribute to the sustainability of continued agricultural practices in the area and will result in ongoing expenditure in the local and regional economy.

The EES addresses impact on property values, and concludes that based on research around the world there is no evidence of reduced property values surrounding wind farms, and evidence of increased values for the wind farm property itself.

(ii) Discussion and conclusions

The Inquiry is in no doubt that the net economic effect of introducing such a large project into a regional area will be positive. Whilst there were some submissions about the economic viability of wind farms generally, no evidence or submissions sought to argue that the project would not result in positive economic benefits for the region.

The issue of community division has been raised at many previous wind farm hearings. For example the Mortlake Panel explored this issue in some detail and acknowledged that it appears to be a specific issue with wind farms in regional communities.[174] However that Panel, whilst acknowledging the issue exists, did not consider that it should result in a permit not being issued for the project.

This Inquiry adopts the same position; some in the community are upset by the project and concerned about its impact on long established social networks, but this in itself is not a reason that the project should not proceed.

In relation to land values the Inquiry has seen no evidence that land values are likely to be affected. Whilst there is a strong perception that surrounding land values may decline, this is not the same as evidence. In addition, planning has traditionally been wary of accepting decreased land values as a valid planning concern, and not just in relation to wind farms.[175]

In addition, the Inquiry considers that the impacts on farming operations of surrounding properties should be limited. The one major exception may be that of aerial agriculture, where as put by Mr McIntosh for Adorina, the turbines on the eastern edge of the project may restrict his ability to use aerial application of pesticide for thistle spraying or other aerial activities.

The Inquiry accepts that the wind farm may place restrictions on aerial spraying in this area, depending on all the usual parameters that are considered when conducting aerial operations such as wind direction, strength, light conditions, humidity and others. The wind farm may well be an additional, and serious, constraint[176] in the context of spraying operations for Adorina, at least for an area on Adorina's western boundary.

This however does not lead to the overall conclusion that the wind farm footprint should be removed or reduced. Constraints already exist in the rural landscape for aerial agriculture including farm infrastructure, trees and powerlines. The wind farm will be yet another consideration in Adorina's decision making.

(iii) Finding

The Inquiry finds:

- The land use and socio-economic impacts of the project will result in a net positive effect in socio-economic terms.

9.2 Health effects

No specific evaluation objectives apply to health considerations.

(i) Evidence and submissions

Submissions on health impacts allegedly caused by wind farms have been common in many Panel and VCAT hearings in recent years and submissions to this project were no different.

[174] Mortlake Wind Energy Facility (PCI) 2010 PPV83, Chapter 6.
[175] See for example the Mitchell C92 Panel Report, at Section 5.3.
[176] The area is already constrained by stony ground.

Significant submissions on the issue were provided in Submissions 14, 46, 67, 109, 120, 121 and many other submissions raised the issue to some extent.

Some of the submitters put it to the Inquiry that their lives have been directly adversely affected by exposure to wind farms, and particularly infrasound, or sound at very low frequencies beyond audibility[177]. Various health conditions were said to result from this exposure.

Submitters also provided copies of submissions to the recent Australian Senate Inquiry *Select Committee on Wind Turbines* from various parties and extracts from the Committee's report, all suggesting some level of health effects.

A copy of the work undertaken at the Cape Bridgewater Wind Farm by Mr Steven Cooper for Pacific Hydro was also provided by submitters to the Inquiry.

In its submission at the hearing[178], Moyne Shire Council stated that it has received complaints alleging health impacts and impacts from noise from the Macarthur Wind Farm.

In response, Mr Power for the Proponent[179] commented on previous wind farm Panel cases, stating that:

> *In every case, the panels rightly concluded that the absence of a 'cause and effect' explanation for potential health impacts could not justify a decision to refuse the permit application, particularly where the application complied with the standards and guidelines adopted by the planning scheme.*

Mr Power noted that in South Australia, the Environment, Resources and Development Court has on two occasions considered arguments that wind farms would have adverse health impacts, and in both those cases the Court concluded that there was no credible evidence of a causal link between turbine operation and health outcomes.

He drew the Inquiry's attention to the Victorian Department of Health's Technical Information Bulletin titled *Wind Farms, Sound and Health*, published in April 2013, which concluded, in part, that:

> *Infrasound is audible when the sound levels are high enough. The hearing threshold for infrasound is much higher than other frequencies. Infrasound from wind farms is at levels well below the hearing threshold and is therefore inaudible to neighbouring residents.*
>
> *There is no evidence that sound which is at inaudible levels can have a physiological effect on the human body. This is the case for sound at any frequency, including infrasound.*

The only expert evidence provided on health issues was from Professor Wittert called by the Proponent. His opinion was:

- *There is no evidence that audible noise resulting from the operation of wind turbines constitutes a significant risk to health in the majority of individuals*

[177] Audible noise is discussed in Chapter 6.
[178] Moyne Shire Council submission p42.
[179] Trustpower submission p31.

- *Annoyance is acknowledged to occur in a small number of individuals and the extent to which this is problematic in a compliant wind farm may depend more on non-acoustic than acoustic factors*
- *It is acknowledged that there are some particularly noise sensitive individuals, but it would seem to me to be surprising that their first awareness of this as adults would be in the context of exposure to wind turbines …*
- *The weight of evidence is that when adverse health affects occur they relate to annoyance and are mediated by psychological distress and or sleep disturbance*
- *The extent to which this occurs and whether it manifests as psychological distress and or sleep disturbance and/or other adverse health effect is dependent on a number of other internal and external factors (attitude, visual amenity, nocebo effects, financial interest, et cetera)*
- *Any problem with LFN, as with high-frequency noise, were likely relate to annoyance associated with audibility and the same range of moderating non-acoustic factors*
- *There is no evidence that adverse health effects can be directly attributable to inaudible low-frequency sound emissions*
- *There is no evidence that inaudible infrasound are associated with any significant physiological or pathophysiological consequences*
- *There is no evidence that the level of infrasound produced by wind turbines constitutes a problem to health.*[180]

Professor Wittert was questioned in the hearing by a number of submitters. In the Inquiry's view none of the questioning significantly challenged the credibility of his evidence.

(ii) Discussion and conclusions

The Inquiry notes that the most recent analysis of the issue undertaken in a decision making context is the Cherry Tree Wind Farm VCAT case.[181] This case in the Inquiry's view contains a comprehensive consideration of the health issue. Some notable conclusions of the Tribunal are:

- NSW and Victorian health authorities expressly state there is no evidence to link turbines and health and the views of public health authorities should be respected[182]
- No evidence was called that would enable a contrary conclusion to be drawn to that of the health authorities[183]
- The 2 kilometre buffer required by Clause 52.32 of the Mitchell Planning Scheme is precautionary in itself.[184]

[180] Professor Wittert expert witness statement pp4-5.
[181] *Cherry Tree Wind Farm Pty Ltd v Mitchell Shire Council SC* [2013] VCAT 1939.
[182] At para 43.
[183] At para 44.
[184] At para 45. The Dundonnell Wind Farm has been developed on the same '2 kilometres' basis in place before Clause 52.32 was recently amended to make this distance 1 kilometre.

Significantly, the Tribunal in *Cherry Tree* also noted that it is likely a small proportion of the population around a wind farm do suffer health effects, albeit that:

> *The current state of scientific opinion is that there is no causal link of a physiological nature between these effects and the turbine.*[185]

The Tribunal went on to conclude that even if it could be established that a small proportion of the community were adversely affected by a wind farm, it was not clear that this would be sufficient to refuse an wind farm application given they have strong planning policy support.[186]

Returning to the Dundonnell project the Inquiry is left with:

- Clear evidence that there are no direct health effects
- Clear positions from the State and National Health Authorities that there is no evidence of direct health effects.[187]

There has been substantial material tabled to the Inquiry, including Mr Cooper's work at Cape Bridgewater, which at this point in time does not go to changing the regulatory regime around wind turbines, particularly in relation to infrasound.

The Inquiry notes that the Commonwealth Government has established an Independent Scientific Committee and appointed a Wind Farm Commissioner to further consider the health issues. This development will be watched with great interest.

The Inquiry concludes there is no basis on which to refuse or modify the project on health grounds.

(iii) Findings

The Inquiry makes no findings on this issue.

9.3 Aviation lighting

EES Evaluation Objective:

To avoid or minimise adverse noise, visual and other amenity effects on nearby residents and local communities, to the extent practicable.

(i) Submissions

Mr Power for the Proponent submitted that the EES gives no consideration to turbine obstacle lighting, because it is not proposed. During preparation of the EES an assessment of aviation safety was undertaken by Aviation Projects which recommended that Dundonnell Wind Farm would not require aviation safety lighting.[188]

[185] At para 46.
[186] At para 47.
[187] Including the National Health and Medical Research Council. The Inquiry also notes, but does not rely on, additional research done by the South Australian EPA and Health Canada, for example, which also does not challenge the prevailing Authorities' views.
[188] Volume 2, Appendix X.

Aviation Projects sought confirmation of this approach from the Civil Aviation Safety Authority (CASA) which confirmed in a letter dated 18 December 2013 that …*it appears that lighting would not be required by CASA…* but left the final decision up to the planning authority.

CASA in the same letter indicated that if a hazard was found to exist then lighting should be provided.

Mr Power submitted that the Proponent was then somewhat surprised to receive correspondence from CASA dated 1 October 2015 recommending that 48 of the 96 (revised layout) turbines be lit. He went on to note that it is the Proponent's view that in planning terms aviation obstacle lighting is acceptable, largely for the same reasons that the turbines are acceptable when viewed through the day.

He acknowledged however that introducing night lighting into the night sky around Dundonnell should only be contemplated if it is absolutely necessary. Mr Power concluded that in light of CASA's correspondence, if a planning permit was to issue then it may be prudent for a condition to regulate night lighting in a similar fashion to DELWP's model permit conditions.

Mr Juttner for DELWP outlined the Department's view and regulatory framework around aviation obstacle lighting.

(ii) Discussion and conclusions

The Inquiry is disappointed to find that in the intervening years since a major wind farm was considered by a Panel, for example Mortlake in 2010, the inconsistent and confusing situation that existed at that time in relation to aviation lighting does not appear to have advanced. The following is taken from that report:

> *The provision of aviation obstacle lighting for wind farms has been problematic due to confusion over CASA's regulatory power and the absence of support for risk based assessment of obstacle marking needs. This confusion is evident in the approach various Panels have taken to the issue over the past eight years. For this project the following points are clear:*
>
> - *the Proponent would prefer not to light the turbines;*
> - *many submitters object strenuously to the impact on their night sky; and*
> - *the expert aviation witness called by the Proponent (Mr Dunn) considers that the risk at this location is low to the point where obstacle lighting is not required.*
>
> *The Panel considers that all - night lighting of the turbines is clearly not necessary in an area of extremely low night flying aircraft movements (none of which are meant to occur below 1,000 feet above the highest obstacle within 10 nautical miles under night visual flight rules) and is an unreasonable and unacceptable impost on the local and regional community.*[189]

[189] *Mortlake Wind Energy Facility* (PCI) [2010] PPV 83

In this case the Inquiry is in a similar position. The expert assessment recommends that lighting is not required, CASA can not *require* lighting but has recommended that it should *and* should not be needed and the Responsible Authority may require it via permit.

The Inquiry considers that night lighting should be avoided if it is not needed. Those submitters offended by the wind turbines by day will likely be offended by the wind turbines at night. Either way it is not an issue that should fundamentally influence whether the project proceeds or not.

If lighting is required, and the Inquiry is unclear as to who will make this decision if the expert aviation consultant is to be ignored, then it should be *allowed for*, via permit.

(iii) Finding

The Inquiry finds:

- Based on the expert report in the EES, aviation safety lighting should not be required.

A permit condition has been drafted in Appendix E to allow for its provision if necessary.

9.4 Fire fighting

No specific evaluation objectives apply to fire fighting.

(i) Introduction

The impact of the wind farm on fire fighting was considered in Chapter 22 of the EES. The EES noted:

- that the site is not in the Wildfire Management Overlay in the Moyne Planning Scheme but is a declared bushfire prone area
- A wildfire management plan will be prepared for the site
- Construction may lead to increased risk but this can be managed
- The wind turbines themselves will contain heat detecting shut-down mechanisms
- A cleared easement will be maintained along the transmission line alignment.

(ii) Evidence and submissions

Mr Power for the Proponent in submissions addressed fire management and acknowledged the concern of submitters on this issue. He also noted that consideration needs to be given both to wind farm generated fire and fire passing through the area.

Mr Power called Mr John Nicholson to give evidence for the Proponent in relation to fire management. He concluded that:

> *…I do not consider the Dundonnell wind farm, transmission line and substations to constitute a high fire risk. In my view, the likelihood of the project being the cause of a fire is low, provided the recommended mitigation measures set out in Chapter 22 of the EES…are implemented. Furthermore I agree with the EES that while the wind farm will somewhat limit the potential to deploy an aerial fire fighting response on the wind farm site, this will not of*

> *itself prevent an effective ground-based response. Indeed the development and maintenance of a network of tracks on the wind farm site should enhance on-ground fire-fighting responses, especially on rocky terrain.*[190]

Mr Nicholson made a number of additional recommendations in his evidence relating to consultation and other matters.

The Country Fire Authority (CFA) in their submission provided conditional support for the proposal subject to a significant number of detailed requirements relating to access, water supply, fuel management, infrastructure, fire danger periods and other matters. The CFA noted that the provisions were taken from their *Emergency Management Guidelines for Wind Energy Facilities – September 2014*.

Moyne Shire Council submitted on fire management and noted that there should be improved consultation with CFA at all levels, as well as with the correct Grampians Region of CFA, not the identified Barwon Region in the EES.

The Council also requested that:

> *… the Inquiry investigate the possibility of a bushfire occurring in this location and determine whether the mitigation measures proposed have been understated if there is a high likelihood of a bushfire occurring.*[191]

A number of individual submitters raised concerns about fire fighting, and particular the constraints on aerial firefighting. For example the Dennis' noted that firefighting on stony grounds needs air support which will not happen at Dundonnell.

Ms Leishman provided a submission in relation to the Dundonnell Rural Fire Brigade expressing concerns about a number of elements including access, consultation and fire response planning. The submission noted that Trustpower (the Proponent parent company) has given assurances that their concerns can be addressed though project development.

Not all submissions were opposed to the wind farm on fire risk grounds. Submitter 113 noted that whilst turbines do catch fire, they usually burn out within an hour and they are not aware of any large scale grass fires being caused by a turbine fire. They also provided a photograph from the Bluff Wind Farm in South Australia which was said to demonstrate an agriculture caused grass fire being arrested at a wind farm track. The submitter also noted that if a fire is approaching a wind farm and turbulence for aircraft is in an issue then the wind farm can be shut down with little notice.

(iii) Discussion and conclusions

There is no doubt that fire in the landscape is very concerning in western Victoria and a frequent occurrence, often with huge economic cost and sometimes threats to human life and safety.

[190] Mr Nicholson, expert witness statement, para 4.4.
[191] Document 40, para 167.

As with other wind farm projects, the Inquiry considers that the key issues are the provision of additional ground based fire fighting access to be balanced with restrictions on aerial fire fighting.

During the construction phase there may be increased fire ignition risk due to the number of people and types of activities on the ground. This increased risk however can be managed through appropriate fire prevention and management measures including training, operating hours and conditions, the provision of fast attack equipment, equipment maintenance and other elements.

During operation there is no question that the presence of the wind turbines will constrain aerial firefighting within the wind farm site to some extent, and the EES itself acknowledges this. However the Inquiry considers that this is another element of planning for fire response to be considered, and not a particular reason why the wind farm should not be approved. There are many constraints on aerial fire fighting including weather, visibility and other structures in the landscape such as power lines and topography.

The presence of the wind farm may well, and should, influence local and regional fire response planning, for example planning where the location of strategic firebreaks or defence lines might be in relation to the wind farm. However this is normal fire planning and the Inquiry does not consider it should result in refusing the wind farm a planning permit.

The Inquiry does note and accept the submissions and evidence around greater consultation and planning. The Inquiry considers the additional measures recommended by Mr Nicholson should be included in the development of the fire planning and response plan.

(iv) Finding and recommendation

The Inquiry finds:

- The presence of the wind farm should not, of itself, lead to greater threat from fire in the landscape
- Fire response planning at a regional and local level will need to consider the special circumstances of the wind farm.

The Inquiry recommends:

Include the additional consultation and fire planning measures recommend in paragraph 4.4 of the expert witness statement of Mr John Nicholson dated 23 September 2015 in the development of the Fire Prevention and Emergency Response Plan for the project.

The Inquiry has drafted conditions accordingly in Appendix E.

9.5 Other matters

The Inquiry notes that there are other matters in the EES include shadow flicker, blade glint and electro-magnetic interference. The Inquiry is satisfied that these matters are relatively minor in nature, have been adequately addressed in the EES and can be satisfactorily addressed in permit conditions. Appropriate permit conditions are included in Appendix E.

10 Integrated assessment and environmental management framework

10.1 Net community benefit and ecologically sustainable development

EES Evaluation Objective:

Overall, to demonstrate that the project would achieve a balance of economic, social and environmental outcomes that contribute to ecologically sustainable development and provide a net community benefit over the short and long term.

The Inquiry has not in this case attempted to articulate an objective assessment of the benefits and disbenefits of the project such as might occur through a multi-criteria analysis. Such tools have their place but the Inquiry considers that this would be a difficult if not impossible task given the complexities of the various elements of the project.

The Inquiry's considerations on particular issues are explained in the preceding chapters. A careful review of these issues leads to the following conclusions:

- Whilst risks remain to Brolga in particular, the Inquiry is satisfied on the evidence before it, and subject to further project redesign, that the risk can be reduced to an acceptable level
- On other biodiversity matters the Inquiry concludes that the risks to species and communities, including EPBC values, are not significant and mitigation measures will further reduce such risk
- Technical wind farm matters such as noise, blade glint, shadow flicker and communications interference have been adequately assessed and can be managed via permit conditions
- The impact on the landscape at Dundonnell will be very significant. This however, must be balanced against the view that the significant impact is not perceived by all, or even a majority, as negative. In addition the landscape of the area itself, whilst attractive, is not mentioned for special protection in any planning instrument
- Wind farm construction will lead to very significant, if temporary, impacts on traffic and transport. The Inquiry is satisfied that building on the lessons from the construction of other major wind farms, the effects can be mitigated to an acceptable level. Establishment of an on-site quarry and on-site abstraction of groundwater, both for providing construction materials, will substantially reduce heavy vehicle construction traffic on external roads
- Impacts on Aboriginal and historic cultural heritage need to be managed carefully and the Inquiry is satisfied that this can be achieved
- Similarly, the potential for impacts on surface water, and particularly groundwater exist with such a major project. The Inquiry was taken with the particular springs and groundwater dependent ecosystems that exist in the area and their protection must be paramount. Again, based on the evidence before us, and subject to further investigation, the Inquiry is satisfied that these impacts can be managed.

There will be a range of other impacts to some extent on adjacent land use, fire fighting efforts and other matters which the Inquiry has addressed in this report. Against any adverse impact of the project, its contribution to the regional economy through construction and operation cannot be overlooked. Whilst the Inquiry has not sighted specific economic evidence, it is satisfied that the project will make a strong positive economic contribution to the region.

And finally, and perhaps most importantly, whilst some submitters are, to put it mildly, sceptical about the renewable energy credentials of wind farms, the Inquiry is satisfied that the policy settings are strongly in favour of such projects and renewable energy generation and that the wind farm, when constructed, will make a significant contribution to ecologically sustainable development.

The Inquiry recommends:

The environment effects of the Dundonnell Wind Farm project can be managed to an acceptable level and the relevant project approvals should be granted subject to the recommendations in this report.

10.2 Environmental Management Framework

EES Evaluation Objective

To provide a transparent framework with clear accountabilities for managing environmental effects and hazards associated with construction, operation, decommissioning and rehabilitation phases of the project, in order to achieve acceptable environmental outcomes.

The Inquiry has reviewed the Environment Management Framework (EMF) proposed in Chapter 25 of the EES and subject to some specific considerations in the issues chapters above, considers that it should provide, in conjunction with planning permit conditions, a sound framework for managing environmental impacts to an acceptable level.

The Inquiry notes that the EMF is called up in the Wind Farm permit conditions for the Environmental Management Plan and thus has a statutory 'home'. Some of the mitigation measures apply to the other project elements, the off-site substation and the transmission line, but such a statutory 'home' was not provided. The Inquiry has included such a link in the permit conditions in Appendix E.

The Inquiry notes the evaluation objective includes 'transparency' as an aim. The Inquiry has included a condition that the endorsed version of Environmental Management Plans be made available on the project website.

The Inquiry also notes and is satisfied with the environmental framework in the quarry Work Plan.

PART C: COMMONWEALTH MATTERS

11 Matters of National Environmental Significance

11.1 Background

The Dundonnell Wind Farm Project was referred to the Australian Government under the EPBC Act and was determined to be a 'controlled action' and hence requires assessment and approval under the EPBC Act. The controlling provisions for the Australian Government's controlled action decision under the EPBC Act are:

- Threatened species and ecological communities
- Listed migratory species.

The EES is accredited as the assessment process from the EPBC Act under the bilateral agreement between the Commonwealth and Victoria.

The evaluation objective of relevance to Matters of National Environmental Significance (MNES) is as follows:

> *To avoid or minimise adverse effects on native vegetation and listed flora of fauna species and ecological communities listed under the FFG Act or EPBC Act, and address opportunities for offsetting potential losses consistent with relevant policy.*

Components of the project that have the potential to impact on flora, fauna and native vegetation are:

Wind farm site and access track

- The construction of wind turbines, construction of access tracks to wind turbines and a network of underground distribution cables
- The major site access track from the Woorndoo-Streatham Road
- Construction of a sub-station, lay-down areas, site office and up to two temporary concrete batching plants
- Construction of two on-site quarry pits
- Collision with wind turbines and meteorological mast guy wires (birds and bats).

Woorndoo-Streatham Road

- Upgrading the Woorndoo-Streatham Road.

Transmission line

- Construction of the transmission line and the access track which will run along the length of the transmission line.

The EES[192] has considered and assessed all relevant EPBC Act listed species that may be impacted by the project.

[192] EES, Volume 2, Annex L, Flora and Fauna Assessment, BL&A, 2015, Chapter 13.

11.2 Evidence and submissions

Comments from submitters on MNES are provided together with other issues raised in submissions on flora and fauna and are summarised in the earlier sections of this report.

(i) Wind farm and access track - vegetation and flora

Mr Lane[193] indicated that potential habitat for three EPBC Act listed flora species was present on the wind farm site (Adamson's Blown-grass, Basalt Rustyhood, Spiny Rice-flower). None of these species were recorded during targeted surveys in areas of native vegetation potentially to be impacted by the wind farm.

Two critically endangered (EPBC Act) ecological communities, Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (SHWTLP) and Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP), occur in the wind farm site.[194] The construction of the access track will impact on an area of NTGVVP. It is proposed that by reducing the design width of the main access track from 20 metres to 12 metres, this will reduce the area of NTGVVP to be removed from 1.023 ha to 0.666 ha.[195] No SHWTLP will be impacted.

(ii) Wind farm and access track - fauna

Targeted surveys have recorded nine listed migratory species within a 10 kilometre radius of the wind farm site (Common Greenshank, Common Sandpiper, Double-banded Plover, Eastern Great Egret, Glossy Ibis, Latham's Snipe, Sharp-tailed Sandpiper and Wood Sandpiper) In addition a White–bellied Sea-eagle was observed flying across the wind farm site. Between 2011 and 2013, eight survey periods involving 31 separate days were undertaken.[196] Targeted migratory bird surveys conducted within the wind farm site show that overall activity is relatively low as a result of limited suitable habitat. Common Greenshank and Latham's Snipe were the only listed migratory species recorded within the wind farm site. Twenty Latham's snipe were recorded on one occasion on the western boundary of the site.[197] Other survey results have recorded low numbers of this species.[198] Mr Lane[199] indicated that wetlands that support larger numbers of listed migratory species are located several kilometres to the north east of the wind farm site and it is unlikely that the wind farm will significantly affect any migratory species populations.

The Corangamite Water Skink has previously been recorded in wetlands to the south of the wind farm boundary. The majority of the wind farm site (97%) does not provide habitat for the Corangamite Water Skink. Potential habitat for this species of mainly of low quality was found in the wind farm site. A small wetland of moderate habitat quality in the south

[193] B Lane, EWS, September 2015 ,p 13.
[194] Ibid. p13.
[195] Document 61, BL&A attachment.
[196] EES, Volume 2, Annex L, Flora and Fauna Assessment Report, BL&A 2015, Chapter 5, p120.
[197] B Lane EWS, September 2015, p18.
[198] EES, Volume 2, Flora and Fauna Assessment Report, BL&A, 2015, Chapter 5, p135.
[199] B Lane EWS, September 2015, p 18.

eastern part of the site will not be impacted by construction works.[200] A targeted survey for the Growling Grass Frog was undertaken in areas considered to be potential habitat. No frogs were detected. The potential habitats for both these species are not to be impacted by the wind farm construction and operation and a 55 metre turbine free buffer has been applied to areas of potential habitat.[201]

Targeted surveys involving 3,900 tile checks did not detect the Striped Legless Lizard. As the Striped Legless Lizard was not detected on the wind farm site, no significant impacts on this species are expected from this project.[202]

Suitable habitat for the Golden Sun Moth occurs in one paddock at the wind farm site. This area will be avoided and no habitat loss for this species is anticipated.[203]

Four bat survey programs were conducted on the wind farm site between 2009 and 2013, totalling 23 weeks and 9,532 Anabat-hours.[204] The results show that the majority of bat activity across the wind farm site was attributable to common species. Given the low number of calls recorded at the wind farm during the four surveys for this species (recorded 21 times and none recorded in two survey periods) the proposed wind farm is highly unlikely to have a significant impact on the population of the Southern Bent-wing Bat.[205]

Woorndoo – Streatham Road

An assessment of native vegetation within the road reserve as well as targeted surveys for listed species along 7.5 kilometres of the Woorndoo-Streatham Road, Bolac Plains Road and Woorndoo - Ararat Road was undertaken. A total of 11 patches of native vegetation were mapped within road reserves between Woorndoo and the proposed Dundonnell wind farm site entrance.[206] The study area potentially supports Natural Temperate Grassland of the Victorian Volcanic Plains (NTGVVP), two listed flora species (Fragrant Leek-orchid and Hoary Sunray) and three fauna species (Southern Bent-wing Bat, Striped Legless Lizard and Golden Sun Moth. The proposed development will not require any native vegetation removal from this road reserve. As such no significant impacts on EPBC Act listed species or ecological communities are expected to occur.[207]Moyne Shire Council in their submission[208] sought an upgrade to the pavement width to sections of these roads. The Proponent in agreeing undertake the upgrade, indicated however, that there would be no removal of native vegetation and that pavement widths may be narrower, in some locations, than that sought by Moyne Shire Council so as to avoid impacts on native vegetation.[209]

[200] Ibid, p21.
[201] B Lane EWS, September 2015, p16.
[202] EES, Volume 2, Flora and Fauna Assessment, BL&A, 2015, Chapter 7, p181.
[203] B Lane EWS, September 2015, p 16.
[204] EES, Volume 2, Flora and Fauna Assessment, BL&A, 2015, Chapter 6, p141.
[205] B Lane, EWS, September 2015, p19.
[206] EES, Volume 2, Flora and Fauna Assessment, BL&A, 2015, Chapter 11, p226.
[207] B Lane, EWS, September 2015, p24.
[208] Document 40, p19.
[209] Document 61, p3.

(iii) Transmission line – vegetation and flora

Information relating to vegetation and flora along the transmission line route is contained in a detailed vegetation assessment undertaken in July and August 2015.[210] A 12 metre wide zone along the proposed transmission line route was assessed. The report indicates that 111 remnant patches of native vegetation totalling 18.19 hectares were identified along the route. Revising the estimates provided in the detailed vegetation assessment, Mr Lane[211] indicated that there were 108 remnant patches of native vegetation with a total area of 17.18 hectares. The construction of the transmission line will result in the removal of up to 4.196 ha of native vegetation of which up to 0.906 hectares is NTGVVP and up to 2.057 hectares is SHWTLP, both ecological communities being critically endangered under the EPBC Act.

The transmission line assessment identified 10 EPBC Act listed flora species as having the potential to occur along the route.[212] A targeted survey for two of these (Basalt Rustyhood and Spiny Rice-flower) has been undertaken and Spiny Rice-flower has been detected. Targeted surveys for the remaining eight species (Adamson's Blown-grass, Button Wrinklewort, Clover Glycine, Fragrant Leek-orchid, Hoary Sunray, Spiny Peppercress, Maroon Leek-orchid, Small Golden Moths) will be undertaken during their flowering time in spring. Initially the need for the removal of five individual Spiny Rice-Flowers was identified. However Mr Lane subsequently advised[213] that in an attempt to avoid any requirement for removal of these plants an alternative access track arrangement appeared to be feasible however, the effectiveness of this strategy would need to be confirmed through pre-construction surveys for Spiny Rice-flower of the proposed alternative track.

(iv) Transmission line - fauna

Sixteen EPBC Act listed fauna species were considered to have the potential to occur along the transmission line corridor but this area does not represent key habitat for any of these species. However, the removal of up to 0.906 hectares of NTGVVP grassland which is potential habitat for Striped Legless Lizard and Golden Sun Moth may impact on these species if they are present and detected during pre-construction surveys.[214]

11.3 Discussion and conclusions

With respect to the wind farm site and access track, the Inquiry agrees with the assessment that no EPBC Act listed flora species will be impacted. However, the removal of 0.666 ha NTGVVP is a significant impact and this will require an offset under the Commonwealth offset policy. State offsets can contribute to EPBC Act offset requirements and the Inquiry notes that a specific State offset proposal is being developed for this project.

The Inquiry accepts that there will be no significant impact on Striped Legless Lizard, Growling Grass Frog and Corangamite Water Skink. To avoid any potential impacts

[210] Transmission Line Flora and Native Vegetation Assessment, BL&A, 2015.
[211] B Lane, EWS, September 2015, p30.
[212] Transmission Line Flora and Native Vegetation Assessment, BL&A, 2015, p41.
[213] Attachment to Document 61.
[214] B Lane, EWS, September 2015, p29.

mitigation measures are proposed for incorporation into the Environmental Management Plan. The Inquiry also accepts that the most important wetlands for migratory birds are located several kilometres from the wind farm site and while small numbers of migratory species may utilise areas of the wind farm site from time to time, it is unlikely that the proposed wind farm will significantly impact any migratory species' populations.

The results of surveys of bat activity across the site suggest very low activity of the Southern Bent-wing Bat, and the Inquiry agrees with this conclusion. As a consequence the proposed wind farm is unlikely to impact significantly on the population of the Southern Bent-wing Bat. As no potential habitat for the Golden Sun Moth will be removed on-site, the Inquiry notes that impact on this species will be avoided.

The Proponent is not proposing any vegetation removal associated with roads works along the Woorndoo-Streatham Road and so the Inquiry agrees that impacts will be avoided on EPBC Act listed species and communities.

The removal of which up to 0.906 hectares of (NTGVVP) and up to 2.057 hectares is SHWTLP, both ecological communities critically endangered under the EPBC Act, as a result of construction of the transmission line is a significant impact which will be required to be offset under the Commonwealth offset policy. The Inquiry notes that this is suggested as an upper limit and that transmission line pole positions will be micro-sited to minimise impacts on native vegetation and threatened species where possible. The Inquiry is satisfied that appropriate attempts have been made to minimise the loss of these communities on the alignment.

The Inquiry notes that further pre-construction surveys are required for Spiny Rice Flower to confirm the revised track access arrangements.. Furthermore additional targeted surveys are required for eight other EPBC Act listed flora species prior to construction. The Inquiry supports the micrositing of turbines and transmission line pole positions to minimise impacts on native vegetation and threatened species. The Inquiry notes that targeted pre-construction surveys are required for the Striped Legless Lizard and Golden Sun Moth.

11.4 Findings

The Inquiry finds:

- The impact of the project on Matters of National Environmental Significance is acceptable subject to:
  - Avoidance of removal of Spiny Rice-flower
  - Confirmation via additional targeted surveys that the eight other EPBC Act listed species are not present
  - Negotiation of a suitable vegetation offset strategy with the Commonwealth Government
  - Implementation of the measures in the Bat and Avifauna Management Plan (for the Southern Bent-wing Bat).

PART D: PLANNING PERMITS

12 The planning permit applications

The EES is accompanied by three planning permit applications as described in Section 1.2(iii) of this report for the:

- Wind farm (Wind energy facility)
- Transmission line
- Off-site substation.

12.1 The Wind energy facility, Permit 2015/23858

(i) Background

In the Hearing Mr Juttner from the Department of Environment, Land, Water and Planning (DELWP) made a comprehensive submission[215] outlining the planning framework for the permit application on behalf of the Responsible Authority (the Minister for Planning) and the Inquiry does not propose to repeat them here. It includes:

- A comprehensive summary of the relevant State and Local Planning Policy
- The specific permit triggers for the permit
- Other relevant considerations such as *Policy and planning guidelines for development of wind energy facilities in Victoria* (June 2015) (PPG).[216]

(ii) Submissions

There were significant submissions to the EES, but few went to the specific planning merits of the proposal. Moyne Shire Council in their submission also identified what they considered are relevant parts of the Local Planning Policy Framework and submitted:

> *The Planning and Land Use Framework* [in the EES]*, in Council's view provides only a cursory assessment of local policy and had not adequately responded to the directives of the planning policy.*[217]

(iii) Decision guidelines and permit application assessment

The table below summarises the main planning scheme decision guidelines relevant to the Wind energy facility application. Decision guidelines generally start with the need to consider relevant State and Local Planning Policy.

[215] Document 5.

[216] There appears to have been a new version of the PPG released in November 2015. The Inquiry is not aware of the complete scope of changes but the wind energy facility appears to have been 'decoupled' from transmission lines which is a reversal of the June 2015 approach. The definition at Clause 74 has also been amended to achieve this result.

[217] Document 40, para 60.

Table 3 Decision guidelines summary – wind farm

Clause	Decision Guidelines Comment
Farming zone – Clause 35.07	Primarily aimed at protecting agricultural land and ensuring use and development do not degrade the land or give rise to incompatible uses. Protection of the natural environment, landscape and character are also listed.
Earth and Resources Industry – Clause 52.08	Provides for approval of stone extraction associated with an EES.
Native vegetation – Clause 52.17	Provides the framework for protecting and managing native vegetation through planning permit applications. The decision guidelines direct applicants to the native vegetation management and offset system managed by DELWP.
Land Adjacent to a Road Zone Category 1 – Clause 52.29	Includes consideration of the views of the relevant Road Authority and of road safety.
Wind energy facility – Clause 52.32	Requires consideration of many of the technical elements of wind energy facilities including noise, landscape, shadow flicker and aircraft safety. Also requires consideration of the PPG.
Decision Guidelines – Clause 65	General planning scheme decision guidelines which seek to integrate decision making across policy, zones, overlays and other planning provisions. The decision guidelines also bring up elements of land management

Section 60 of the *Planning and Environment 1987* provides the legislative framework for what a Responsible Authority must consider in issuing a permit.

(iv) Inquiry response

The issues required to be considered in the decision guidelines have been discussed at length in the environment effects chapters earlier in this report. In essence the Inquiry considers:

- The wind farm will have limited adverse effect on agricultural activities and will provide support for farming families in the area
- Impacts on the land can be effectively managed through good project design, development and operation
- The impacts on native vegetation and biodiversity can be managed to an acceptable level in the Inquiry's view

- Technical aspects of the wind farm such as noise have been addressed
- The impact on the landscape will be significant, but this is not an adverse effect for many people and the landscape is not identified or protected in the planning scheme as having particular significance.

This is not to suggest that the wind farm has no adverse effects, but that in the Inquiry's view the balance in policy in the planning scheme weighs in favour of the project.

It is important to note that the language around wind farms in the planning scheme has in recent years been strongly supportive. For example the purpose of Clause 52.32 is to *…facilitate the establishment and expansion of wind energy facilities in appropriate locations, with minimal impact on the amenity of the area.* Clause 19.01-1 has the objective to *…promote the provision of renewable energy in a manner that ensures appropriate siting and design considerations are met …*

This is significant as it is uncommon for planning schemes to use such active, facilitative language, and is in the Inquiry's view a reflection of Government's desire to encourage the transition to a sustainable energy supply.

In relation to turbine numbers, the Inquiry has specified a maximum number of 85. This is based on 104 exhibited, less eight for the alternate layout provided in the hearing, less another eight for the buffer to wetland 117[218] and less the three that the Inquiry has recommended be deleted in relation to Brolga. The buffer to wetland 117 is subject to confirmation and the Inquiry has made a note in Appendix E accordingly.

(v) Recommendation

Consistent with the conclusions on environment effects, the Inquiry recommends:

Issue planning permit 2015/23858 for the Dundonnell Wind energy facility subject to the application of permit conditions as shown in Appendix E.

These conditions have resulted from a process of comment and discussion through the hearing process.

12.2 The Utility installation (transmission line), Permit PL15/075

(i) Background and submissions

As for the Wind energy facility, Mr Juttner made a comprehensive submission[219] outlining the planning framework for the permit application.

There were no substantive submissions on the planning merits of the transmission line beyond the broader submissions made on the EES and environmental matters already discussed.

[218] Document 39, para 120.
[219] Document 5.

(ii) Decision guidelines and permit application assessment

The table below summarises the main planning scheme decision guidelines relevant to the transmission line application.

Table 4 Decision guidelines summary – transmission line

Clause	Decision Guidelines Comment
Farming zone – Clause 35.07	As per Table 3.
Road Zone – Clause 36.04	Includes consideration of the views of the relevant Road Authority and of road safety.
Environmental Significance Overlay Schedule 3 – Clause 42.01	Requires consideration of whether any nearby development (accommodation) may constrain the operation of the Mortlake Power Station.
Native vegetation – Clause 52.17	As per Table 3.
Decision Guidelines – Clause 65	As per Table 3.

Section 60 of the *Planning and Environment 1987* provides the legislative framework for what a Responsible Authority must consider in issuing a permit.

(iii) Inquiry response

The transmission line is a secondary element of the Wind Farm. Although it has impacts on native vegetation and landscape in particular, the Inquiry is satisfied that an assessment against the relevant policy and planning provisions shows that on balance, the transmission line should be supported.

The Proponent indicated (through Mr Lane the ecological consultant) that further late spring surveys were to be carried out for 14 listed FFG/EPBC species.[220] If necessary the results of these surveys should be included in offset planning for specific species. The permit conditions around these issues are to the satisfaction of the Responsible Authority and the Inquiry is satisfied that the issue can be adequately addressed.

(iv) Recommendation

Consistent with the conclusions on environment effects, the Inquiry recommends:

Issue planning permit PL 15/075 for the Dundonnell Wind Farm transmission line subject to the application of permit conditions as shown in Appendix E.

[220] EES Annex L, Flora and Fauna Assessment, p259.

12.3 The Utility installation (off-site substation), Permit PL15/074

(i) Background and submissions

As for the Wind energy facility, Mr Juttner made a comprehensive submission[221] outlining the planning framework for the permit application.

There were no substantive submissions on the planning merits of the off-site substation.

(ii) Decision guidelines and permit application assessment

The table below summarises the main planning scheme decision guidelines relevant to the transmission line application.

Table 5 Decision guidelines summary - substation

Clause	Decision Guidelines Comment
Farming zone – Clause 35.07	As per Table 3.
Road Zone – Clause 36.04	Includes consideration of the views of the relevant Road Authority and of road safety.
Environmental Significance Overlay Schedule 3 – Clause 42.01	Requires consideration of whether any nearby development (accommodation) may constrain the operation of the Mortlake Power Station.
Decision Guidelines – Clause 65	As per Table 3.

Section 60 of the *Planning and Environment 1987* provides the legislative framework for what a Responsible Authority must consider in issuing a permit.

(iii) Inquiry response

The impacts of the off-site substation will be negligible and it is located adjacent to an existing large gas fired power station. The Inquiry considers that the permit should issue.

(iv) Recommendation

Consistent with the conclusions on environment effects, the Inquiry recommends:

Issue planning permit PL 15/074 for the Dundonnell Wind Farm off-site substation subject to the application of permit conditions as shown in Appendix E.

[221] Document 5.

Appendix A Submitters to the Inquiry

No.	Submitter
1	Eric J. Cumming
2	Samuel L. and James C. Christensen
3	Country Fire Authority
4	World Council for Nature
5	Save the Eagles International
6	John Stuart
7	Jackie Rovensky
8	Tony Dickinson
9	Fraser Bunn
10	Claire Gaidzkar
11	Will Lynch
12	Macsfield Park Merinos
13	Jenny Cumming
14	Noel Dean
15	Peter Forster
16	Marion Truman
17	Louise Thomas
18	Debbie Brooks
19	Todd Lamont
20	Frank Campbell and Sanae Matsushita
21	Justin Hicks
22	Heather Hicks
23	Kerry Hicks
24	James Thomas
25	Brolga Recovery Group
26	Bill and Karen Blackmore
27	Ian Penna
28	Samantha Bradley

No.	Submitter
29	George Burbury, Tiverton Property Partnering
30	Daryl Clark
31	Edward Blackwell
32	Hamish Cumming
33	Mike Brooks
34	Jeffrey Warhurst
35	W A Molan & Sons
36	Birdlife Ballarat
37	Westvic Tyres
38	Vincent Gedye
39	Andrew Lang
40	Peter Coy
41	Charlie Blackwell
42	Susan Clarke
43	Jay Miller
44	David and Sandy Allen
45	Andrew and Leanne Lamont
46	Celia and Bill Blackwell
47	Brian Morton
48	Simon Peters
49	Melissa Ware
50	Tim and Susan Kosch
51	Don and Heather Kosch
52	Gary and Heather Cameron
53	Woorndoo-Mortlake Football Netball Club
54	Bill Jurg
55	Glenda Jurg
56	Christie Leishman

No.	Submitter
57	Dundonnell Fire Brigade
58	James Leishman
59	Veronica Gordon
60	Felicity Gordon
61	Adorina Pty Ltd
62	James Luckock
63	Chris Luckock
64	Dion Ross
65	Carolyn and Tony Ware
66	Keith Staff
67	Peter Mitchell
68	Jocelyn Mitchell
69	Heather McMahon
70	Susan Richmond
71	Lulu Liddell
72	Stephanie Cumming
73	Hyon-Xhi Tan
74	Madelon Yorke
75	Sinthujan Jegaskanda
76	Caroline Johnson
77	Simon Langston
78	Alistair Hunt
79	Pritika Desai
80	Imogen Milne
81	Rebecca Fagan
82	Grant Winberg
83	Rick Holden
84	Janet Heatherington
85	Andrew Field
86	Lola Puddy and Mary Davis
87	Jacoba (Josie) Thomas
88	Peter Allen

No.	Submitter
89	Maureen Coleman
90	David Coleman
91	Colleen J. Watts
92	Flyers Creek Wind Turbine Awareness Group Inc
93	Brinkworth Pre School
94	FMG Research House
95	Stephanie Lamont
96	Keppel Prince Engineering
97	Gerard Diprose
98	Ararat Rural Council
99	Cheryl Small
100	Glenelg Hopkins Catchment Management Authority
101	Daryl R. Clark
102	James Hicks
103	Peter Christensen
104	Sue Mudford
105	Paul and Linda Burrow
106	Simon and Kerry Ross
107	Vestas Australian Wind Technology Pty Ltd
108	Belinda Wehl
109	Fincher Trist
110	Tim, Danielle and Nathan Blomeley
111	Timothy J. Free
112	Susan and Alexander Dennis
113	Brendan Ryan
114	Geraldine Conheady
115	Australian Industrial Wind Turbine Awareness Network
116	Jane Hayes
117	Catherine Fletcher

No.	Submitter
118	David Mortimer
119	John and Loyis Gedye
120	Crispin Trist
121	Sonia Trist
122	Eilyer Pastoral Company
123	Carolyn and Rod Wilkinson
124	Anne Schafer
125	Earth and Water Technologies
126	Earth Resources Division, Department of Economic Development, Jobs, Transport and Resources

No.	Submitter
127	Mirren and Paul Munn
128	Inka Veltheim
129	David and Jill Wade
130	Tim and Susan Mannon
131	Geoffrey Blomeley
132	Robert Mifsud
133	BirdLife Australia
134	David Farmhill
135	Moyne Shire Council

Appendix B Terms of Reference

Terms of Reference

Dundonnell Wind Farm Project – Inquiry

Version 1: July 2015

An Inquiry appointed pursuant to section 9(1) of the *Environment Effects Act 1978* to report on the Dundonnell Wind Farm Project.

Name

1. The Inquiry is to be known as the Dundonnell Wind Farm Inquiry (the Inquiry)1.
2. The Inquiry members have the following skills/ experience:
    a. Land use planning (including noise, landscape and visual, and social impacts)
    b. Biodiversity and habitat
    c. Wind Farm and power infrastructure
    d. Cultural heritage

The Inquiry may seek additional specialist expert advice if required.

Purpose

3. The Inquiry's purpose is to inquire into and provide an integrated assessment of the potential effects of the proposed Dundonnell Wind Farm Project (the project).
4. The Inquiry is to produce a report to inform the Minister for Planning's Assessment of the project under the Environment Effects Act 1978 (the EE Act) and in turn assist statutory decision making required for the project, primarily under the Planning and Environment Act 1987.
5. In overview, the Inquiry is to:
    a. Consider submissions received and the exhibited Environment Effects Statement (EES) documentation and report on the potential effects of the Dundonnell Wind Farm, proposed transmission line and other associated infrastructure investigated in the EES.

Background

Project

6. Dundonnell Wind Farm Pty Ltd, a wholly owned subsidiary of Trustpower Australia Holdings Pty Ltd, proposes to construct a wind farm comprising up to 104 wind turbine generators at a maximum blade tip height of 165 metres above ground level and an indicative generation capacity of 312 Megawatts. The project is located approximately 23km north-east of Mortlake and 21 km west of Derrinallum in the Shire of Moyne.
7. Permanent ancillary infrastructure includes an on-site operations and maintenance building, up to 4 permanent wind monitoring masts with a height of approximately 110m, a substation and access tracks. Temporary infrastructure for the construction period includes an on-site concrete batching plant, on-site quarry, cleared construction laydown areas, temporary site buildings, ablutions facilities and site parking.

[1] The Inquiry members will also be appointed as a Panel under the *Planning and Environment Act 1987* (P&E) Act to consider objections to related planning permit application for the Dundonnell Wind Farm Project - a single consolidated report with content meeting the requirements of both the EE Act and the P&E Act will be prepared.

Department of Environment, Land, Water & Planning
State Government Victoria

8. A 220kV overhead transmission line approximately 38km in length will connect the on-site substation to the 500kV Heywood-Moorabool network at the Mortlake Gas Power Station. The project will have an expected operational life of 25 years, with the potential for an additional 25 year operational period.

9. The project was commenced in 2009 by NewEn Australia Pty Ltd and acquired by Trustpower in 2013. Trustpower is a publicly listed energy and telecommunications company on the New Zealand Stock Exchange that owns and manages 38 hydro generation power stations and three operating wind farms globally, including one in Snowtown, South Australia. In June 2014 Trustpower acquired assets from Green Power in NSW, including the Hume hydro power station and the Blayney wind farm and 80% of the Crookwell Wind Farm.

EES decision

10. On 21 January 2013, the Minister for Planning determined that an EES was required for the project under the EE Act and issued the decision with procedures and requirements for the preparation of the EES under section 8B(5) of the EE Act (Attachment 1).

11. The EES has been prepared by the proponent in response to the Minister's decision and Scoping Requirements issued for the proposal on 16 September 2013.

12. The EES was placed on public exhibition together with three planning permit applications pursuant to the Moyne Planning Scheme, from 13 July 2015 to 21 August 2015.

Commonwealth approval

13. The project was determined to be a controlled action that requires assessment and approval under the EPBC Act on 3 December 2012, because of its potential impacts on matters of national environmental significance (NES). The controlling provisions under that Act relate to listed threatened species and communities (sections 18 and 18A).

14. The EES process is being applied as the accredited assessment process under the Commonwealth-Victorian Bilateral Agreement for Environmental Impact Assessment2, to provide for the assessment of matters of NES required under the EPBC Act. The Victorian Minister for Planning's Assessment under the EE Act will be provided to the Commonwealth to inform the EPBC Act approval decision, in accordance with requirements of the Bilateral Agreement.

Planning approvals

15. Dundonnell Wind Farm Pty Ltd has prepared 3 Planning Permit Applications for the use and development of:

    a. the Wind Energy Facility (Permit application 2015/23858)

    b. the Transmission line (Permit application PL15/075)

    c. the Substation (Permit application PL15/074)

    The members of the Inquiry are also to be appointed as a Panel under the P&E Act to consider submissions in relation to these planning permit applications.

Other approvals

16. Under Victorian law, the project requires a number of other approvals and consents, as outlined in the EES, including but not limited to:

[2] The previous agreement came into operation on 25 June 2009 and provided for the accreditation of specified Victorian statutory processes, including the EES process, to enable assessment of MNES for actions requiring Commonwealth approval. There is a new agreement that came into operation in December 2014, which also has the EES as an accredited assessment process.

a. Approved Cultural Heritage Management Plans for the Wind Farm and Transmission Line under the Aboriginal Heritage Act 2006 to manage works in areas of cultural heritage sensitivity.
b. Work plan and work authority for extractive industry under the *Mineral Resources (Sustainable Development) Act 1990.*

Method

17. The Inquiry may apply to vary these Terms of Reference in writing, prior to submission of its report.

18. The Inquiry may inform itself in any way it sees fit, but must consider:

    a. The exhibited EES.
    b. Any submissions and evidence provided by the proponent, State agencies, and the public.
    c. Information provided by the proponent which addresses, to the extent practicable, the submissions provided by the public.
    d. Other relevant information provided to, or obtained by, the Inquiry, having regard to relevant statutory provisions, policies and plans.

19. The Inquiry must conduct a public hearing and may make other such enquiries as are relevant to its consideration of the potential environmental effects of the project.

20. The Inquiry must conduct its hearings in accordance with the following principles:
    a. The hearings will be conducted in an open, orderly and equitable manner, in accordance with the rules of natural justice, with a minimum of formality and without the necessity for legal representation.
    b. The Inquiry process will aim to be exploratory and constructive and adversarial behaviour should be minimised.
    c. Parties without legal representation will not be disadvantaged – cross-examination will be strictly controlled and prohibited where deemed not to be relevant by the Inquiry Chair.

21. The Inquiry will meet and conduct hearings when there is a quorum of at least two of its members present including the Inquiry Chair.

Submissions are public documents

22. The Inquiry must retain a library of any written submissions or other supporting documentation provided to it directly until a decision has been made on its report or five years has passed from the time of its appointment.

23. Any written submissions or other supporting documentation provided to the Inquiry must be available for public inspection until the submission of its report, unless the Inquiry specifically directs that the material is to remain 'in confidence'.

Report

24. The Inquiry must produce a written report for the Minister for Planning presenting the Inquiry's:
    a. Findings on the likelihood and significance of environmental effects (impacts) of the different components of the project documented in the EES, including impacts on matters of NES protected under relevant controlling provisions of the EPBC Act.
    b. Advice regarding the availability and effectiveness of proposed feasible mitigation measures or controls to prevent, minimise or compensate for environmental effects (including on relevant matters of NES), in the context of relevant standards, objectives and guidelines established under relevant legislation.
    c. Recommendations on any necessary modifications to the project and/or specific design measures required to prevent, minimise or compensate for adverse effects, (including on relevant matters of NES).

d. Recommendations on appropriate approval conditions that could be applied under Victorian law, necessary to achieve acceptable environmental outcomes in the context of applicable legislation and policy.
e. Recommendations on the draft framework for environmental management for the project described in the EES, including any necessary controls, procedures or mechanisms.
f. Conclusions on whether the project will substantially meet evaluation objectives and deliver an appropriate balance of environmental, economic and social outcomes, having regard to the conclusions on the effects of the project, public submissions, and the principles and objectives of ecologically sustainable development.
g. Relevant information and analysis in support of the Inquiry's conclusions and recommendations.
h. Description of the proceedings conducted by the Inquiry and a list of those consulted and heard by the Inquiry.

Timing

25. The Inquiry is required to submit its report in writing to the Minister for Planning within 40 business days from its last hearing date.

Fee

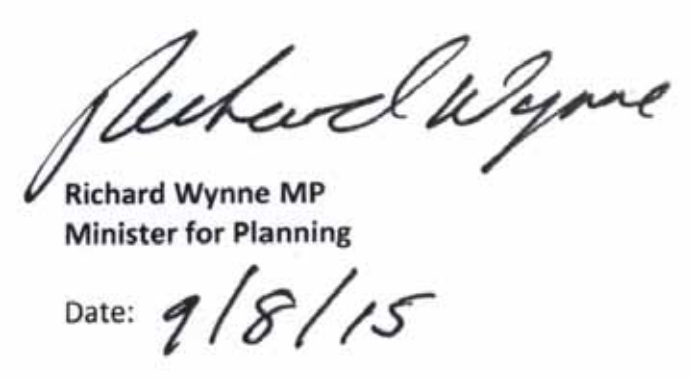
26. The members of the Inquiry will receive the same fees and allowances as a panel appointed under Division 1 of Part 8 of the Planning and Environment Act 1987.

27. The costs of the Inquiry will be met by Dundonnell Wind Farm Pty Ltd.

Project Manager

28. Day to day liaison for matters about this Inquiry process can be made to Greta Grivas, Senior Project Officer, Planning Panels Victoria on (03) 8392 6393 or greta.grivas@delwp.vic.gov.au.

29. Any queries about the EES process should directed to Julie Hallyburton, Senior Impact Assessor, Department of Environment, Land, Water & Planning on ph. (03) 9223 5316 or julie.hallyburton@delwp.vic.gov.au.



Richard Wynne MP
Minister for Planning

Date: 9/8/15

Attachment 1

DECISION ON PROJECT: Dundonnell Wind Farm
Under section 8B(3)(a) of the Environment Effects Act 1978

1. Assessment though an Environment Effects Statement (EES) under the *Environment Effects Act 1978* **is required** for the reasons set out in the attached Notice of Reasons for Decision.

2. The procedures and requirements applying to the preparation of the EES in accordance with section 8B(5) of the *Environment Effects Act 1978* and the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978* are as follows:

   i. The EES is to investigate the potential environmental effects of the proposed wind farm and related infrastructure, including associated environmental mitigation and management measures, with a view to identifying a final development scenario for the site to be presented for statutory approvals processes. While addressing the requirements of the *Policy and planning guidelines for development of wind energy facilities in Victoria* (July 2012), the EES should also have a particular focus on:

      a. Effects on biodiversity, including native vegetation, listed fauna, flora and ecological communities on and near the site, including those associated with access tracks, local road augmentation and the connection to the electricity grid. Of note are the effects of the proposed wind farm on populations of Victorian Brolga and migratory birds, and the need to clarify the potential risk to the Southern Bent-wing Bat and Yellow-bellied Sheath-tail Bat.

      b. Effects on geoscience and associated landscape values within the site and region;

      c. Cumulative environmental effects, particularly in relation to biodiversity and geoscience values, of the wind farm in combination with other approved and publicly proposed wind energy facilities within the region.

   ii. The matters to be investigated and documented in the EES will be set out in detail in scoping requirements to be prepared by the Minister for Planning. Draft scoping requirements will be exhibited for 15 business days for public comment, before being finalised and issued to the proponent.

   iii. The proponent is to prepare and submit to the Department of Planning and Community Development (DPCD) a draft EES study program, describing planned investigations of relevant issues, to inform the initial preparation of the above scoping requirements.

   iv. The proponent is also to prepare and submit to DPCD a proposed schedule for the preparation and exhibition of the EES, following preparation of the draft scoping requirements.

   v. DPCD will convene an inter-agency Technical Reference Group (TRG) to advise DPCD and the proponent, as appropriate, on scoping and the study program, the adequacy of draft EES studies, as well as coordination with statutory approval processes.

vi. The proponent is to prepare and implement an EES Consultation Plan for informing the public and consulting with stakeholders during the preparation of the EES, having regard to advice from DPCD and the Technical Reference Group.

vii. The level of detail of investigation for the EES studies should be consistent with the scoping requirements and be adequate to inform an assessment of acceptability of its potential environmental effects, in the context of the Ministerial Guidelines.

viii. The proponent is to apply appropriate peer review procedures to enable the completion of EES studies to a satisfactory standard.

ix. The EES is to be exhibited for a minimum period of 30 business days for public comment.

x. An inquiry will be appointed under the *Environment Effects Act 1978* to consider environmental effects of the proposal.

3. The following parties (proponent and relevant decision-makers) are to be notified of this decision:

- NewEn Australia (the proponent);
- Minister for Environment and Climate Change;
- Moyne Shire Council; and
- Aboriginal Affairs Victoria.

MATTHEW GUY MLC
Minister for Planning

Date: 21-1-13

Appendix C Document list

No.	Date	Description	Tabled by
1	6/10/15	Folder of reference documents	Mr Power for Dundonnell Wind Farm Pty Ltd (DWF)
2	6/10/15	Map of existing and proposed energy developments in Moyne Shire	Mr Moyne for Moyne Shire
3	6/10/15	Senate Speech of Senator Madigan on renewable energy dated 15/9/15	Mr Staff
4	6/10/15	Department of Environment, Land, Water and Planning (DELWP) EES submission	Ms Hallyburton for DELWP
5	6/10/15	DELWP submission on behalf of Minister as Responsible Authority (RA)	Mr Juttner for RA
6	6/10/15	Notice map for planning permit applications (1 copy held by Inquiry)	Mr Juttner for RA
7	6/10/15	Correspondence in response to PPAs to DELWP from CASA, VicRoads and AusNet Services	Mr Juttner for RA
8	6/10/15	Opening submissions for DWF	Mr Power for DWF
9	6/10/15	A3 Map Set – site plans including alternate layout	Mr Power for DWF
10	6/10/15	A3 Map Set – landholders adjoining project	Mr Power for DWF
11	7/10/15	Revised site inspection itinerary	Mr Power for DWF
12	8/10/15	Mr Wyatt PowerPoint presentation	Mr Power for DWF
13	8/10/15	Dr Weaver PowerPoint presentation	Mr Power for DWF
14	8/10/15	Dr Rosengren (geomorphology) comments on alternate turbine layout	Mr Power for DWF
15	8/10/15	Mr Rymer (archaeology) comments on alternate turbine layout	Mr Power for DWF
16	8/10/15	Correspondence from Marshall Day Acoustics on data on indicative turbine noise output	Mr Power for DWF
17	8/10/15	Submission and attachments from Adorina	Mr Macintosh for Adorina
18	9/10/15	Correspondence from Senator Madigan to Premier Andrews dated 18 August 2015	Mr Staff
19	9/10/15	'Sound pollution from wind turbines' extract from Windbyte website	Mr Staff
20	9/10/15	Submission to Senate Select Committee on Wind Turbines form Emeritus Professor Hansen	Mr Staff

No.	Date	Description	Tabled by
21	13/10/15	DELWP Environment correspondence dated 9/10/15 (Brolga and bats)	Inquiry
22	13/10/15	DELWP Environment correspondence dated 12/10/15 (native vegetation)	Inquiry
23	13/10/15	DELWP Version of permit conditions x 3	Mr Juttner for RA
24	13/10/15	Moyne Shire Version of permit conditions x 3	Mr Moyne for Moyne Shire
25	13/10/15	Mr Delaire PowerPoint presentation	Mr Power for DWF
26	13/10/15	Institute of Acoustics Supplementary Guidance Note 5: Post Completion Measurements	Mr Power for DWF
27	13/10/15	AAAA Windfarm Policy March 2011	Mr Staff
28	13/10/15	Mr Lane PowerPoint Presentation	Mr Power for DWF
29	13/10/15	Correspondence from DNV-GL Shadow flicker and EMI	Mr Power for DWF
30	13/10/15	Correspondence from Vegetation Link biodiversity offsets	Mr Power for DWF
31	13/10/15	Brolga Breeding Habitat Brochure	Mr Lane giving evidence for DWF
32	13/10/15	Folder of EES Referral Documents	Mr Power for DWF
33	13/10/15	E-bird extract	Mr Cumming
34	13/10/15	Extract from Laura Navarrete Paper	Mr Cumming
35	13/10/15	Bat Detector Article	Mr Cumming
36	14/10/15	Article on Barotrauma and bats	Mr Staff
37	14/10/15	Extract from National Recovery Plan for Southern Bent-wing Bat	Mr Staff
38	14/10/15	Correspondence from Biosis	Mr Smales for Biosis
39	14/10/15	Main Submission for DWF	Mr Power for DWF
40	15/10/15	Moyne Shire Council submission and attachments	Mr Moyne for Moyne Shire
41	15/10/15	Revised Figure 2-3 showing substation access	Mr Power for DWF
42	15/10/15	Statements of consent for revised turbine layout (2)	Mr Power for DWF
43	15/10/15	Submission from Brolga Recovery Group	Ms Dennis for BRG
44	15/10/15	DEDJTR Earth Resources Regulation PowerPoint Presentation	Ms Abbott for DEDJTR
45	16/10/15	CD of Mortlake Wind Farm Submission and Mr Cumming CRM	Mr Cumming

No.	Date	Description	Tabled by
46	16/10/15	Submission from Mr Lang	Mr Andrew Lang
47	16/10/15	Submission and attachments from Mr Staff	Mr Staff
48	16/10/15	Submission to Senate Inquiry from Mr Stepnell	Mr Staff
49	16/10/15	Email from Senator Back	Mr Staff
50	16/10/15	Web article *Low Frequency Noise, Infrasound and Wind Turbines*	Mr Staff
51	16/10/15	*Land of the Volcanoes* article	Mr Staff
52	16/10/15	Kanawinka Geopark Energy and Communications Infrastructure Siting Policy	Mr Staff
53	16/10/15	Submission from Mr Dean	Mr Dean
54	16/10/15	Report of acoustical emissions of a wind turbine generator system of the type Acciona AW 82/1500 IEC IIIb T80A LM40.3P in the Moncayuelo windfarm in Spain (1 copy held by Inquiry)	Mr Dean
55	20/10/15	Proponent responses to issues raised in Hearing	Mr Power for DWF
56	20/10/15	Ms Thomas PowerPoint slides and submission	Ms Thomas
57	20/10/15	Submission from Mr Allen	Mr Allen
58	20/10/15	Submission from Ms Hayes	Ms Hayes
59	20/10/15	Submission from Ms Mudford	Ms Mudford
60	20/10/15	Submission and resource folder from Mr Mitchell	Mr Mitchell
61	20/10/15	Reply submission for DWF	Mr Power for DWF
62	20/10/15	Set of A3 plans showing Brolga Flocking buffers	Mr Power for DWF
63	20/10/15	Permit conditions for wind farm (track changes and changes accepted)	Mr Power for DWF
64	20/10/15	Moyne Shire traffic conditions for wind farm permit	Mr Moyne for Moyne Shire
65	20/10/15	Permit conditions for transmission line (track changes and changes accepted)	Mr Power for DWF
66	20/10/15	Permit conditions for substation (track changes and changes accepted)	Mr Power for DWF

Appendix D Correspondence between Inquiry and DELWP

Planning Panels Victoria
Department of Environment, Land, Water and Planning

1 Spring Street
Melbourne Victoria 3000
GPO Box 2392
Melbourne, Victoria 3001
Telephone (03) 8392 6397
Facsimile (03) 8392 6381

14 September 2015

Mr Don Hough
Director, Regulations and Approvals
Land Fire and Water
Department of Environment Land Water and Planning
Level 2, 8 Nicholson Street
East Melbourne Vic 3002
email: don.hough@delwp.vic.gov.au

Dear Mr Hough

Dundonnell Wind Farm EES Inquiry and Planning Permit Applications Panel

You may be aware that the Minister for Planning has appointed an Inquiry Panel pursuant to Section 9(1) of the *Environment Effects Act 1978* to review this matter. A copy of the Inquiry Terms of Reference can be found at:

http://www.dtpli.vic.gov.au/planning/panels-and-committees/current-panels-and-committees/dundonnell-wind-farm-ees-inquiry

Exhibition of the EES took place between 13 July and 21 August 2015 and a total of 135 submissions were received. Public Hearings will commence on 6 October 2015 in Glenormiston.

The EES documentation can be found here:

http://www.dundonnellwindfarm.com.au/

A number of submissions have raised issues in relation to impacts on flora and fauna; and particularly Brolga, the Southern Bent-wing Bat and native vegetation. The Inquiry would be interested in DELWP's view of the project in relation to its potential impacts on natural assets and you may wish to make a submission. If you wish to make a submission, could you please forward it to the Inquiry by close of business on Monday 28 September 2015.

If you intend to make a submission or have any queries please contact Greta Grivas, Senior Project Officer, Planning Panels Victoria on (03) 8392 6393 or planning.panels@delwp.vic.gov.au as soon as possible.

Yours sincerely

Nicholas Wimbush

NICK WIMBUSH

Inquiry Chair

Department of Environment, Land, Water & Planning

PO Box 500
East Melbourne Victoria 8002
Tel: 9637 8000

Mr Nick Wimbush
Inquiry Chair
Planning Panels Victoria
Department of Environment, Land, Water & Planning
1 Spring Street
MELBOURNE VIC 3000

Dear Mr Wimbush

DUNDONNELL WINDFARM EES INQUIRY AND PLANNING PERMIT APPLICATION PANEL

Thank you for your letter of 14 September 2015 about the Dundonnell Windfarm EES Inquiry and Planning Permit Application Panel and the invitation to make a submission.

As you may be aware the department was represented on the Technical Review Group to review of the proponent's environment effects statement studies and draft documentation.

The department is also a recommending referral authority for the planning permit application as identified in Clause 66.02-2 in the Moyne Planning Scheme and Section 55 of the *Planning and Environment Act 1987*. A copy of the department's advice in this regard is attached for information.

The department would be pleased to assist the Inquiry Panel should it have specific questions on issues raised submissions or through the panel's inquiry process. Please note that any issues for the administration of the *Environment Effects Act 1978* should be referred to Julie Hallyburton, phone 9094 8466, in the first instance.

Should you require further information, I can be contacted on phone 9637 8443 or e:don.hough@delwp.vic.gov.au.

Thank you again for writing.

Yours sincerely

Don Hough
Director Regulation and Approvals

22/09/2015

Planning Panels Victoria
Department of Environment, Land, Water and Planning

1 Spring Street
Melbourne Victoria 3000
GPO Box 2392
Melbourne, Victoria 3001
Telephone (03) 8392 6397
Facsimile (03) 8392 6381

24 September 2015

Mr Don Hough
Director, Regulations and Approvals
Land Fire and Water
Department of Environment Land Water and Planning
Level 2, 8 Nicholson Street
East Melbourne Vic 3002
email: don.hough@delwp.vic.gov.au

Dear Mr Hough

Dundonnell Wind Farm EES Inquiry and Planning Permit Applications Panel

Thank you for your correspondence dated 22 September 2015 in relation to the above matter. As you would be aware there are a number of technical environmental and conservation biology matters addressed by the EES itself and raised in submissions to the Inquiry. The Inquiry would appreciate specific advice on the following:

Bat fauna

- The adequacy of the survey, including seasonal coverage, for the required assessments and the conclusions reached.
- The relative importance of the wind farm site for bat fauna and in particular the Southern Bent-wing Bat and the Yellow-bellied Sheathtail Bat.
- The conclusions reached in the EES on the impacts on bat fauna, in particular on the Southern Bent-wing Bat and the Yellow-bellied Sheathtail Bat and the mitigation measures proposed (buffers from forested areas, trees with large hollows and water bodies).

Brolga

- The implementation of the Interim Guidelines for the Assessment, Avoidance, Mitigation and Offsetting of Potential Wind Farm Impacts on the Victorian Brolga Population 2011, Revision 1 February 2012 (the Guidelines), through the project EES.
- In particular advice on:
  - The adequacy of the methodology for the Level1 and Level 2 assessments that have been undertaken.
  - Whether any other breeding or non-breeding records should have been considered in the assessments.
- Furthermore, for the level 3 assessment the Department's advice on:
  - Whether they have been consulted on and whether they agree with the proposed home range buffers (breeding and non-breeding) being proposed for this project.
  - Whether they support the basis for determining the breeding and non-breeding home range buffers for this project.
  - If the proposed buffers for this project are not supported what alternative home range buffer options are recommended.

- In addition advice on:
  - The results of the Collision Risk Modelling that has been undertaken and whether the Department has discussed and agreed on the assumptions used in developing the collision risk estimates.
  - The results of the Population Viability analysis and the model used.
  - The efficacy of the compensation measures identified to ensure zero net impact.

Mt Fyans Wildlife Reserve

- Any documentation on the natural values on the Wildlife Reserve and matters relevant to the proposed operation of a quarry as part of the wind farm project.

Whilst conclusions on these matters leading to advice to the Minister for Planning are ultimately to be drawn by the Inquiry, the Inquiry needs to be informed by the best information available and hopes DELWP might be able to assist.

A written response to the above matters would be appreciated so that the Proponent and other parties may consider it before the Hearing; as well as attendance at the Hearing by a suitable officer(s) to answer any questions from the Inquiry. The Hearing dates are as per the attached directions and timetable and the Inquiry will accommodate any attendance as best it can to accord with DELWP officer availability.

Please contact Planning Panels Victoria on (03) 8392 6396 or planning.panels@delwp.vic.gov.au if you have any queries.

Yours sincerely

Nicholas Wimbush

NICK WIMBUSH

Inquiry Chair

2

Department of Environment,
Land, Water & Planning

PO Box 500
East Melbourne Vic 8002
136 186

FF/39/5354

Mr Nick Wimbush
Inquiry Chair
Planning Panels Victoria
Department of Environment, Land, Water and Planning
1 Spring Street
MELBOURNE Vic 3001

Dear Mr Wimbush

DUNDONNELL WIND FARM

Thank you for your letter of 24 September 2015 seeking information to assist the inquiry. I also refer to my email of 1 October 2015.

The information below was informed by:

- The Environment Effects Statement (EES), as exhibited.
- The report "*Dundonnell Windfarm Additional Brolga Assessment June 2014 to August 2015*" Trustpower Australia Pty Ltd. Brett Lane and Associates Pty Ltd. Report Number 9184 (25.5) September 2015.
- Internal files on the land that was purchased to establish the Mt Fyans Wildlife Reserve.

For your convenience the questions on which the information is sought are in *italics* and the information in dot-point format.

Bat fauna

- *The adequacy of the survey, including seasonal coverage, for the required assessments and the conclusions reached.*
  - When compared against relevant standards, and work undertaken at other windfarms, the Anabat surveys are reasonable.
  - The conclusion that there is unlikely to be much South Bent-wing Bat activity on the site is reasonable.
  - The overall conclusion, that the relevant risk to assess is that associated activity levels on the site as opposed to that in surrounding areas, is reasonable.

- *The relative importance of the wind farm site for bat fauna and in particular the Southern Bent-wing Bat and the Yellow-bellied Sheathtail Bat.*
  - Yellow-bellied Sheathtail bats are rarely recorded in Victoria.
  - The current knowledge on these species precludes a definitive answer to this question.

- *The conclusions reached in the EES on the impacts on bat fauna, in particular on the Southern Bent-wing Bat and the Yellow-bellied Sheathtail Bat and the mitigation measures proposed (buffers from forested areas, trees with large hollows and water bodies).*
  - Noting the above, the conclusions outlined in the EES are reasonable.

Brolga

- *The implementation of the Interim Guidelines for the Assessment, Avoidance, Mitigation and Offsetting of Potential Wind Farm Impacts on the Victorian Brolga Population 2011, Revision 1 February 2012 (the Guidelines), through the project EES.*

- *In particular advice on:*
  - *The adequacy of the methodology for the Level1 and Level 2 assessments that have been undertaken.*
    - The Guidelines set out the detailed process for Level 1 and Level 2 assessments. Their application as outlined in the EES is considered fit-for-purpose.
  - *Whether any other breeding or non-breeding records should have been considered in the assessments.*
    - The Guidelines provide a list of potential sources of Brolga records that should be considered in a Level 1 assessment.
    - The Victorian Biodiversity Atlas is a primary sources of information for Victorian flora and fauna records.
    - The atlas is publicly available and allows the submission and viewing of records.
    - The most recent update of Brolga records to the atlas occurred in August 2015. The project proponent was advised of this update.

- *Furthermore, for the level 3 assessment the Department's advice on:*
  - *Whether they have been consulted on and whether they agree with the proposed home range buffers (breeding and non-breeding) being proposed for this project.*
    - The department participated as a member of the Technical Review Group, that was established to support the proponent prepare the EES. In this role, the department provided advice and commentary to the project proponent on its work to identify buffers.
    - Breeding buffers have been informed by breeding site data collected from three other wind farm sites rather than site specific data as canvassed in the Guidelines.
    - The department has not sought to 'agree' the buffers, or otherwise, but to ensure the logic applied was fit for purpose.
    - The EES does not specify flocking site buffers. The proposed rationale seeks to buffer (by 300m) locations where brolgas were observed more generally, noting that this method does not specifically consider movements around flocking sites, nor flights where the final destination was unknown.
    - The EES does not outline how the transmission line might be buffered, and it is noted that a section of the transmission line crosses a turbine-free buffer.
  - *Whether they support the basis for determining the breeding and non-breeding home range buffers for this project.*
    - The Guidelines (p. 11) describe an objective for designing buffers. The proposed buffers focus on the objective of excluding any significant impact on the likelihood of successful reproduction at a nesting site or survivorship while occupying a flocking site.
    - Buffers have been developed to capture the majority of movements at these sites. Note that the Guideline objective is that turbine-free buffers be designed so turbines avoid the breeding and non-breeding home ranges.
    - The EES has not directly identified home ranges.

- *If the proposed buffers for this project are not supported what alternative home range buffer options are recommended.*
  - The Guidelines provide default buffers to avoid home ranges as an alternative and these are set out on page 11.

- *In addition advice on:*
  - *The results of the Collision Risk Modelling that has been undertaken and whether the Department has discussed and agreed on the assumptions used in developing the collision risk estimates.*
    - The department has not participated in technical discussions with the modellers on the Collision Risk Modelling or provided comment on the results.
  - *The results of the Population Viability analysis and the model used.*
    - DELWP has not participated in technical discussions on the models underlying the Population Viability Analysis.
  - *The efficacy of the compensation measures identified to ensure zero net impact.*
    - The EES describes both transmission line marking and enhancement of breeding sites as possible offsets to achieve zero net impact. The department recognises and supports the value of transmission line marking, and the rehabilitation of historical breeding sites that are no longer used. These measures are currently in outline form and, and subject to the Assessment decision, it is expected they would then be detailed to describe the number and condition of wetlands and or numbers of landowners that would be involved to achieve the required outcome.

Mt Fyans Wildlife Reserve

- *Any documentation on the natural values on the Wildlife Reserve and matters relevant to the proposed operation of a quarry as part of the wind farm project.*
  - Correspondence from the department's file on the Reserve that refers to the its natural values, when the land for the Reserve was purchased in 1986, is attached. It comprises:
    - Initial advice from the Ministry for Conservation to the Secretary for Lands to commence land purchase (valuation), July 1977.
    - Minister for Conservation's recommendation to the Minister of Lands to purchase the land for the purpose of preservation or management of wildlife or the preservation of wildlife habitat.
    - Mortlake Shire's letters to the above ministers seeking a halt to this purchase.
    - The above minister's responses to Mortlake Shire.
  - The department's file contains no further technical information on the Reserve's natural values.

I trust that this information assists the inquiry in its deliberations and should further information be required I can be contacted on telephone 03 9637 8443.

Thank you again for writing.

Yours sincerely

Don Hough
Director
Regulation and Approvals

9/1/2015

Attachments
Minister for Conservation recommends Minister for Lands purchase for Wildlife 20 April 1979.pdf
Minister for Conservation to Mortlake Shire 22 Apr 1982-final.pdf
Mortlake Shire to Ministers for Conservation and Lands 15 March 1982.pdf
Conservation Ministry requests Lands commence purchase valuation 7 July 1977.pdf

Planning Panels Victoria
Department of Environment, Land, Water and Planning

1 Spring Street
Melbourne Victoria 3000
GPO Box 2392
Melbourne, Victoria 3001
Telephone (03) 8392 6397
Facsimile (03) 8392 6381

26 October 2015

Mr Don Hough
Director, Regulations and Approvals
Land Fire and Water
Department of Environment Land Water and Planning
Level 2, 8 Nicholson Street
East Melbourne Vic 3002
email: don.hough@delwp.vic.gov.au

Dear Mr Hough

Dundonnell Wind Farm EES Inquiry and Planning Permit Applications Panel

Thank you for your correspondence of 9 October 2015 in relation to the above project. The Inquiry has now completed its Hearings and has the following specific questions:

Brolga

- The *Interim Guidelines for the Assessment, Avoidance, Mitigation and Offsetting of Potential Wind Farm Impacts on the Victorian Brolga Population 2011*, Revision 1 February 2012 (the Guidelines) contain the following on page 11:

  Brolga breeding and non-breeding home ranges are likely to vary with local habitat quality and extent and seasonal conditions. Unless site specific investigations can show with a high level of confidence the size and shape of home ranges for a project, then the DSE's default breeding and flocking site home ranges should be used for the project. Proposed site-specific buffer distances should be agreed to by DSE.

- Can you please confirm whether the 'site specific' buffers proposed by the proponent in the Dundonnell Wind Farm have been agreed to by DELWP. If not, does DELWP have any concerns with the buffers proposed.
- Various estimates have been provided to the Inquiry on the size of the Brolga population in south west Victoria. Population estimates range from a high of 907 in 2013, but other figures provided to the Inquiry indicate brolga counts of between 400 and 500 in recent years. It is not clear whether the population estimates are compatible due to different counting methodologies and whether the estimates relate to the Victorian population (excluding South Australia) or to the population in south west Victoria. Can you please advise what is the DELWP advice on the size of the Brolga population in south west Victoria.

Cumulative effects

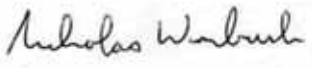
The scoping requirements for the Inquiry require it to have regard to the cumulative effects of this project in combination with other wind energy facilities.

- The Inquiry has been provided with bird and bat mortality studies for the Macarthur Wind Farm (a different Proponent/owner to Dundonnell) dated June 2014 and May 2015.

- The May 2015 report *Macarthur Wind Farm Bat and Avifauna Mortality Monitoring March 2014 to February 2015*; suggests that the turbines bird mortality rates in that project are 3.08 bats/turbine/year and 3.31 native birds/turbine/year, including 1.11 raptors/turbine/year (which equates to 154.88 +/- 39.20 raptor deaths).
- The report notes that no threatened bird species carcasses were found; but one Southern Bent-wing bat carcass was recovered.
- Can you please advise:
    - Is DELWP actively monitoring the population ecology of native bird and bat species that are being killed at wind farms, and if so, is there any cause for concern for particular species.
    - Whether DELWP can provide consolidated data, by wind farm, on bird and bat mortality from operational wind farms in Victoria.

Please contact Ms Greta Grivas at Planning Panels Victoria on (03) 8392 6393 or planning.panels@delwp.vic.gov.au if you have any queries.

Yours sincerely



NICK WIMBUSH

Inquiry Chair

Department of Environment, Land, Water & Planning

PO Box 500
East Melbourne Victoria 8002
Tel: 9637 8000

Mr Nick Wimbush
Inquiry Chair
Planning Panels Victoria
Department of Environment, Land, Water & Planning
1 Spring Street
MELBOURNE VIC 3000

Dear Mr Wimbush

DUNDONNELL WINDFARM EES INQUIRY AND PLANNING PERMIT APPLICATION PANEL

Thank you for your letter of 26 October 2015 requesting technical information on questions to assist the Panel's inquiry. The response to the questions is appended.

I trust that this information assists the inquiry in its deliberations and should further information be required I can be contacted on telephone 03 9637 8443 or don.hough@delwp.vic.gov.au

Thank you again for writing.

Yours sincerely

Don Hough
Director Regulation and Approvals

17 / 11 / 2015

Attachment 1

BROLGA BUFFERS

- The *Interim Guidelines for the Assessment, Avoidance, Mitigation and Offsetting of Potential Wind Farm Impacts on the Victorian Brolga Population 2011*, Revision 1 February 2012 (the Guidelines) contain the following on page 11:

  Brolga breeding and non-breeding home ranges are likely to vary with local habitat quality and extent and seasonal conditions. Unless site specific investigations can show with a high level of confidence the size and shape of home ranges for a project, then the DSE's default breeding and flocking site home ranges should be used for the project. Proposed site-specific buffer distances should be agreed to by DSE.

- Can you please confirm whether the 'site specific' buffers proposed by the proponent in the Dundonnell Wind Farm have been agreed to by DELWP. If not, does DELWP have any concerns with the buffers proposed.

RESPONSE

The Guidelines

The Guidelines are administrative guidance only. They are not statutory rules.

They were created to provide a process to consider the potential impacts of windfarm proposals on the Brolga population. They contains several references to the department, should they be applied through a stand-alone processes, one of which is cited by the Panel above.

The Guidelines are risk-based. The outcome for risk management is to achieve a zero net impact on Brolga from windfarms compared to inherent long term risk to the south eastern Australian population.

They use a hierarchical, staged approach to assess the incremental change in risk from a project proposal against the background level of risk. This approach estimates the likelihood and consequence of direct and indirect impacts on Brolga, to design risk mitigation and adaptive operational management.

The expected primary approach to risk management is mitigation through turbine layout controls, with residual risk to be managed through compensating mechanism. Attention to turbine layout controls is to bring the residual risk, which requires offsetting, to as low as reasonably practicable.

The proposal

The Dundonnell Wind Farm proposal is northeast of Mortlake. It proposes that 104 turbines be installed with a maximum wind blade tip height of 165 metres above ground level within a 4200 hectare farm. The turbine layout is Layout L09. The layout provides for up to 100 metres micro-siting allowance for the design-to-construct stage. Supporting infrastructure includes a 38 kilometre high voltage transmission line.

It has an expected operational life of 25 years, with the potential for an additional 25 year operational period.

It is being considered through an assessment by the Minister for Planning pursuant to the *Environment Effects Act 1978*.

The minister's 2013 Scoping Directions required the proponent's Environment Effects Statement (EES) to identify relevant legislation, policies, guidelines and standards, and assess their specific requirements or implications for the project, particularly in relation to required approvals. This requirement included the Guidelines.

In 2013, the Minister for Planning drew the department's attention to section 8C of the *Environment Effects Act 1978* preventing decisions and works proceeding pending the assessment, see **Annexure 1.**

Consistent with the intent of the minister's letter, the department has not made a determination to 'agree' the site buffers.

The department was a member of the technical review group for the assessment process and considered documents that were published as part of the EES.

The role of this group included advising the proponent on:

- applicable policies, strategies and statutory provisions
- the design and adequacy of technical studies for the EES
- the technical adequacy of draft EES documentation

The department considered brolga-related information that included but was not limited to:

- BLA 2014 *Dundonnell Windfarm Brolga Assessment*.
- BLA 2015 *Dundonnell Wind farm Additional Brolga Assessment June 2014 to August 2015*.
- BLA 2015 Dundonnell Windfarm – Response to Verbal and Email Submissions
- Smales 2015 *Expert Witness Statement of Ian John Smales*
- Brett Lane 2015 *Expert Witness Statement of Brett Lane*.

The department is not aware of any further quality assured factual information that is materially relevant to the proponent's application of the Guidelines.

Findings

The department finds that:

- The Guidelines are the appropriate guidance document for the consideration of Brolga-related issues that may arise from the project proposal.
- The process outlined in the Guidelines has been systematically applied. Their application is a reasonable and practical response to the conditions at the project proposal site, and in this regard the process that has been applied is compliant with the risk based approach that forms the basis of the Guidelines.
- The conclusions drawn at each process step are conservative and robust, and the field and modelling investigations to support them are proportionate to the level of risk (including uncertainty), and provide for a high level of confidence in the proposed layout.
- The iterative change in turbine layout design leading to Layout 09, as the primary risk control, has reduced the residual risk to a level that is as low as reasonably practicable.
- The independent expert finding on impact of the residual risk on the Brolga population is *small apparent decreases in risk in the presence of the wind farm are due to random variation arising from stochastic simulations*. (Noting the editorial error in referring to Layout LO8 as the layout modelled and that the results would be equally applicable to L09.)
- The level of residual risk achieved is therefore inherently low and acceptable for considering offsets to achieve the outcome of zero net impact.
- The power line related risk is of an order of magnitude lower than that arising from the turbine layout, noting that the buffer-concept used in the Guidelines does not apply to power lines.
- The preference to offset the power line related risk, rather than mitigation, is appropriate because of the inherent uncertainty in the performance that would be achieved by marking the power line relative to the cost to mitigate this very low risk.

- Should mitigation be contemplated, the cost should be monetised and directed to ongound actions that provide offsets for the wind farm's operating life and potentially beyond.
- Given the low level of residual risk from the proposal (turbines and power line) requiring offsetting, the offset arrangements are capable of practical application and would achieve the outcome of zero net impact.
- The confidence that this will be achieved in practice is high.

Given the above, the department has no concerns with the 'site specific' buffers proposed and used to determine Layout L09. In this regard it considers the buffers 'fit for purpose'.

Alternate layout

The proponent has presented an alternate layout. The alternate layout affects an area in which 16 turbines are located in the south west corner of the farm. Within this area, eight turbines would be removed and eight relocated.

The department finds that:

- The change in the modelled levels of collision risk is of no material ecological consequence for Brolga.
- Given the department has no concerns with the 'site specific' buffers proposed and used to inform Layout L09, it has no concerns with the alternate layout.
- For the outcome, Brolga protection, the cost of the interventions proposed in the alternate layout are not proportionate to the level of risk to Brolga.
- Given there is no material benefit for Brolga protection from the alternate design, the department has no preference for the alternate layout over Layout L09.
- Irrespective of the alternate layout proposal, the high level of confidence that a zero net impact will be achieved with Layout L09 remains.

BROLGA POPULATION ESTIMATES

- Various estimates have been provided to the Inquiry on the size of the Brolga population in south west Victoria. Population estimates range from a high of 907 in 2013, but other figures provided to the Inquiry indicate Brolga counts of between 400 and 500 in recent years. It is not clear whether the population estimates are compatible due to different counting methodologies and whether the estimates relate to the Victorian population (excluding South Australia) or to the population in south west Victoria. Can you please advise what is the DELWP advice on the size of the Brolga population in south west Victoria.

Response

The department has considered Brolga-related information that included but was not limited to:

- BLA 2014 *Dundonnell Windfarm Brolga Assessment*.
- BLA 2015 *Dundonnell Wind farm Additional Brolga Assessment June 2014 to August 2015*.
- BLA 2015 Dundonnell Windfarm – Response to Verbal and Email Submissions
- Brett Lane 2015 Expert *Witness Statement of Brett Lane*, inclusive of Appendices.

- Sheldon 2004 *Characterisation and modelling of brolga* (grus rubicundus) *flocking habitat in south-western Victoria: relationships between habitat characteristics, brolga abundance and flocking duration.*

Findings

The department finds that:

- The stronghold for the Brolga population is northern Australia.
- The southeast Australian population is at the margins of the Australian stronghold. In Victoria, the species is listed under the *Flora and Fauna Guarantee Act 1998.*
- The population as a whole is not at risk.
- In the public discourse various counts collected by the department and its antecedent organisations are cited as annual estimates of the south western Victoria and eastern South Australian population.
- These citations are often in the absence of context that would describe the survey purpose, survey intensity, survey area, confidence limits, quality assurance/control standards and actual and antecedent environmental conditions.
- The absence of context has routinely led to misplaced debate about the implications of these counts, including year to year variation.
- The surveys from 2003/04 and 2013 are the most relevant in terms of a comprehensive and simultaneous survey methodology that could inform an estimate of the south eastern Australian population.
- The focus of recent surveys is to assess specie's reproductive status by measuring annual breeding success. This is consistent with population monitoring methods adopted by the department for other threatened long lived nomadic birds in Victoria.
- Annual relative population size counts are not made due to the limitations and logistical difficulties in making accurate counts. For these reasons the annual count results are not comparable for the purpose of estimating the south eastern Australian population or to infer year to year variations in this population. Consequently, it is not meaningful to pictorially represent every annual count to infer from it trends in the south eastern Australian population.
- For the purpose of assessing this proposal, the most relevant Brolga population estimate is that required to sustain south eastern Australian population in the long term.
- The independent expert population viability analysis modelling by McCarthy provides reference population estimates as a basis for determining the effect of the proposed windfarm. The department accepts these estimates.
- McCarthy found that the *small apparent decreases in risk in the presence of the wind farm are due to random variation arising from stochastic simulations*. (Noting the editorial error in referring to Layout LO8 as the layout modelled and that the results would be equally applicable to L09.)
- In essence the effect of the proposal is less than the inherent variation in the modelled population that follows for example wet and dry periods and, would not by itself prejudice the population's viability.
- The proponent's adoption of a conservative estimate of the number of Brolga to be offset – which represents an inherently low level of incremental risk to the population – is

acceptable and the evidence and reasoning provides a high level of confidence that this finding is sound.

CUMULATIVE EFFECTS

Q. *Is DELWP actively monitoring the population ecology of native bird and bat species that are being killed at wind farms, and if so, is there any cause for concern for particular species.*

Response

As set out in the Guidelines, the department's preference is for the proponent to design-out risk, through attention to turbine design and layout, as the primary control for protecting threatened species. Residual risks are to be offset to achieve a zero net impact.

The department's view is that for Brolga there is no cumulative effect from this project proposal, when considered in combination with other wind energy facilities. Consequently the priority is 'process monitoring' during windfarm construction, which assures that the approved turbines are constructed at the approved locations.

The requirement for either 'process' and/or 'environmental' monitoring is set through approval regimes administered by local government pursuant to the *Planning and Environment Act 1987*. It is these approvals that establish the proponent's accountability for compliance within the relevant local government area.

For these reasons the department has not sought to both actively and independently monitor bird mortality at windfarms.

CONSOLIDATED DATA

Q. *Whether DELWP can provide consolidated data, by wind farm, on bird and bat mortality from operational wind farms in Victoria.*

Response

Wind farm mortality data is collected by individual wind farm operators in accordance with approvals and associated conditions for each windfarm pursuant to the *Planning and Environment Act 1987*. The detailed monitoring specifications and resulting monitoring data varies from wind farm to windfarm.

For this reason the department does not hold systematically consolidated data on bird and bat mortality from operational windfarms in Victoria.

Appendix E Recommended permit conditions

DRAFT PLANNING PERMIT CONDITIONS

PLANNING PERMIT 2015/23858

DUNDONNELL WIND ENERGY FACILITY

WHAT THE PERMIT ALLOWS:

Use and development of land for a Wind Energy Facility and associated buildings and works, business identification signage, removal of native vegetation and alteration of access to a road in a Road Zone – Category 1.

THE FOLLOWING CONDITIONS APPLY TO THIS PERMIT:

DEVELOPMENT PLANS

1. Before the development starts, development plans must be prepared to the satisfaction of the responsible authority. When approved, the plans will be endorsed by the responsible authority and will then form part of this permit. The plans must be fully dimensioned, drawn to scale and three copies must be provided to the responsible authority. The plans must be generally in accordance with the *'Dundonnell Wind Farm EES Exhibition Drawings, April 2015* but modified (where required) to show:

    a. adjustments to the layout generally in accordance with Figure 2-3 Indicative Alternate Site Layout Plan dated 24 September 2015;

    b. the deletion of turbines T073, T081 and T084;

    c. the deletion of turbines in the north west corner of the site to provide an appropriate turbine free buffer to Brolga breeding wetland 117;

    d. the location, layout and dimensions of all on-site buildings and works including all turbines, access tracks, power cable routes, any temporary concrete batching plant, the substation, the switchyard, any designated car parking areas, and ancillary works such as construction compounds, fire-fighting infrastructure and water tanks, as well as off-site road works and areas where native vegetation is to be removed;

    e. in relation to the turbines:

        i details of the model and capacity of the turbines to be installed;

        ii elevations and dimensions of the turbines, including overall maximum height of turbines to the tip of the rotor blade when vertical, and base diameter at ground level, including towers and their bases;

        iii materials and finishes of the turbines;

        iv global positioning system coordinates using WGS84 datum for the centre of each turbine;

        v distance of each turbine from:

            - each non-participant dwelling that existed on 21 April 2015 within 1 km of the turbine measured from the closest point of the closest turbine to the closest point of the dwelling; and

            - the nearest boundary of the wind energy facility site;

    f. in relation to other buildings and works:

        i. locations, elevations and dimensions of the buildings and works; and

        ii. materials and finishes of the buildings and works;

    g. the location, size, type and intensity of any lighting (including aviation safety lighting), including any directional screening or baffling of lighting;

    h. any directional or business identification signage and any required safety signage; and

i. any staging of the development.

2. Despite any other condition of this permit, no plans will be endorsed by the responsible authority, and no variation to the endorsed plans will be approved by the responsible authority, which allow a turbine to be located within 1 kilometre of an existing dwelling (measured from closest point of the turbine to closest point of the dwelling) unless evidence has been provided to the satisfaction of the responsible authority that the owner of the dwelling has consented in writing to the location of the turbine.

LAYOUT NOT TO BE ALTERED WITHOUT CONSENT

3. Except as permitted under condition 5, and subject to condition 4, the use and development as shown on the endorsed plans must not be altered or modified without the written consent of the responsible authority.

4. The responsible authority will not consent to an alteration or modification of the use and development as shown on the endorsed plans under condition 3 unless the responsible authority is satisfied that the alteration or modification will not give rise to a material adverse change to assessed landscape, geoscience, vegetation, fauna, cultural heritage, visual amenity, shadow flicker, noise, fire risk or aviation impacts.

   Any application for the consent of the responsible authority for an alteration or modification to the endorsed plans under condition 3 must be accompanied by supporting material addressing the matters referred to in this condition, to the satisfaction of the responsible authority.

MICRO-SITING OF TURBINES

5. Micro-siting of turbines (as defined in this condition) is permitted without the need for consent under condition 3 provided that:

   a. the developer of the wind energy facility has written advice from appropriately qualified experts that the alteration or modification will not result in material adverse change in landscape, geoscience, vegetation, fauna, cultural heritage, visual, shadow or noise impacts compared to the endorsed plans;

   b. No turbine located more than a kilometre from a dwelling is moved to within 1 km of a dwelling that existed on 21 April 2015 and which was not the subject of written consent of the owner as at that date, unless evidence has been provided to the satisfaction of the responsible authority that the owner of the dwelling has consented in writing to the location of the turbine;

   c. The micro-siting does not result in the removal of any additional native vegetation, unless that removal has been authorised by a planning permit; and

   d. The microsited turbine is within the approved locations for development under a Cultural Heritage Management Plan approved under the *Aboriginal Heritage Act 2006.*

   e. The micro-siting does not move a turbine (including rotors) any closer to a Brolga turbine free buffer than shown on the endorsed plans.

   The measurement of any distance between a dwelling and a turbine must be from the closest point of the turbine to the closest point of the dwelling.

   For the purpose of this condition, 'micro-siting of turbines' means:

   a. an alteration to the siting of a turbine by not more than 100 metres; and

   b. any consequential changes to access tracks and internal power cable routes.

   Plans and global positioning system coordinates of the relocated turbines and copies of the advice referred to in condition 5(a) must be provided to the responsible authority.

SPECIFICATIONS

6. The wind energy facility must meet the following requirements, unless varied by the written consent of the responsible authority:

   a. the wind energy facility must comprise no more than 85 turbines (NUMBER TO BE CONFIRMED SUBJECT TO WETLAND 117 BUFFER BEING DEFINED);

   b. the overall maximum height of the turbines (to the tip of the rotor blade when vertical) must not exceed 165 metres above natural ground level;

   c. the lowest point of the swept path of a turbine blade must not be less than 47 metres above ground level at the turbine base;

   d. turbines must be mounted on a tubular tower;

   e. each turbine is to have not more than three rotor blades;

   f. the transformer associated with each wind turbine must be located beside each tower, or enclosed within the tower structure;

   g. the turbines must be finished in a low-reflectivity material;

   h. blades must be finished with a surface treatment of low reflectivity to minimise glint;

   i. the colours and finishes of all other buildings and works must be non- reflective such as to minimise the impact of the development on landscape to the satisfaction of the responsible authority; and

   j. no more than four permanent wind monitoring masts (including anemometers) can be erected on site.

LANDSCAPING

On-site landscaping plan

7. Before the development starts, on-site landscaping plans must be prepared for the onsite substation switchyard and permanent maintenance facility to the satisfaction of the responsible authority. The plans must be fully dimensioned, drawn to scale and three copies must be provided. When approved, the plans will be endorsed by the responsible authority and will then form part of this permit.

   The on-site landscaping plans must include:

   a. landscaping to screen the onsite substation switchyard and permanent maintenance facility;

   b. details of plant species proposed to be used in the landscaping, including height and spread at maturity;

   c. a timetable for implementation of all on-site landscaping works; and

   d. a maintenance and monitoring program to ensure the ongoing health of the landscaping.

8. The landscaping as shown on the endorsed on-site landscaping plan must be completed in accordance with the implementation timetable, and monitored and maintained, all to the satisfaction of the responsible authority.

Off-site landscaping program and plan

9. Within six months after the date of endorsement of the development plans under condition 1, an off-site landscape program must be prepared by the permit holder and submitted for endorsement by the responsible authority.

   Once endorsed, the off-site landscape program must be completed to the satisfaction of the responsible authority.

10. The off-site landscaping program must have the objective of reducing the visual impact of turbines from all non-participant dwellings within 4km of a turbine, and must provide:

    a. details of all dwellings located within 4 kilometres of a turbine;

b. a methodology to ascertain the extent of landscaping to be offered to dwelling owners which relates to the visibility of turbines from their dwellings;

c. details of typical plant types, including height and spread at maturity, and maturity of stock at planting stage;

d. a method for calculating the cost of undertaking and maintaining the off-site landscaping for two years, and arrangements for alternative arrangements if landowners wish to source their own plants and do their own landscaping;

e. the method used and number of attempts to make offers for off-site landscaping to landholders;

f. the time limit that offers are subject to; and

g. details of how evidence of offers to landscape dwellings under this condition are to be recorded, to ensure records can be provided to demonstrate the condition has been discharged.

The permit holder must make progress reports on the off-site landscaping program available on request by the responsible authority.

NOISE

Performance requirement

11. Subject to condition 12, the operation of the wind energy facility must not result in wind farm sound levels that exceed the relevant base noise limit described below when measured in accordance with New Zealand Standard 6808:2010, Acoustics – Wind Farm Noise (**the Standard**):

    a. 40dB LA90(10 min) at 'noise sensitive locations' (as defined in the Standard); or

    b. any higher base noise limit that the wind farm operator and dwelling owner agree applies to a particular dwelling. This agreement must be in a form that runs with the land for the life of the wind energy facility.

    Where the background sound level plus 5dB is greater than the relevant base noise limit, the noise limit will be the background sound level LA90 (10 min) plus 5dB.

12. Where special audible characteristics, including tonality, impulsive sound or enhanced amplitude modulation occur, as assessed in accordance with Appendix B of the Standard, the noise limit will be modified by applying a penalty of up to + 6 dB LA90 in accordance with Section 5.4 of the Standard.

Noise compliance assessment

Pre-construction assessment

13. Before development of the wind energy facility commences, a pre-construction noise assessment, including a tonal audibility assessment, must be undertaken to reflect the final turbine layout and turbine model chosen. The pre-construction noise assessment shall be prepared by a suitably qualified and experienced independent acoustic engineer to demonstrate the wind energy facility will comply with the relevant noise limits specified in condition 11, and must be to the satisfaction of the responsible authority. All compliance reports must be publically available on the project website.

Post-construction assessment

14. Before the wind energy facility starts operating, a noise compliance testing plan shall be prepared by a suitably qualified and experienced independent acoustic engineer which sets out the methodology used to demonstrate compliance with the relevant noise limit specified in condition 11. The noise compliance testing plan must be submitted to and be to the satisfaction of the responsible authority and must also:

    a. demonstrate that noise assessment positions have been located according to the Standard, and show the location of the noise assessment positions on a map. Alternative noise assessment positions should also be included in case a noise assessment position on private land become inaccessible.

b. require noise monitoring in accordance with the Standard for the purpose of preparing the compliance reports required by this condition.

c. if the wind energy facility is developed in stages, require a noise compliance investigation to be carried out and reported to the responsible authority by no later than six months after completion of each stage of the wind energy facility.

d. require a post-construction noise compliance investigation to be carried out and reported to the responsible authority within 6 months from the commissioning of the wind energy facility, and then repeated 12 months later.

e. in the event on non-compliance with the Standard include a noise non-compliance action plan which shall be prepared and implemented to the satisfaction of the responsible authority including actions to make the wind energy facility compliant.

f. include a report from an environmental auditor accredited under the Environment Protection Act 1970 with their opinion on the methodology and results contained in the noise compliance testing plan.

15. The noise compliance testing plan must be carried out to the satisfaction of the responsible authority and the plan and all results made publicly available on the project website.

Noise complaints evaluation

16. Before the wind energy facility starts operating, a noise complaints evaluation plan must be prepared to the satisfaction of the responsible authority capable of demonstrating whether a complaint can be attributed to a breach of the relevant performance requirement in condition 11. The plan must be prepared in accordance with the following requirements:

    a. unless compliance with the relevant performance requirements in condition 11 has been demonstrated at the complainant's property within the previous twelve months, set out the process for evaluating the complaint including circumstances in which noise monitoring must be undertaken at that property using the same methodology as described in the noise compliance testing plan.

    b. if a potential non-compliance with the relevant performance requirement in condition 11 is detected, an assessment report must be prepared by a suitably qualified and experienced independent acoustic engineer to:

        i. identify the weather or operational conditions associated with the complaint;

        ii. analyse the uncertainty and confidence levels in the monitoring, and the steps taken to reduce uncertainty;

        iii. target assessment to identify the cause and remediation actions;

        iv. implement the remediation actions; and

        v. submit a remediation plan to the satisfaction of the responsible authority outlining the investigation process, complainant communications, actions undertaken and timelines to resolve the potential non-compliance.

Noise complaint response plan

17. Before the first turbine is commissioned, the permit holder must prepare a noise complaint response plan to the satisfaction of the responsible authority.

    The plan must include:

    a. a process of investigation to resolve a complaint;

    b. a requirement that all complaints will be recorded in an incidents register;

    c. how contact details will be communicated to the public;

    d. a toll free telephone number and email contact for complaints and queries;

    e. a table outlining complaint information to be recorded for each complaint received, including:

        i. the complainant's name;

ii. any applicable property reference number if connected to a background testing location;

iii. the complainant's address;

iv. a receipt number for each complaint which is to be communicated to the complainant;

v. the time, prevailing weather conditions and description of the complainant's concerns including the potential incidence of special audible characteristics; and

vi. the processes of investigation to resolve the complaint.

A report including a reference map of complaint locations, and outlining complaints, investigation and remediation actions is to be provided quarterly to the responsible authority.

The register and complaints response process shall continue for the duration of the operation of the wind energy facility and must be made available to the responsible authority on request.

The owner of the wind energy facility must implement and comply with the noise complaint response plan for the duration of the operation of the wind energy facility.

BLADE SHADOW FLICKER

Performance requirement

18. Shadow flicker from the wind energy facility must not exceed 30 hours per annum at any dwelling existing at 21 April 2015.

    This condition does not apply if the operator of the wind energy facility has entered into an agreement with a landowner under which the landowner acknowledges and accepts that shadow flicker may exceed 30 hours per annum at the landowner's dwelling. Evidence of the agreement must be provided to the satisfaction of the responsible authority, and must be in a form that runs with the land for the life of the wind energy facility.

Blade shadow flicker complaint evaluation and response plan

19. Before the first turbine is commissioned, the operator of the wind energy facility must prepare a detailed shadow flicker complaint evaluation and response plan, to the satisfaction of the responsible authority.

    The plan must include the following elements:

    a. a toll free complaint telephone service;

    b. a sign on site advising of the complaints telephone number;

    c. a measure setting out the circumstances in which a complaint made to either the operator of the wind energy facility or the responsible authority triggers a requirement for an investigation; and

    d. procedures for assessing any alleged non-compliance with condition 20.

20. The operator of the wind energy facility must implement and comply with the approved shadow flicker complaint evaluation and response plan to the satisfaction of the responsible authority.

TELEVISION AND RADIO RECEPTION AND INTERFERENCE

21. Before the commencement of construction of the wind energy facility, a pre-construction survey must be carried out to determine television and radio reception strength in the area within 5 km of turbines closest to the site boundary in all directions and in which dwellings were located as at 21 April 2015 to the satisfaction of the responsible authority.

    The pre-construction survey must include testing at selected locations to enable the average television and radio reception strength in the area within 5 km of the turbines to be determined. The specific locations of testing will be determined by an independent television and radio monitoring specialist, to the satisfaction of the responsible authority.

22. If, following commencement of the operation of the wind energy facility, a complaint is received regarding the wind energy facility having an adverse effect on television or radio reception at any dwelling within 5 km of the turbines which existed at 21 April 2015, a post-construction survey must be carried out at the dwelling.

23. If the post-construction survey establishes any increase in interference to reception as a result of the wind energy facility, the operator of the wind energy facility must undertake measures to mitigate the interference and return the affected reception to pre-construction quality to the satisfaction of the responsible authority.

ACCESS TRACKS

24. Access tracks within the site must be sited and designed to minimise impacts on overland flows, soil erosion, the landscape value of the site, environmentally sensitive areas and, where appropriate, the farming activities on the site to the satisfaction of the responsible authority.

25. Access tracks must be surfaced in a manner which does not unduly contrast with the surrounding landscape.

LIGHTING INCLUDING AVIATION OBSTACLE LIGHTING

26. External lighting of infrastructure associated with the wind energy facility is not permitted other than:

    a. low-level, low-intensity security lighting;

    b. aviation obstacle lighting in accordance with condition 27;

    c. lighting necessary for construction purposes; and

    d. lighting necessary in the case of an emergency or for operational call-outs at reasonable times,

    each of which must be to the satisfaction of the responsible authority.

27. Any aviation obstacle lighting must meet the following requirements:

    a. for each lit turbine, the lighting must consist of a pair of lights mounted above the nacelle so that at least one light is visible from an aircraft approaching from any direction;

    b. each light must be steady red low intensity lighting as recommended by CASA;

    c. each light must be shielded so as to restrict the vertical spread of light to not more than 3.0 degrees and light spread below the horizontal to not more than 1.0 degree; and

    d. the lights are to switch on and off during ambient lighting conditions as recommended by CASA.

28. Before the wind energy facility is commissioned, a lighting maintenance plan must be prepared to the satisfaction of the responsible authority. When approved, the lighting maintenance plan will be endorsed by the responsible authority and will then form part of this permit. The operator of the wind energy facility must implement and comply with the endorsed lighting maintenance plan.

AVIATION SAFETY CLEARANCES

29. Within 30 days of the endorsement of plans under condition 1, copies of the development plans endorsed under condition 1 must be provided to the following entities, to enable details of the wind energy facility to be shown on aeronautical charts of the area:

    a. CASA;

    b. the Department of Defence (RAAF Aeronautical Information Service);

    c. Airservices Australia;

    d. any aerodrome operator within 15 km of the outside property boundaries of the site;

    e. the Aerial Agriculture Association of Australia;

    f. any organisation responsible for providing air ambulance services in the area; and

    g. CFA Air Services Unit.

TRAFFIC MANAGEMENT

Engineering specifications

30. Prior to the commencement of development of the wind energy facility, engineering plans for all road works required by this condition must be submitted to the Moyne Shire Council for approval. The engineering plans must be designed to Australian Standards and in accordance with VicRoads guidelines and include:

    a. the location and detailed design of the connection between the internal access tracks and the public roads;

    b. a demonstration that safe sight distances, turning movements, and the avoidance of traffic conflicts at the intersection of internal roads and public roads will be achieved to the satisfaction of Moyne Shire Council and VicRoads;

    c. following constructed to a 6.2m wide seal, with 0.5m gravel shoulders on either side, for a total width of 7.2m at:

        i. Woorndoo-Streatham Road between Woorndoo-Dundonnell Road and the entrance track to the wind energy facility site and all associated intersections (a distance of about 8.3km); and

        ii. Woorndoo-Dundonnell Road between Mortlake-Ararat Road and Woorndoo-Streatham Road and all associated intersections (a distance of about 80m),except in locations where this would require the removal of native vegetation, or as otherwise approved in writing by the responsible authority. In such locations, the plan must identify narrower pavement and/or shoulder widths.

        The plans required under this condition must include cross sections showing their formation, depth, drainage and surface levels to the satisfaction of the Moyne Shire Council. Any variation to the width of the road widening to avoid native vegetation must be indicated on the plans.

31. Pre-construction works shown on the plan(s) must be undertaken, completed and assessed by the Independent Road Quality Auditor to the satisfaction of Moyne Shire Council.

TRAFFIC MANAGEMENT PLAN

32. At least eight weeks before construction of the road upgrades referred to in condition 30 commences (unless a shorter time frame is agree by Moyne Shire Council), a traffic management plan must be prepared to the satisfaction of, and endorsed by, Moyne Shire Council and VicRoads. The traffic management plan is to be prepared in consultation with the Rural City of Ararat if local roads within that municipality are proposed to be used for wind farm construction access. The traffic management plan must be complied with, unless varied by the written consent of Moyne Shire Council and VicRoads.

33. The traffic management plan must include:

    a. the scope of the expertise, duties and role of the nominated Road Quality Auditor engaged under condition 35, including inspection frequency and reporting requirements;

    b. the number and type of anticipated vehicle movements and the time of day when local roads will be used;

    c. the nominated routes for traffic accessing and departing the wind energy facility site. The plan should also identify the routes proposed to be utilised to construct the transmission line and off-site substation;

    d. an existing conditions survey (including testing of road base) of public roads that may be used in connection with the wind energy facility (for access, pre-construction or construction purposes), including details of the suitability, design, condition and construction standard of the relevant public roads;

    e. the designation of all vehicle access points to the wind energy facility site from surrounding roads. Vehicle access points must be designed and located to ensure safe sight distances, turning movements, and avoid potential through traffic conflicts;

f. the designation of appropriate pre-construction, construction and transport vehicle routes to and from the to the wind energy facility site, including designation of transport vehicle routes being used to establish the on-site quarries;

g. engineering plans demonstrating whether, and if so how, truck movements to and from the wind energy facility site can be accommodated on sealed roadways and turned without encroaching onto the incorrect side of the road;

h. provision of designated areas for loading zones;

i. measures to be undertaken to record traffic volumes on the nominated road network during the construction of the wind energy facility;

j. recommendations regarding the need for road and intersection upgrades to accommodate any additional traffic or site access requirements (whether temporary or ongoing), beyond those already required by condition 30. Such recommendations will be informed by Council's policy of requiring road upgrades when there is greater than 150 vehicle movements per day, the duration of when those roads will be used, the type of vehicles and extent to which the existing road is impacted by construction vehicles. Where upgrades are required, the traffic management plan must include:

   i. detailed engineering plans showing the required works, including cross sections which show their formation, depth, drainage and surface levels to the satisfaction of the Moyne Shire Council; and

   ii. the timing of when the works are to be undertaken;

k. proposed measures to ensure workers enter and exit the wind energy facility site from the designated site entrance at Woorndoo-Streatham Road;

l. proposed measures to ensure construction vehicles are easily identifiable;

m. the designation of mitigation measures, including operating hours and speed limits for trucks on routes accessing the wind energy facility site which:

   i. provide for appropriate safety measures around school bus routes and school bus times where relevant; and

   ii. provide for resident safety;

n. proposed measures to manage traffic impacts associated with the ongoing operation of the wind energy facility on the traffic volumes and flows on surrounding roads; and

o. a program to rehabilitate existing public roads within agreed timeframes to the condition identified in the surveys carried out under condition 33(d) or to the condition to which the roads have been upgraded, whichever is relevant.

34. Where there is:

a. a significant increase in vehicle numbers, determined by the Road Quality Auditor, above the anticipated vehicle movements identified in the endorsed traffic management plan; or

b. any change to an endorsed vehicle route identified in the traffic management plan,

the traffic management plan must be updated to the satisfaction of Moyne Shire Council within 28 days of the event described in conditions 34(a) or 34(b).

Road Quality Auditor

35. Prior to endorsement of the traffic management plan, the permit holder must submit to the Moyne Shire Council for approval the identity of a suitably qualified engineer, independent of the proponent's traffic adviser who will undertake the duties of the Road Quality Auditor identified in the traffic management plan.

Once approved, the developer of the wind energy facility must engage, at its cost, the approved Road Quality Auditor to fulfil the requirements of the Road Quality Auditor as defined in the traffic management plan.

36. Council may require at any time the appointment of an alternate proposed Road Quality Auditor within 21 days of making a written request to the wind energy facility developer, if the appointed

Road Quality Auditor is unable to maintain independence or is unable to meet project timelines to the Moyne Shire Council's satisfaction. The alternate auditor must, if approved, be appointed by the wind energy facility developer to undertake the duties identified under the traffic management plan.

37. Prior to endorsement of the traffic management plan, the terms of reference for the Road Quality Auditor must be endorsed by Moyne Shire Council, including but not limited to:

    a. a program of regular inspections to be carried out during the construction of the wind energy facility to identify maintenance works necessary as a result of construction traffic;

    b. frequency of inspections;

    c. frequency of reporting to the wind energy facility developer, Moyne Shire Council and VicRoads;

    d. standards to which all agreed local roads are constructed;

    e. ongoing maintenance and repair regime during construction of the wind turbine generators;

    f. procedures for corrective works resulting from non-compliance; and

    g. penalties for non-compliance.

38. Before substantive construction of the wind energy facility commences, construction of all local road upgrades required by this permit must be certified by the Road Quality Auditor as satisfying the requirements of the traffic management plan and the relevant conditions of this permit, to the satisfaction of the Moyne Shire Council, unless otherwise approved in writing by Moyne Shire Council.

Traffic management and road upgrade and maintenance works

39. The traffic management and road upgrade and maintenance works identified in the endorsed traffic management plan must be carried out in accordance with the endorsed traffic management plan to the satisfaction of the Moyne Shire Council.

ENVIRONMENTAL MANAGEMENT PLAN

General requirement for an environmental management plan

40. Before the development starts, an environmental management plan must be prepared, to the satisfaction of the responsible authority. When approved, the environmental management plan will be endorsed by the responsible authority and will then form part of this permit.

    The environmental management plan:

    a. must be generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015);

    b. must be prepared in consultation with the agencies specified in conditions 44, 46, 48, and 49 or any other agency as directed by the responsible authority;

    c. may be prepared in sections or stages;

    d. must be in accordance with all relevant EPA requirements and guidelines;

    e. must provide for the presence on-site of a suitably qualified ecologist(s) when construction work is occurring in areas of defined environmental sensitivity; and

    f. must meet the requirements of conditions 42 to 52 below.

41. The use and development must be carried out in accordance with the endorsed environmental management plan, to the satisfaction of the responsible authority.

Construction and work site management plan

42. The environmental management plan must include a construction and work site management plan.

    The construction and work site management plan must include:

a. the identification of fuels, other hazardous materials and all other potential contaminants stored or used on site during the construction phase of the wind energy facility, and appropriate storage, construction and operational methods to control any identified contamination risks;

b. procedures for managing potential spills and leaks and pollution incidents, including incorporation of appropriate pollution control measures outlined in EPA Publication 480 Environmental Guidelines for Major Construction Sites (February 1996);

c. procedures to suppress dust emissions from construction-related activities. Appropriate measures may include water spraying of roads and stockpiles, stabilising surfaces, temporary screening and wind fences, modifying construction activities during periods of heightened winds and revegetating exposed areas as soon as practicable;

d. procedures for managing noise emissions from construction-related activities;

e. criteria for the siting of any temporary concrete batching plant associated with the development of the wind energy facility and the procedure for its removal and reinstatement of the site once its use finishes. The establishment and operation of any temporary concrete batching plant must be designed and operated in accordance with EPA Publication 628 Environmental Guidelines for the Concrete Batching Industry (June 1998) and taking into account the location of key stony rise areas, as well as the springs and wetlands on the site;

f. appropriate sanitary facilities to be provided for construction and maintenance staff, which must be designed and operated in accordance with EPA Publication 891.3 Code of Practice – Onsite wastewater management (February 2013);

g. the identification of waste re-use, recycling and disposal procedures;

h. a timetable, where practicable, for the construction of turbine bases, access tracks and power cabling during warmer months, to minimise impacts on ephemeral wetlands, local fauna and sediment mobilisation;

i. procedures to ensure that construction vehicles and equipment use designated tracks and works areas to avoid impacts on native vegetation;

j. procedures for covering trenches and holes at night, and filling trenches as soon as practical after excavation, to protect native fauna;

k. the removal of works, buildings and staging areas on completion of the construction phase of the project; and

l. protocols for avoiding demolishing or altering historic dry stone walls, and where not possible procedures for replacing demolished sections with gates.

Construction Noise Management Plan

43. The environmental management plan must include a construction noise management plan.

The construction noise management plan must include:

a. performance requirements for noise at nearby receptors in accordance with EPA Publication 1254;

b. procedures for measuring compliance with performance requirements; and

c. procedures for receiving, evaluating and responding to complaints.

Sediment, erosion and water quality management plan

44. The environmental management plan must include a sediment, erosion and water quality management plan which must be prepared in consultation with the Glenelg Hopkins Catchment Management Authority prior to its submission to the responsible authority.

The sediment, erosion and water quality management plan must include:

a. identification of all construction and operational processes that could potentially lead to water contamination;

b. procedures to ensure that silt from batters, cut-off drains, table drains and road works is retained on the site during and after construction and replaced as soon as possible. To this end:

   i. all land disturbances must be confined to a minimum practical working area;

   ii. soil to be removed must be stockpiled and separate soil horizons must be retained in separate stockpiles and not mixed, and soil must be replaced as soon as possible in sequence; and

   iii. stockpiles must be located away from drainage lines;

c. the installation of geo-textile silt fences (with sedimentation basins where appropriate) on all drainage lines from the site which are likely to receive run-off from disturbed areas;

d. procedures to ensure that steep batters are treated in accordance with EPA Publication 275 Construction Techniques for Sediment Pollution Control (May 1991);

e. procedures for waste water discharge management;

f. a process for overland flow management to prevent the concentration and diversion of waters onto steep or erosion prone slopes;

g. pollution management measures for stored and stockpiled materials including waste materials, litter, contaminated run-off and any other potential source of pollution to ground or surface waters;

h. incorporation of appropriate pollution control measures outlined in EPA Publication 480 Environmental Guidelines for Major Construction Sites (May 1996);

i. a program and appropriate capacity for annual inspection and regular maintenance of any on-site wastewater management system;

j. procedures to manage dust from access tracks to prevent adverse impacts on the amenity of neighbouring residential properties;

k. a program of inspection and remediation of localised erosion within a specified response time; and

l. siting of all buildings, structures and access tracks to avoid location within 20 metres of designated waterways where possible and to take into consideration key stony rise areas as well as the springs and wetlands on the site.

Hydrocarbon and hazardous substances plan

45. The environmental management plan must include a hydrocarbon and hazardous substances plan.

    The hydrocarbon and hazardous substances plan must include:

    a. procedures for any on-site, permanent post-construction storage of fuels, lubricants, waste oil or other hazardous substances or potential contaminants to be in bunded areas; and

    b. contingency measures to ensure that any chemical or oil spills are contained on-site and cleaned up in accordance with EPA requirements.

Fire prevention and emergency response plan

46. The environmental management plan must include a fire prevention and emergency response plan prepared in consultation with and to the satisfaction of the CFA and DELWP. Consultation with the CFA must include consultation at the region and local level. The Moyne Shire Council must also be consulted in the preparation of the plan.

    The fire prevention and emergency response plan must be generally in accordance with the Emergency Management Guidelines for Wind Farms – Version 4, CFA February 2012, and must include:

    a. Consideration of weather based threshold criteria for brigade call out and use of aerial appliances;

    b. criteria for the provision of static water supply tanks solely for fire-fighting purposes, including minimum capacities, appropriate connections and signage;

c. procedures for vegetation management, fuel control and the provision of fire-fighting equipment during declared fire danger periods;

d. minimum standards for access roads and tracks to allow access for fire fighting vehicles, including criteria for access to static water supply tanks for fire-fighting vehicles;

e. a requirement that, within one month after the commencement of the operation of the wind energy facility, the operator of the wind energy facility facilitates a familiarisation visit to the site and explanation of emergency services procedures for:

   i. the CFA (including headquarters level, the CFA Regional Office and local volunteer brigades as specified by the CFA Regional Office);

   ii. Rural Ambulance Victoria;

   iii. Moyne Shire Council's Municipal Emergency Management Committee; and

   iv. Victoria Police;

f. subsequent familiarisation sessions for new personnel of the organisations referred to in condition 46(d) on a periodic basis as required;

g. if requested, training of personnel of the organisations referred to in condition 46(d) in relation to suppression of wind energy facility fires.

Blasting management plan

47. Where blasting is proposed by the wind energy facility developer, the environmental management plan must include a blasting management plan.

    The blasting management plan must include:

    a. name and qualification of the person responsible for blasting;

    b. a description of the location of where explosives will be used;

    c. a plan showing the location of every licensed bore on any property with a boundary within 1 km of the location of the blasting;

    d. identification and assessment of any potentially sensitive site within 1 km of the location of the blasting, including the procedure for pre-blast and post-blast qualitative measurement or monitoring of the effects of the blasting on such sites;

    e. the procedure for site clearance and post-blast re-occupation;

    f. the procedure for the storage and handling of explosives;

    g. a requirement that blasting only can occur after at least 48 hours prior written notification of the intention to undertake blasting has been given to the occupants of the properties which are located in whole or in part within 1 km of the location of the proposed blasting; and

    h. a requirement that blasting only be undertaken between the hours of 8am and 4pm.

Vegetation management plan

48. The environmental management plan must include a vegetation management plan to be prepared in consultation with DELWP – Regulation and Approvals and approved by the responsible authority.

    The vegetation management plan must include:

    a. identification of the siting and extent of native vegetation which is authorised by this permit to be removed;

    b. procedures for the rehabilitation of construction zones with appropriate pasture species or native grasses (if in areas of native vegetation);

    c. procedures for ensuring that native vegetation to be retained near wind energy facility infrastructure, including access tracks, will not be adversely affected by construction of the wind energy facility; and

d. protocols to prevent inadvertent loss or disturbance of habitat for the Striped Legless Lizard, the Fat-tailed Dunnart, the Growling Grass Frog, the Corangamite Water Skink and the Golden Sun Moth.

Biosecurity management plan

49. The environmental management plan must include a biosecurity management plan to be prepared in consultation with DEDJTR and to the satisfaction of the responsible authority.

    The biosecurity management plan must include:

    a. procedures to prevent biosecurity risks, which may include (but are not limited to):

        i. the cleaning of all plant and equipment before transport onto and off the site; and

        ii. the use of material/products on site which are free of invasive plants and animals;

    b. a protocol for effective identification of biosecurity risks, early intervention to manage biosecurity risks, ongoing monitoring of biosecurity risks, trace-backs, and integrated control measures when entry, establishment or spread of specific risk targets is identified;

    c. a requirement to comply with approved government or industry standards and procedures for the identification, prevention and management of biosecurity risks that apply from time to time, which include (but are not necessarily limited to):

        i. the DEDJTR's Invasive Plant and Animal Management Policy Framework (undated);

        ii. the DEDJTR's Biosecurity Guidelines for Movement of Equipment Contractors Between Farms (Note Number: AG1171 published in January 2005 and updated in July 2009; and

        iii. the DEDJTR's recommended standards and practices for managing viticulture biosecurity and plant biosecurity risks.

Environmental management plan training program

50. The environmental management plan must include a training program for construction workers and permanent employees or contractors at the wind energy facility site, including a site induction program relating to the range of issues addressed by the environmental management plan.

Environmental management plan reporting program

51. The environmental management plan must include a program for reporting environmental incidents, including:

    a. a register of environmental incidents, non-conformances and complaints, together with corrective actions taken in response to such incidents, non-conformances or complaints

    b. identification of the person to whom reports of environmental incidents, non-conformances and complaints should be made.

Implementation timetable

52. The environmental management plan must include a timetable for implementation of all programs and works referred to in conditions 41 to 51 above.

Review of the environmental management plan

53. The environmental management plan must be reviewed and if necessary amended in consultation with the responsible authority and other authorities as directed by the responsible authority every five years, to reflect operational experience and changes in environmental management standards and techniques.

    The amended environmental management plan must be submitted to the responsible authority for re-endorsement. Once re-endorsed, the amended environmental management plan will take the place of the earlier environmental management plan and will form part of this permit.

BAT AND AVIFAUNA

Bat and Avifauna Management Plan

54. Before the development starts, a bat and avifauna management plan (**BAM Plan**) must be prepared in consultation with DELWP – Regulation & Approvals to the satisfaction of the responsible authority. When approved, the plan will be endorsed by the responsible authority and will then form part of the permit. On endorsement, the endorsed BAM Plan must be placed on the project website for a minimum period of five years.

    The BAM Plan must include:

    a. a statement of the objectives and overall strategy for managing and mitigating any significant native bird and bat strike arising from the wind energy facility operations;

    b. a general bat and avifauna monitoring program (excluding Brolga) of at least five years duration that:

        i. commences on the commissioning of the last turbine of the first stage of the use and development approved by this permit or such other time approved by the responsible authority;

        ii. requires carcass searches using an acceptable sample of species to be undertaken to ascertain the species, number, age and sex (if possible), date and location of any bird or bat strike;

        iii. the number and species of birds and bats struck at lit versus unlit turbines;

        iv. any seasonal and yearly variation in the number of bird and bat strikes; and

        v. whether further detailed investigations of any potential impacts on native birds and bats are warranted. Any further detailed investigations required are to be undertaken in consultation with DELWP– Regulation & Approvals and to the satisfaction of the responsible authority;

    c. procedures for the reporting of any native bird and bat strikes to the responsible authority and to DELWP– Regulation & Approvals within seven days of becoming aware of any strike;

    d. information on the efficacy of searches for carcasses of birds and bats, and, where practicable, information on the rate of removal of carcases by scavengers, so that correction factors can be determined to enable calculations of the total number of mortalities;

    e. procedures for the regular removal of carcasses likely to attract raptors to areas near turbines;

    f. procedures for periodic reporting, within agreed timeframes, of the findings of the monitoring to the responsible authority, DELWP– Regulation & Approvals and public reporting via the project website; and

    g. procedures for developing measures, in consultation with DELWP– Regulation & Approvals and to the satisfaction of the responsible authority, to offset any impacts detected through the monitoring program, including:

        i. turbine operation management; and

        ii. taking into account the measures to be implemented in the Brolga compensation plan (described in condition 57 below).

55. Following the completion of the monitoring program referred to in condition 54, a report must be submitted to the responsible authority and DELWP– Regulation & Approvals setting out the findings of the program to the satisfaction of the responsible authority. After consideration of this report, the responsible authority may direct that further investigation of potential or actual impacts on native birds and bats is to be undertaken, in which case:

    a. the extent and details of the further investigation must be developed in consultation with DELWP – Regulation & Approval and to the satisfaction of the responsible authority;

    b. the investigation must be carried out to the satisfaction of the responsible authority; and

c. all reports and investigation results under this condition must be placed on the project website for a minimum period of five years.

56. The use and development of the wind energy facility must be carried out in accordance with the endorsed BAM Plan to the satisfaction of the responsible authority.

Brolga monitoring and compensation

57. Before the development starts:

a. a Brolga monitoring plan must be prepared in consultation with DELWP – Regulation & Approvals to the satisfaction of the responsible authority. When approved, the plan will be endorsed by the responsible authority and will then form part of the permit. On endorsement, the endorsed Brolga monitoring plan must be placed on the project website for a minimum period of five years. The plan must:

i. be implemented for the life of the wind energy facility, but otherwise be consistent with the requirements of condition 54;

ii. identify the location of potentially at risk Brolga breeding, migration and flocking activities;

iii. include recommendations in relation to a mortality rate for Brolga which would trigger the requirement for responsive mitigation measures to be undertaken by the operator of the wind energy facility, developed in consultation with DELWP – Regulation & Approvals to the satisfaction of the responsible authority;

b. a Brolga compensation plan must be prepared in consultation with DELWP – Regulation & Approvals to the satisfaction of the responsible authority. When approved, the plan will be endorsed by the responsible authority and will then form part of the permit. On endorsement the Brolga compensation plan must be placed on the project website for a minimum period of five years. The plan must include:

i. specification of accountabilities for plan implementation and monitoring;

ii. the locations of historical Brolga breeding wetlands that will be enhanced;

iii. evidence of landholder agreements to participate in the breeding site enhancement project for its duration that will run with the land for the life of the wind energy facility;

iv. methods of enhancement appropriate to each enhancement site such as restoration of the natural flooding regime and controlled grazing or stock removal;

v. where appropriate, a program of appropriate fox baiting leading up to each breeding season in areas subject to the plan;

vi. five-yearly performance targets for each site and the program as a whole, consistent with the outcomes of the Population Viability Assessment included in the Dundonnell Wind Farm EES (June 2015), the zero net impact objective (to be amended every five years depending on outcomes), and the data and recommendations in the Brolga monitoring plan referred to in condition 57(a); and

vii. monitoring and reporting requirements, including public reporting after 1 year, 2 years, 5 years, 10 years, 15 years, 20 years and 25 years from commencement of plan implementation approval, on whether the number of sites being managed and the way management is proceeding are expected to meet the 25-year zero net impact objective.

58. Before the development starts the operator of the wind energy facility must commence implementation of the Brolga monitoring plan and Brolga compensation plan and then implement it to the satisfaction of the responsible authority.

REFERRAL AUTHORITY CONDITIONS

DEPARTMENT OF ENVIRONMENT, LAND WATER AND PLANNING

FAUNA MANAGEMENT

59. Prior to commencement of construction, a fauna management plan must be prepared in consultation with DELWP and the responsible authority to the satisfaction of DELWP and the responsible authority. When approved the fauna management plan will be endorsed and will then form part of the permit. The fauna management plan must include:

    a. management and mitigation measures to address impacts to fauna utilising remnant native vegetation;

    b. management and mitigation measures to address other impacts to native fauna, including impacts to the Growling Grass Frog, Striped Legless Lizard, Fat-tailed Dunnart, Corangamite Water Skink and Golden Sun Moth; and

    c. salvage and translocation protocol for the Striped Legless Lizard and Fat-tailed Dunnart

    d. marking of meteorological mast guy lines within the turbine free buffer area in order to minimise Brolga collision.

VEGETATION REMOVAL AND OFFSETS

60. Before development starts, the permit holder must advise all persons undertaking the (vegetation removal/works) on site of all relevant conditions of this permit.

61. Before development starts, a plan to the satisfaction of the responsible authority identifying all native vegetation to be retained, and describing the measures to be used to protect the identified vegetation during construction, must be prepared in consultation with DELWP – Regulatory & Approvals and submitted to and approved by the responsible authority. When approved, the plan will be endorsed and will form part of this permit. All works constructed or carried out must be in accordance with the endorsed plan.

62. In order to offset the removal of 0.928 hectares of native vegetation approved as part of this permit, the wind energy facility developer must provide a native vegetation offset that:

    a. meets the requirements set out in conditions 64 and 65; and

    b. is in accordance with the *Permitted clearing of native vegetation – Biodiversity assessment guidelines* and the *Native vegetation gain scoring manual*,

    unless lesser offsets are approved by the responsible authority if it is satisfied that the extent of native vegetation removal following detailed design of the wind energy facility is less than described in this condition 63.

63. The general offset must:

    a. contribute a gain of 0.085 general biodiversity equivalence units;

    b. be located within the Glenelg Hopkins Catchment Management Authority boundary or Moyne municipal district; and

    c. have a strategic biodiversity score of at least 0.505.

64. The specific offset must contribute gain of 0.190 specific biodiversity equivalence units suitable habitat for Fragrant Leek Orchid determined by the habitat importance map for Fragrant Leek orchid.

65. Before any native vegetation is removed, evidence that an offset has been secured must be provided to the responsible authority. This offset must meet the offset requirements set out in this permit and be in accordance with the requirements of *Permitted clearing of native vegetation – Biodiversity assessment guidelines* and the *Native vegetation gain scoring manual*. Offset evidence can comprise either:

    a. a security agreement, to the required standard, for the offset site or sites including a 10-year offset management plan; or

    b. a credit register extract from the Native Vegetation Credit Register.

66. The wind energy facility developer must provide notification to the responsible authority of the management actions undertaken towards the implementation of the offset management plan one, two, five and 10 years after the responsible authority has approved the offset management plan. An offset site condition statement, including photographs, must be included in this notification.

SECURITY DEPOSIT/BOND

67. Before the development starts, the operator of the wind energy facility must provide one or more security deposits, bonds or bank guarantee to secure:

    a. the performance of any works required under condition 33(o);

    b. the maintenance of those works for a period of 12 months after the works are completed.

68. The nature of the security deposit(s), bond(s) or bank guarantee(s), and the terms on which they are provided, must be to the satisfaction of the responsible authority, and:

    a. the amount of the security deposit(s) or bond(s) or bank guarantee(s) must be calculated by reference to the value of the works to which the security deposit or bond relates and must cover 100% of the value of the works.

    b. the security deposit(s) or bond(s) or bank guarantee(s):

        i. must remain in place for a period of at least 12 months after the completion of the relevant works to which the security deposit or bond relates

        ii. may only be applied to any works, including maintenance and repair, to which the security deposit or bond relates that are not completed in accordance with the requirements of this permit

        iii. will be released at the completion of the maintenance period referred to in condition 33(o).

SITE SECURITY

69. The site, including access points, must be secured to the satisfaction of the responsible authority.

70. All electrical equipment, spare parts and other equipment and materials associated with the wind energy facility must be located in screened, locked storage areas that are inaccessible to the public, to the satisfaction of the responsible authority.

71. Public safety warning signs must be located on all towers, to the satisfaction of the responsible authority.

DECOMMISSIONING

72. Within six months after the construction of the wind energy facility is completed, the operator of the wind energy facility and the owners of the properties which make up the site must enter into an agreement with the responsible authority under section 173 of the Planning and Environment Act 1987.

    The agreement must require the operator of the wind energy facility to do the following where any or all turbines have permanently ceased to generate electricity:

    a. notify the responsible authority in writing of the turbine(s) ceasing operation. Such notification must be given no later than two months after the turbine(s) ceases operation;

    b. undertake the following to the satisfaction of the responsible authority, within such timeframe as may be specified by the responsible authority:

        i. remove all above ground non-operational equipment;

        ii. remove and clean up any residual contamination;

        iii. rehabilitate all storage areas, construction areas, access tracks and other areas affected by the decommissioning of the turbine(s), if those areas are not otherwise useful to the on-going use or decommissioning of the wind energy facility;

iv. submit a decommissioning traffic management plan to the same level of detailed as required by condition 33 to the satisfaction of VicRoads and Moyne Shire Council and, when approved, implement that plan; and

v. submit a post-decommissioning revegetation management plan, including a timetable of works, to the responsible authority and, when approved by the responsible authority, implement that plan.

73. An application must be made to the Registrar of Titles to register the section 173 agreement on the title to the land under section 181 of the Act within one month after the agreement is executed.

74. The operator of the wind energy facility must pay the reasonable costs of the preparation, execution, registration and enforcement of the section 173 agreement.

STAGING

75. The use and development authorised by this permit may be completed in stages as shown on the endorsed development plans. Any corresponding obligation arising under this permit (including the preparation and approval of plans) may be similarly completed in stages or parts, but only insofar as those obligations are relevant to the activities and the elements of the wind energy facility that are proposed to be used or developed in a stage or part.

PRELIMINARY INVESTIGATIVE WORKS

76. For the purposes of this permit, the carrying out of preliminary investigative works, including geotechnical investigations, for the purposes of gathering data or making other assessments necessary or desirable in order to prepare the development plans or other plans specified in this permit, is not considered to be commencement of the development.

EXPIRY

77. This permit will expire if one of the following circumstances applies:

    a. the development is not started within five years of the date of this permit; or

    b. the development is not completed within 10 years of the date of this permit.

78. The responsible authority may extend the permit if a request is made in writing:

    a. prior to the expiry of the permit; or

    b. within 6 months after the permit expires.

DRAFT PLANNING PERMIT CONDITIONS

MOYNE PLANNING SCHEME PLANNING PERMIT PL15/075

DUNDONNELL WIND ENERGY FACILITY – TRANSMISSION LINE

WHAT THE PERMIT ALLOWS:

Use and development of land for a utility installation (220,000 volt power lines) and removal of native vegetation.

THE FOLLOWING CONDITIONS APPLY TO THIS PERMIT:

Development plans

1. Before the development starts, development plans must be prepared to the satisfaction of the responsible authority. When approved, the plans will be endorsed by the responsible authority and will then form part of this permit. The plans must be fully dimensioned, drawn to scale and three copies must be provided. The plans must be generally in accordance with the plans *'Dundonnell Wind Farm EES Exhibition Drawings, April 2015* but modified to show:
    a. the locations, elevations and dimensions of the buildings and works;
    b. materials and finishes of the buildings and works;
    c. the specific locations of poles and how they have been sited to minimise impacts on Striped Legless Lizard and Golden Sun Moth habitat;
    d. alterations to the alignment west of the Hamilton Highway described as 'Proposed transmission line – revised layout' described on the plan called 'Proposed transmission line layout comparison' prepared by BL&A (Project 9184 dated 16 October 2015);
    e. alterations to the access track and alignment resulting from pre-construction surveys to avoid or minimise impacts on listed species, and particularly the population of Spiny Rice Flower in the road reserve north of Nine Mile Lane; and
    f. setbacks to property boundaries,
2. The use and development as shown on the endorsed plans must not be altered or modified without the written consent of the responsible authority.

Native vegetation

3. Before works start, the permit holder must advise all persons undertaking the (vegetation removal/works) on site of all relevant conditions of this permit.
4. Before works start, a plan to the satisfaction of the responsible authority identifying all native vegetation to be retained, and describing the measures to be used to protect the identified vegetation during construction, must be prepared and submitted to and approved by the responsible authority. When approved, the plan will be endorsed and will form part of this permit. All works constructed or carried out must be in accordance with the endorsed plan.
5. In order to offset the removal of 4.196 hectares of native vegetation and one scattered tree approved as part of this permit, the applicant must provide a native vegetation offset that meets the following requirements, and is in accordance with the *Permitted clearing of native vegetation – Biodiversity assessment guidelines* and the *Native vegetation gain scoring manual,* unless other offsets are approved by the responsible authority if it is satisfied that the extent of native vegetation removal following detailed design of the utility installation is less than described in this permit.

General offset

6. The general offset must:
    a. contribute gain of [0.418] general biodiversity equivalence units;
    b. be located within the Glenelg Hopkins Catchment Management Authority boundary or Moyne Shire; and
    c. have a strategic biodiversity score of at least [80 per cent of the strategic biodiversity score of the native vegetation approved for removal].

Specific offset

7. The specific offset or offsets must contribute gain of:
    a. 1.771 specific biodiversity equivalence units suitable habitat for Salt-lake Tussock Grass determined by the habitat importance map for Salt-lake Tussock Grass;
    b. 0.976 specific biodiversity equivalence units suitable habitat for Derrinallum Billy-buttons determined by the habitat importance map for Derrinallum Billy-buttons;
    c. 0.183 specific biodiversity equivalence units suitable habitat for Drunken Tussock-grass determined by the habitat importance map for Drunken Tussock-grass; and
    d. 2.055 specific biodiversity equivalence units suitable habitat for Corangamite Water Skink determined by the habitat importance map for Corangamite Water Skink.
8. Before any native vegetation is removed, evidence that an offset has been secured must be provided to the satisfaction of the responsible authority. This offset must meet the offset requirements set out in this permit and be in accordance with the requirements of *Permitted clearing of native vegetation – Biodiversity assessment guidelines and the Native vegetation gain scoring manual*. Offset evidence can be either:
    a. A security agreement, to the required standard, for the offset site or sites including a 10- year offset management plan; or
    b. A credit register extract from the Native Vegetation Credit Register.

Brolga

9. Marking of the wires of the sections of the powerline within 3 km of known breeding sites in order to minimise Brolga collision with powerlines must be undertaken to the satisfaction of the responsible authority.

Environmental Management Plan

10. Before the development starts, an environmental management plan must be prepared, to the satisfaction of the responsible authority. When approved, the environmental management plan will be endorsed by the responsible authority and will then form part of this permit. The environmental management plan must:
    a. be generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015) and prepared in consultation with Moyne Shire Council and other agencies as directed by the responsible authority;
    b. may be prepared in sections or stages;
    c. must provide for the presence on-site of a suitably qualified ecologist(s) when construction work is occurring in areas of defined environmental sensitivity; and
    d. must be in accordance with all relevant EPA requirements and guidelines.
11. The use and development must be carried out in accordance with the endorsed environmental management plan, to the satisfaction of the responsible authority.

Decommissioning

12. When the use of the transmission line ceases, the following must be undertaken to the satisfaction of, and within such timeframe as may be specified by, the responsible authority:

a. remove all above ground non-operational equipment;

b. remove and clean up any residual contamination;

c. rehabilitate all storage areas, construction areas, access tracks and other areas affected by the decommissioning of the poles, if those areas are not otherwise useful to the on-going use or decommissioning of the transmission line;

d. submit a decommissioning traffic management plan to the responsible authority and, when approved by the Responsible Authority, implement that plan; and

e. submit a post-decommissioning revegetation management plan, including a timetable of works, to the responsible authority and, when approved by the responsible authority, implement that plan.

Preliminary Investigative Works

13. For the purposes of this permit, the carrying out of preliminary investigative works, including geotechnical investigations, for the purposes of gathering data or making other assessments necessary or desirable in order to prepare the development plans or other plans specified in this permit, is not considered to be commencement of the development.

Traffic management plan

14. At least eight weeks before the development starts (unless a shorter time frame is agree by Moyne Shire Council), a traffic management plan must be prepared to the satisfaction of, and endorsed by, Moyne Shire Council and VicRoads. The traffic management plan must be complied with, unless varied by the written consent of Moyne Shire Council and VicRoads. The traffic management plan:

    a. is to be prepared in consultation with Ararat Rural City Council if transport routes affect that municipality; and

    b. must be reviewed and audited by an independent traffic consultant. The consultant must be to the satisfaction of the responsible authority after first consulting with VicRoads, Moyne Shire Council and (if relevant) Ararat Rural City Council. The costs of the independent traffic consultant must be paid for by the wind energy facility developer.

        When approved, the traffic management plan will be endorsed by the responsible authority. The traffic management plan must be complied with to the satisfaction of the responsible authority, unless varied by the written consent of the responsible authority.

15. The traffic management plan must:

    a. identify pre-construction, construction and transport vehicle routes to and from the transmission line corridor;

    b. nominate the expected average daily vehicle movements on identified access routes to and from the transmission line alignment;

    c. identify any crossovers with public roads that need to be constructed or upgraded.

    d. where works are required under condition 15(c), the traffic management plan must include:

        i. detailed engineering plans showing the required works; and

        ii. the timing of when the works are to be undertaken; and

    e. identify construction traffic management measures to be implemented on public roads during the construction of the transmission line.

Traffic management and road upgrade and maintenance works

16. The traffic management, road works and maintenance works identified in the endorsed traffic management plan must be carried out in accordance with the endorsed traffic management plan to the satisfaction of VicRoads, Moyne Shire Council and the responsible authority.

17. All costs associated with the traffic management and road upgrade and maintenance works must be borne by the owner of the wind energy facility.

18. Construction of all external road works must be supervised by and completed to the satisfaction of a suitable road quality auditor. The auditor must be to the satisfaction of the responsible authority after first consulting with VicRoads, Moyne Shire Council and (if relevant) Ararat Rural City Council. The road quality auditor must advise VicRoads, Moyne Shire Council and the responsible authority when the construction of all external road works have been completed to their satisfaction.

AusNet Services

19. Detailed plans of that part of the proposed transmission line that crosses and runs parallel with Ausnet Transmission's Group's existing 500 kilovolt transmission line must be submitted to AusNet Transmission Group and approved in writing prior to the commencement of works on site.

Staging

20. The use and development authorised by this permit may be completed in stages as shown on the endorsed development plan(s) to the satisfaction of the responsible authority. Any corresponding obligation arising under this permit (including the preparation and approval of plans) may be similarly completed in stages or parts.

Expiry

21. This permit will expire if one of the following circumstances applies:

    a. the development is not started within five years of the date of this permit; or

    b. the development is not completed within ten years of the date of this permit.

22. The responsible authority may extend the permit if a request is made in writing:

    a. prior to the expiry of the permit, or

    b. within 6 months after the permit expires.

DRAFT PLANNING PERMIT CONDITIONS
MOYNE PLANNING SCHEME PLANNING PERMIT PL15/074
DUNDONNELL WIND ENERGY FACILITY - SUBSTATION

WHAT WILL THE PERMIT ALLOW:

Use and development of land for a utility installation (substation).

THE FOLLOWING CONDITIONS APPLY TO THIS PERMIT:

Development plans

1. Before the development starts, development plans must be prepared to the satisfaction of the responsible authority. When approved, the plans will be endorsed by the responsible authority and will then form part of this permit. The plans must be fully dimensioned, drawn to scale and three copies must be provided. The plans must be generally in accordance with the PPA-2 Indicative Offsite substation location and setbacks (ERM 10/4/15) but modified to show:

    a. the overall height of proposed structures.

    b. the location of the substation

    All to the satisfaction of the responsible authority.

2. The use and development as shown on the endorsed plans must not be altered or modified without the written consent of the responsible authority.

Materials

3. All external cladding and trim of the building must be of a non- reflective nature.

4. Cladding materials must be coloured or painted in muted shades of green, brown or in colours satisfactory to the responsible authority within 12 months of completion of the building. All paintwork must be maintained to the satisfaction of the responsible authority.

Stormwater

5. Storm water drainage from the proposed buildings and impervious surfaces must be retained and disposed of within the boundaries of the subject land to the satisfaction of the responsible authority. Overflows from on-site storage systems must be directed away from any waste water disposal areas.

Amenity

6. The amenity of the area must not be detrimentally affected by the use or development through the:

    a. transport of materials, goods or commodities to or from the land.

    b. appearance of any building, works or materials.

    c. emission of artificial light, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit or oil. Noise levels from the substation must not exceed the relevant noise levels under Noise from Industry in Regional Victoria (EPA publication No. 1411).

    d. presence of vermin.

    The site must be kept in an ordered and tidy state and its appearance must not prejudicially affect the amenity of the area.

Traffic management

7. At least eight weeks before the development starts (unless a shorter time frame is agreed by Moyne Shire Council), a traffic management plan must be prepared to the satisfaction of, and endorsed by, Moyne Shire Council and VicRoads. The traffic management plan must be complied with, unless varied by the written consent of Moyne Shire Council and VicRoads.

8. The traffic management plan must be reviewed and endorsed by an independent traffic consultant. The consultant must be to the satisfaction of VicRoads and Moyne Shire Council. The costs of the independent traffic consultant must be paid for by the wind energy facility developer.

   The traffic management plan must be complied with, unless varied by the written consent of Moyne Shire Council and VicRoads.

9. The traffic management plan must:

   a. identify pre-construction, construction and transport vehicle routes to and from the substation site
   b. nominate the expected average daily vehicle movements on identified access routes to and from the substation site
   c. include detailed engineering plans showing the specifications of the access track and its crossover with Connewarren Lane, and information about when the construction of the access track will be undertaken.
   d. identify construction traffic management measures to be implemented on public roads during the construction of the substation.

10. The traffic management, road works and maintenance works identified in the endorsed traffic management plan must be carried out in accordance with the endorsed traffic management plan to the satisfaction of VicRoads and Moyne Shire Council.

11. All costs associated with the traffic management and road upgrade and maintenance works must be borne by the owner of the wind energy facility.

12. Works or other requirements identified in accordance with Condition 9(c) must be completed to the satisfaction of VicRoads and Moyne Shire Council.

On-site landscaping plan

13. Before the development starts, an on-site landscaping plan must be prepared to the satisfaction of the responsible authority. The plans must be generally in accordance with PPA-3 Indicative Off-site Substation Layout (ERM 10/4/15), fully dimensioned, drawn to scale and three copies must be provided. When approved, the plan will be endorsed by the responsible authority and will then form part of this permit.

    The on-site landscaping plan must include:

    a. landscaping to screen the substation, switchyard and associated buildings.

    b. details of plant species proposed to be used in the landscaping, including height and spread at maturity

    c. a timetable for implementation of all on-site landscaping works

    d. a maintenance and monitoring program to ensure the ongoing health of the landscaping.

14. The landscaping as shown on the endorsed on-site landscaping plan must be completed in accordance with the implementation timetable, and monitored and maintained, all to the satisfaction of the responsible authority.

Environmental Management Plan

15. Before the development starts, an environmental management plan must be prepared, to the satisfaction of the responsible authority. When approved, the environmental management plan will be endorsed by the responsible authority and will then form part of this permit. The environmental management plan must:

a. be generally in accordance with the approach outlined in Chapter 25 of the Dundonnell Wind Farm EES (June 2015) and prepared in consultation with other agencies as directed by the responsible authority;

b. may be prepared in sections or stages

c. must be in accordance with all relevant EPA requirements and guidelines

16. The use and development must be carried out in accordance with the endorsed environmental management plan, to the satisfaction of the responsible authority.

SP Ausnet

17. Detailed plans of that part of the proposed transmission line that crosses and runs parallel with the AusNet Transmission Group's existing 500 kilovolt transmission line must be submitted to AusNet Transmission Group and approved in writing prior to the commencement of work on site.

18. Detailed plans of the proposed substation adjacent to AusNet Transmission Group's existing 500 kilovolt transmission line must be submitted to AusNet Transmission Group and approved in writing prior to the commencement of works on site.

Decommissioning

19. When the use of the substation ceases, the following must be undertaken to the satisfaction of, and within such timeframe as may be specified by, the responsible authority:

a. remove all above ground non-operational equipment;

b. remove and clean up any residual contamination;

c. rehabilitate all storage areas, construction areas, access tracks and other areas affected by the decommissioning of the substation;

d. submit a decommissioning traffic management plan to the responsible authority and, when approved by the Responsible Authority, implement that plan;

e. submit a post-decommissioning revegetation management plan, including a timetable of works, to the responsible authority and, when approved by the responsible authority, implement that plan.

Preliminary Investigative Works

20. For the purposes of this permit, the carrying out of preliminary investigative works, including geotechnical investigations, for the purposes of gathering data or making other assessments necessary or desirable in order to prepare the development plans or other plans specified in this permit, is not considered to be commencement of the development.

Expiry

21. This permit will expire if one of the following circumstances applies:

a. the development is not started within five years of the date of this permit

b. the development is not completed within ten years of the date of this permit.

The responsible authority may extend the permit if a request is made in writing:

a. prior to the expiry of the permit, or

b. within 12 months after the permit expires and the development or a stage of the development started lawfully before the permit expired.