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### Abbreviations

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<tr>
<td>AAV</td>
<td>Aboriginal Affairs Victoria</td>
</tr>
<tr>
<td>AGL</td>
<td>Above Ground Level</td>
</tr>
<tr>
<td>CASA</td>
<td>Civil Aviation Safety Authority</td>
</tr>
<tr>
<td>CEMP</td>
<td>Construction Environmental Management Plan</td>
</tr>
<tr>
<td>CHMP</td>
<td>Cultural Heritage Management Plan</td>
</tr>
<tr>
<td>CFA</td>
<td>Country Fire Authority</td>
</tr>
<tr>
<td>CO₂</td>
<td>Carbon dioxide</td>
</tr>
<tr>
<td>CPI</td>
<td>Consumer Price Index</td>
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<tr>
<td>CSP</td>
<td>Concentrating Solar Power</td>
</tr>
<tr>
<td>dB</td>
<td>Decibel. The unit of sound level</td>
</tr>
<tr>
<td>L&lt;sub&gt;AB90&lt;/sub&gt;</td>
<td>The A - weighted noise level exceeded for 90% of the measurement period. This is commonly referred to as the background noise level.</td>
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<td>Department of Environment and Primary Industries</td>
</tr>
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<td>DE</td>
<td>Department of Environment</td>
</tr>
<tr>
<td>DTPLI</td>
<td>Department Transport, Planning and Local Infrastructure</td>
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<td>EMP</td>
<td>Environmental Management Plan</td>
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<tr>
<td>EPA</td>
<td>Environment Protection Authority</td>
</tr>
<tr>
<td>EPBC Act</td>
<td>Environment Protection and Biodiversity Conservation Act 1999</td>
</tr>
<tr>
<td>EVC</td>
<td>Ecological Vegetation Class</td>
</tr>
<tr>
<td>FZ</td>
<td>Farming Zone</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographical Information Systems</td>
</tr>
<tr>
<td>GWh</td>
<td>Gigawatt hour</td>
</tr>
<tr>
<td>Ha</td>
<td>Hectare</td>
</tr>
<tr>
<td>IEA</td>
<td>International Energy Agency</td>
</tr>
<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
</tr>
<tr>
<td>KWh</td>
<td>Kilowatt hour</td>
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<tr>
<td>kV</td>
<td>Kilovolt</td>
</tr>
<tr>
<td>LPPF</td>
<td>Local Planning Policy Framework</td>
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<tr>
<td>LRET</td>
<td>Large-scale Renewable Energy Target</td>
</tr>
<tr>
<td>MSS</td>
<td>Municipal Strategic Statement</td>
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**Name of organisation:**
b) ACCIONA Energy Pty Ltd

**Name of project:**
c) Berrimal Wind Farm

**Name of document:**
d) Planning Assessment Report

**Project number:**
e) 

**Date:**
f) 16th December 2013

**Photos:**
g)
Executive Summary

ACCIONA Energy Oceania Pty Ltd (ACCIONA Energy) is seeking planning approval for the establishment of a wind farm in the Berrimal locality, approximately 19 kilometres south of Charlton and 16 kilometres west of Wedderburn. The site is located entirely within the Buloke Shire, however the southern end of the site sits directly on the border with the Loddon Shire.

ACCIONA Energy is the developer of the Berrimal wind farm. A pioneer in renewable energy, infrastructure and water services, ACCIONA Energy operates on five continents and has been recognised as a leader on the Dow Jones Sustainability Index since 2007. ACCIONA Energy has built, owns and operates over 7,000 MW of wind farms globally. In Australia ACCIONA Energy built, owns and operates wind farms at Waubra near Ballarat in Victoria and at Gunning in New South Wales, and jointly owns the Cathedral Rocks Wind Farm in South Australia with Energy Australia. ACCIONA Wind Power additionally manufactures the wind turbines proposed to be utilised at the Berrimal site.

This report provides detailed information to support the application, and aims to provide:

- A source of information from which individuals and groups may gain an understanding of the proposal, the need for the project, the environment that it affects, and the avoidance and mitigation strategies to be taken to minimise any adverse effects;
- A basis for public consultation and informed comment on the proposal; and
- A framework against which decision-makers can consider the proposal and determine the conditions under which any approval may be given.

Project Description

The site is located on freehold land along a 5 kilometre ridgeline, covering an area of approximately 66 hectares. The project will comprise:

- Up to 24 wind turbine generators, installed on towers up to 120m in height, with tip height up to 185m above ground level;
- Associated infrastructure including:
  - hardstand areas adjacent to each turbine;
  - access roads;
  - underground cabling (running adjacent to access roads);
  - up to two electrical substations;
  - an operations and maintenance facility;
  - up to four wind monitoring towers;
an area for storage and maintenance of wind turbine equipment;

During construction, temporary facilities located within the site will include:

- A site office and amenities;
- Waste transfer facilities;
- Secure and bunded hazardous materials storage facilities;
- A concrete batching plant;
- A casting plant (in the event concrete turbine towers are utilised); and
- A borrow pit for on-site sourcing of road and construction materials.

This application is for a new planning consent, which, if approved would supersede an existing planning consent (planning permit 490/13) for a wind farm comprising 16 x 1.5MW capacity wind turbines in the same location.

Powercor Australia Limited in conjunction with ACCIONA Energy would develop and construct approximately 50 kilometres of 66kV transmission line to connect the substation(s) at the site to the national electricity network. This line will be built and owned by Powercor, and will be subject to a separate regulatory approval process.

A detailed project description is found in section 6 of this report.

**Project Benefits**

The $150 million investment in the Berrimal wind farm will bring a range of benefits to the Buloke shire and surrounding areas. These include:

- Creation of 80-100 jobs during the peak construction phase;
- Creation of 5-10 full time ongoing jobs during the operational phase of the project;
- Contribution of up to approximately $140,000 per annum in rates to the Buloke Shire (based on standard wind farm rating structures in Victoria);
- Provision of a reliable income stream to host landowners, independent of seasonal agricultural variation;
- Associated flow on effects to local businesses and service providers through a long term diversification and addition to the shire economy;
- The establishment of an ongoing Community Enhancement and Benefit program, incorporating:
  - A Community Benefit Fund of approximately $35,000 per annum (indexed to CPI); and
EXECUTIVE SUMMARY

- A Local Sponsorship program of approximately $15,000 per annum (indexed to CPI)
- The provision of clean renewable energy to approximately 33,000 households and the offsetting of approximately 177,000 tonnes of CO2 per annum; and
- A substantial contribution to meeting the Federal Renewable Energy Target

Further details on project benefits and socio-economic considerations are found in Section 4 and 7.11 of this report and in Technical Volume 2.

Planning Assessment

The proposal requires a planning permit in the Farming Zone of the Buloke Planning Scheme for the use and development of:

- A Wind Energy Facility;
- For removal of native vegetation; and
- To undertake buildings and works.

A detailed, comprehensive analysis has been undertaken of the project against, and in response to, the planning policies and requirements. Particular focus has been given to consideration of the project against the requirements of Section 52.32 of the Buloke Planning Scheme, and the associated Policy and Planning Guidelines for development of wind energy facilities in Victoria.

Based on a balanced assessment of the proposed wind farm against the Buloke Planning Scheme and other planning policies and strategies, it is concluded that the proposed wind farm will be an appropriate planning outcome that will result in the development of an additional renewable energy resource in Victoria. Furthermore, the development will result in an overall net community benefit, and represent an example of sound, orderly and responsible land use planning.

Further details are found in Sections 3 and 5 of this report.

Environmental Management

ACCCIONA Energy adopts a best practice approach to environmental assessment and management. All activities proposed – construction, commissioning, operation and maintenance of the wind farm would be undertaken with minimal impact upon the surrounding environment. A Construction Environmental Management Plan (CEMP) will be developed for the site before any construction activities commence. Construction activities will be audited at intervals as specified in the CEMP, to ensure that the required
management plans and strategies are in place and being implemented. After the wind farm is commissioned, it will operate under an Operations Environmental Management Plan (OEMP).

Consideration of Environmental issues is found in Section 8.0 of this report and a Draft Environmental Management Plan is attached at Appendix D.

**Community and Stakeholder Consultation**

ACCIONA Energy has consulted widely as part of the preparation of this planning submission. These consultations were aimed to inform local community members about the proposal, providing an opportunity to identify any potential issues early in the planning process.

Consultation and engagement activities have included:

- Undertaking a residential dwelling survey during 2012 to identify all dwellings within 10km of the proposed wind farm site;
- Door knocks to dwellings within 5km of the site in 2012 and again in late 2013;
- Circulation of regular community information bulletins, providing updates on the project and activities relating to the preparation of this submission. The most recent edition was circulated in November 2013;
- Conducting a range of open house sessions in Charlton, St Arnaud and Wedderburn. The most recent were held in Charlton and Wedderburn in November 2013; and
- Conducting regular consultation and update meetings with Buloke and Loddon Shires. The most recent meetings were held in November 2013.

Additional community and stakeholder engagement details are found in Section 4 of this report.

**Flora and Fauna Assessment**

A flora and fauna assessment and bird and bat utilisation survey was undertaken by Ecology and Heritage Partners Pty Ltd. The key observations are noted below:

**Flora observations**

- Whilst low quality remnant vegetation was recorded on the upper slopes and along the ridgelines, the majority of the overstorey trees and shrubs have been removed;
- A low quality modified cover of native grasses and herbs remain in certain locations on the upper slopes and ridge;
• Moderate quality vegetation is limited to within the treed area along Gap Road; and
• Each of the three EVC classifications recorded are in a modified condition as a result of previous land use activities.

The report concluded that within the study area footprint overall, remnant vegetation was predominantly considered to be of low quality.

**Fauna observations**

• A total of 46 fauna species were observed during the survey comprising five mammals (three native and two introduced);
• Suitable, albeit degraded, habitat was recorded within the study area for three nationally significant fauna species (Golden Sunmoth *Synemon plana*, Pink-tailed Worm-lizard *Aprazia parapulchella*, and Striped Legless Lizard *Delmar impar*), and one state significant fauna species (Yellow bellied Sheathtail Bat *Saccolaimus flaviventrus*); and
• None of these significant species were sited during the survey.

**Bird and bat observations**

• A total of 41 bird species (38 native and three introduced) were observed during the survey;
• Eight native microbat species were detected, none of which are listed as significant species in Victoria and all of which are common throughout southeastern Australia; and
• A low proportion of avifauna were recorded within the potential turbine rotor swept area, suggesting that the Berrimal Wind Farm will have a minimal impact on significant avifauna of the region.

The report assessed that the wind farm will not have a significant impact on any of the native species of fauna present at the site. Nevertheless, the wind farm has been designed to reduce the risk to birds, bats and the impact on fauna generally, through:

• Widely spaced turbine towers;
• Having no overhead power cables within the turbine area;
• Using existing access tracks where possible, and keeping their widths to a minimum where they pass through remnant vegetation;
• Minimising the clearance and/or damage to remnant vegetation. The detailed design process will follow the principles of ‘avoid, minimise and offset’ under the Native Vegetation Framework to minimise native vegetation impact; and
• Locating stockpiles of materials, vehicle parking areas and equipment storage areas in areas of open, modified pasture, where possible.

In addition to these design features, construction activities will be managed to reduce impacts to fauna as part of the CEMP.

Further details on the Flora and Fauna assessments are included in Section 7.1 and in Technical Volume 1.

**Cultural Heritage Assessment**

Two cultural heritage assessments, including an approved Cultural Heritage Management Plan have previously been undertaken by archaeologists Andrew Long & Associates Pty Ltd, together with the Dja Dja Wurrung Peoples for the approved 16 turbine development. A subsequent cultural heritage assessment has been undertaken by Ecology and Heritage Partners Pty Ltd to ascertain cultural heritage significance of the additional areas required for the proposed (up to) 24 turbine development. This subsequent assessment identified a single site of low sensitivity potential cultural heritage significance that will be impacted during the construction of the wind farm.

The Cultural Heritage Management Plan has been submitted to the Registered Aboriginal Party for approval.

Further Cultural Heritage details and the Cultural Heritage Management Plan are provided in Section 7.2 and Technical Volume 1.

**Landscape and Visual Impact Assessment**

A landscape and visual impact assessment has been prepared by AECOM. This assessment identified that there may be both direct and indirect landscape impacts upon landscape character due to the presence of the Berrimal wind farm.

Direct landscape impacts of a minor to moderate nature may occur within the Undulating Pastoral landscape character area in the immediate surrounds of the wind farm site. AECOM determined that whilst the presence of the wind farm would represent a considerable change in the character within a relatively restricted area of the Undulating Pastoral character area, its presence is not expected to result in a fundamental change in landscape character. It determined that the project would not impact on the defining characteristics of the landscape- rolling topography, expansive pasture and scattered native trees.
The greatest level of visual impact is expected from representative public viewpoints 3, 5 and 6 located relatively close to the wind farm (2.1-2.4km distant). A moderate impact is anticipated in these locations.

Indirect landscape impacts of a more minor nature are expected to parts of the remaining 4 landscape character areas. Impact to the Towns, Mallee Shrubland and Avoca River environs are expected to be negligible, whilst minor impacts are expected to more open and expansive parts of the Flat Pastoral country. Impacts on these locations are mitigated by their distance from the site.

It was concluded that whether or not these landscape and visual impacts are perceived as being adverse, positive, or neutral is considered to be subjective and influenced by the unique perspective of individual receptors.

Further details on the Landscape and Visual assessment are found in Section 7.4 and Technical volume 1.

**Noise Assessment**

A noise assessment was undertaken in accordance with NZS6808:2010 as required by the Victorian Wind Energy Guidelines at six residential properties identified within 3km of the proposed wind farm.

It was found that predicted wind farm noise, for the range of different turbine models and heights, complies with the applicable NZS6808:2010 noise limits and the lowest possible NZS6808:2010 noise limit of 40dB $L_{A90}$ at all wind speeds at all assessed residential properties in the vicinity of the proposed Berrimal Wind Farm.

Further details on the Noise and Acoustic assessment are found in Section 7.3 and Technical volume 1.

**Electromagnetic Interference Assessment**

ACCIONA Energy prepared an assessment of the anticipated electromagnetic interference that may be caused by the wind farm. The assessment determined that point-to-point communications paths will be unaffected by the wind farm. In respect to broadcast signals, a survey will be conducted of television and radio reception at nearby houses prior to the construction of the wind farm and provide the necessary rectification to the signal quality if problems resulting from construction of the wind farm are identified.

Further details on the Electromagnetic Interference assessment are found in Section 7.9 and Technical volume 2.
**Geotechnical Assessment**

Coffey Geotechnics have prepared a preliminary geotechnical assessment of the Berrimal site. This report was prepared in 2008 in support of ACCIONA Energy’s original 16 turbine wind energy project across the same subject site. With geotechnical considerations being a more static technical discipline, ACCIONA Energy has confidently relied on this report in preparing this revised proposal. Coffey’s findings were that the Berrimal site has:

- No evidence to signify slope instability within the proposed wind farm area;
- High to very high rock material strength, providing the potential opportunity for use of rock-anchors for turbine foundations;
- Subsurface materials present at tested sites which offer no significant challenge to the use of traditional gravity foundations (if the rock-anchor approach is not pursued); and
- Material present which may be suitable for the construction of internal access tracks, but may be less suitable for concrete aggregate.

Further Geotechnical details are provided in Section 7.8 and in Technical Volume 2.

**Traffic and Transport Assessment**

GTA Consultants have prepared a traffic and transport assessment of the proposal to determine the best access route to the site for transportation of the equipment and materials for the wind farm. The preferred traffic route for the transportation of over dimension and other construction materials is via VicRoads arterial routes:

- The Sunraysia Highway from port through the town of St Arnaud; and
- St Arnaud-Charlton Road,

Then via local Buloke Shire roads, comprising:

- Seven Mile, Yeungroon, Nine Mile, Olives and Lees Road to site; or
- Nine Mile, Yeungroon-koonoer, Yeungroon-Nine Mile and Lees Road to site; or
- The most appropriate combination of the above local routes.

Each of the local shire roads will require intersection upgrades and localised surface improvement works. Some vegetation at these designated intersections, and along Lees Road in particular, will need to be trimmed in order to allow the transport vehicles to manoeuvre safely.
Further details on the Traffic and Transport assessment are found in Section 7.7 and Technical volume 2.

**Shadow Flicker and Blade Glint Assessment**

ACCIONA Energy has prepared an assessment of possible shadow flicker and blade glint from the wind farm. Shadow flicker can occur when a wind turbine blade passes in front of the sun causing a shadow, then light, in an ongoing manner as the blades turn. The Victorian Planning Guidelines limit the duration of shadow flicker at any dwelling to 30 hours per year.

These assessments concluded that shadow flicker will occur within the requirements of the planning guidelines, with blade glint minimised through the use of a non-reflective coating treatment on turbine blades.

Further details on Shadow Flicker and Blade Glint are found in Section 7.5, 7.6 and Technical volume 2.

**Conclusion**

In accordance with ACCIONA Energy’s commitment to the environment, all reasonable measures to reduce amenity impacts to the surrounding environment and population have been incorporated into the project design. The careful design, construction and operation of the wind farm as outlined in this document will ensure that there will be no unacceptable environmental impacts and that there will be a net environmental and social gain.

The Berrimal Wind Farm site has all the aspects of a suitable wind farm location:

- Nationally competitive wind resource;
- Adequate proximity to existing electricity grid;
- Low level of impact on the surrounding environment; and
- A remote, generally sparsely populated locality, with a broadly supportive and engaged local community.

Importantly, as is demonstrated within this planning report, the Berrimal wind farm comfortably meets the requirements of the Planning and Policy Guidelines for the Development of Wind Energy facilities in Victoria, and is supported by the Federal Government’s commitment to generate renewable electricity.

The proposed Berrimal wind farm provides an opportunity for the Buloke Shire to make a significant contribution to the development of renewable energy and the reduction of greenhouse gas emissions. In addition, the project will deliver significant investment and
diversification to the shire economy, and represents an example of sound, measured responsible and orderly land use planning.
1. Introduction

ACCIONA Energy Oceania Pty Ltd (ACCIONA Energy) is submitting this planning assessment report to the Buloke Shire Council in support of a planning application for a proposed wind farm at Berrimal.

The approval sought would allow for ACCIONA Energy to own and operate a Wind Farm consisting of up to 24 turbines and other associated infrastructure required for generating electricity and connection to the existing electricity grid.

This report contains supporting information for the planning application and includes full independent technical assessment reports by specialist consultants.

1.1 ACCIONA Energy

ACCIONA Energy is a unique renewable energy operator on a global scale. It focuses exclusively on renewables and is a major player in five types of clean energy: wind, solar thermal (CSP), PV solar, hydraulic and biomass. It has 100% ownership of over 7000 MW's worth of installed capacity, with a total output of more than 20TWh/year, as well as installing a further 1,500MW of capacity for third parties.

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<td>1,472</td>
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<td>Biomass</td>
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<td><strong>Total</strong></td>
<td><strong>8,428</strong></td>
<td><strong>1,540</strong></td>
<td><strong>9,968</strong></td>
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ACCIONA Energy is present in the entire value chain, from project development and engineering; construction and manufacture of wind turbine generators, to the operation and maintenance of facilities and energy management and sales.

ACCIONA Energy has over 20 years of experience in a sector that has seen the emergence of many newcomers, and it has successfully undertaken a process of international expansion that has given it a presence in more than twenty countries worldwide, including Australia.

In Australia, ACCIONA Energy has the following operational wind farms:

- Waubra Wind Farm in Victoria – 128 turbines (192MW)
• Gunning Wind Farm in New South Wales – 31 Turbines (46.5MW)
• Cathedral Rocks in South Australia – 44 Turbines (66MW). This project is jointly owned with Energy Australia and is shown in Figure 1-1.

ACCIÓNA Energy has approval to build a 76.5MW wind farm at Mortlake and a 189MW wind farm at Mt Gellibrand, both located in Western Victoria.

![Figure 1-1 ACCIÓNA Energy's Cathedral Rocks Wind Farm](image)

ACCIÓNA Energy adopts a best practice approach to environmental assessment and management. The company is committed to reducing potential impacts on the environment during the planning stage of projects by sensitively siting wind turbines, undertaking environmental studies and managing any specific environmental issues.

ACCIÓNA Energy is committed to working with governments, authorities and communities in the environmental assessment and management of projects.

ACCIÓNA Energy’s Statement of Environmental Commitment is reproduced below.
1.2 Scope of the Planning Assessment Report

This planning assessment report is structured as follows:

- Section 1.0 provides an overview of the proposed development and the regional setting in which it is proposed to take place and information about the proponent ACCIONA Energy;
- Section 2.0 provides a discussion of overall project objectives including climate change, government support and the role of renewable energy, and wind farms in greenhouse gas abatement;
• Section 3.0 describes the planning process and how the Berrimal wind farm responds to the planning assessment framework;
• Section 4.0 describes the community and stakeholder engagement activities undertaken;
• Section 5.0 provides a site analysis and design response;
• Section 6.0 provides a detailed project description;
• Section 7.0 provides a summary of each of the supporting technical documents;
• Section 8.0 provides a discussion of the Environmental Management measures proposed, including (at Appendix D) a draft Environmental Management Plan;
• Section 9.0 presents the key conclusions; and
• Section 10.0 outlines the references used throughout the document.
1.3 Proposed Berrimal Wind Farm

The Berrimal Wind Farm is located approximately 16 kilometres west of Wedderburn and 19 kilometres south of Charlton in northwest Victoria. The wind farm is situated within The Buloke Shire Council as shown in Figure 1-2.

Figure 1-2 Location of Berrimal Wind Farm
The development of the proposed wind farm will involve:

- Up to 24 wind turbines, located on towers with heights up to 120m, with a maximum blade tip height of 185 metres;
- Internal access tracks linking the wind turbines and associated infrastructure to the existing public road network;
- Upgrading some parts of the local public road network to allow for the passage of over dimensional vehicles;
- Up to four permanent meteorological monitoring masts;
- Up to two substations;
- One operations and maintenance building;
- Installing underground electrical and fibre optical cabling linking the wind turbines and substation(s);
- A temporary construction compound;
- A temporary casting plant for the construction of concrete turbine towers (if required);
- A temporary concrete batching plant; and
- A temporary on-site borrow pit for the sourcing of road and other construction materials.

The Berrimal Wind Farm will be connected to the existing 66 kV electrical line located east of the project along the Calder Highway. This line runs from Charlton to Bendigo. This connection will be undertaken by Powecor and will form part of a separate regulatory approval process.

Flexibility is requested in the ultimate generating capacity of turbines to be installed at the site. However, ACCIONA Wind Power turbines with a rated power of 3.0 megawatts (MW), have been used as the reference turbine for technical supporting documentation in this application. Use of these turbines would give the proposed wind farm a total generating capacity of up to 72MW.

The proposed wind farm is expected to generate enough electricity to meet the needs of approximately 33,000 Victorian households each year and save 177,000 tonnes of greenhouse gasses each year as a result of this renewable electricity generation.

Development of the proposed wind farm will benefit the local economy through job creation. It is estimated that the proposed wind farm will create approximately 80-100 peak construction phase jobs and 5-10 ongoing operations and maintenance jobs on site.

Planning approval is sought for full development, excluding the transmission line connection that will be subject to a separate planning process. Whilst the timing of the wind farm project is subject to approval being obtained from the Buloke Shire Council, construction of the wind farm is anticipated to begin in 2016.
1.4 Regional Setting and Current Land Use

The proposed Berrimal Wind Farm is located in the Buloke Shire Council in northwest Victoria. The Shire includes the towns of Birchip, Charlton, Donald, Sea Lake and Wycheproof as well as many smaller localities. It occupies an area of 8,001 square kilometres with an estimated resident population of 6,384 (ABS June 2011)\(^1\).

Agriculture, specifically grain production, is the primary source of income and employment in the area. Other forms of farming, education, retail, community service sectors and light industry also provide employment and income\(^2\).

The wind farm will be located along the Berrimal ridgeline which has been used as agricultural land for over 100 years. The ridge itself is predominantly used for livestock grazing, however northern parts of the ridge and the lower slopes are used for cropping. The northern end of the Berrimal ridgeline can be seen in Figure 1-3. The topography and typical outlook of the site can be seen in Figure 1-4.

![Figure 1-3 Northern end of Berrimal ridgeline](image)

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Figure 1-4 Typical outlook of the proposed Berrimal Wind

The regional setting of the Berrimal Wind Farm and its surrounding features can be seen in Figure 1-5. Figure 1-6 provides a detailed overview of the site and immediate surrounds, including 2 kilometre buffer around turbines and location of dwellings.
Figure 1-5 Berrimal Wind Farm in a regional setting
Figure 1-6 Detailed site overview
1.4.1 Land Titles

Total land area contained within project land titles is approximately 545 hectares, involving two private landowners. Total developed area will be substantially below the 66 hectares assessed in technical documents. A list of the certificate of titles affected by the proposal is shown in Table 1-1.

Table 1-1 Land Titles of site of proposed wind farm

<table>
<thead>
<tr>
<th>Volume</th>
<th>Folio</th>
<th>Land Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3122</td>
<td>369</td>
<td>Crown Allotment 44 Section B, Parish of Coonooer East</td>
</tr>
<tr>
<td>6048</td>
<td>575</td>
<td>Crown Allotment 46 and 48 Section B, Parish of Coonooer East</td>
</tr>
<tr>
<td>8085</td>
<td>758</td>
<td>Crown Allotment 51, Section B, Parish of Coonooer East</td>
</tr>
<tr>
<td>8313</td>
<td>104</td>
<td>Lot 5 on TP 408900B, Parish of Coonooer East</td>
</tr>
<tr>
<td>8272</td>
<td>861</td>
<td>Lot 1 on TP 411805B, Parish of Coonooer East</td>
</tr>
</tbody>
</table>

1.4.2 Topography

The site is to the south of Charlton and west of Wedderburn and extends along ridges and hills approximately 5 kilometres from end to end in generally a northwest-southeast direction. To the north of the site are flat open paddocks currently used for grazing and cropping, with scatterings of existing native vegetation lining the existing road reserves. The districts of Nine Mile, Yeungroon and Richmond Plains are located between the site and the Calder Highway. To the south and southwest of the site are undulating open paddocks which are also used for grazing and cropping. Larger areas of vegetation is evident on properties and road reserves to the east and south east between the site and St Arnaud-Wedderburn Road.

The hills that form the site of the wind farm are part of an elevated range that tends to rise gently in the northwest and dropping slightly in the south east. Most of the hills in the district are prominent, rounded high points on a broad, rolling plateau on top of the range. Some of the hills in the larger range expanse (Mt Kerang and Mt Korong) are more rugged, steep projecting peaks that include rocky outcrops and cliffs. Mt Kerang is located to the north of the Calder Highway and can be seen from the top of the Berrimal ridgeline. Mt Korong to the east of Wedderburn can also be seen clearly from the top of the ridgeline.
1.4.3 Vegetation

Virtually all of the original vegetation in the study area has been progressively cleared by pastoralists since the early 19th Century. The current vegetation cover is sparse over the majority of the site, particularly in the north. The landholdings where the turbines are proposed are clear of vegetation and have been heavily grazed and cropped. Around the site, remnant vegetation exists in pockets located along the road sides. A few isolated trees remain on the ridgeline.

1.4.4 Water Features

There are no predominant water features on the site and surrounds. There are a few existing stock dams dotted around the site and surrounding properties.

1.4.5 Climate

The climate of the site and its environs is characterised by warm summers and cool to cold winters. Based on rainfall figures from the Bureau of Meteorology, the area has an average rainfall of approximately 430 mm per year and the average number of days of rain annually is 65.5 days. Given the elevated nature of the ridge, cloudy and rainy days may obscure the visibility of wind turbines.
2. Objectives of the Project

This section outlines the context of the proposed Berrimal wind farm including the predicted impacts of climate change, the role of renewable energy in addressing climate change, and the potential role of wind farms as a source of renewable energy.

Development of the Berrimal wind farm is consistent with ACCIONA Energy’s overall mission and objectives to:

- Be a leader in the creation, development and management of infrastructure, energy and water, contributing actively to social wellbeing, sustainable development and the creation of value for our stakeholder groups; and
- Meet the needs of today without compromising the ability of future generations to meet theirs.

2.1 Climate Change

Anthropogenic climate change, caused by the increasing concentrations of greenhouse gases (such as carbon dioxide) in the Earth’s atmosphere is unquestionably a key challenge for all societies.

Since the early 19th century there has been a large and increasing inflow of carbon dioxide into the atmosphere from human activities. The burning of fossil fuels, industrial processes, as well as deforestation or land clearing, have been key causes. Emissions from the burning of fossil fuels are however the largest source of atmospheric carbon dioxide from human activities.

Stabilisation and ultimately reduction in global emissions of greenhouse gases is arguably the most important environmental challenge confronting the world today. The Garnaut Review\(^1\) reveals global average temperatures have continued to track a warming trend with the year 2010 ranked with 2005 and 1998 as the warmest on record, with global average temperatures 0.53°C above the 1961–90 mean. For Australia, 2009 was the second-warmest year on record and the decade ending in 2010 has easily been Australia’s warmest since record keeping began\(^3\). September 2013 was the warmest on

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\(^1\) The Garnaut Review 2011: Australia in the Global Response to Climate Change, Commonwealth of Australia (Department of Climate Change and Energy Efficiency) 2011.
record, with a +2.75 degree anomaly. The 12 month period to September 2013 was additionally the warmest 12 months on record ⁴.

The Intergovernmental Panel on Climate Change (IPCC) reports that Australia and New Zealand are already experiencing impacts from recent climate change including increasing stresses on water supply and agriculture, changed natural ecosystems, reduced seasonal snow cover, and glacier shrinkage⁵.

The IPCC reports that potential impacts of climate change are likely to be substantial without further adaptation, and include:

- Water security problems are projected to intensify by 2030 in southern and eastern Australia and New Zealand.
- Ongoing coastal development and population growth, in areas such as Cairns and south-east Queensland are projected to exacerbate risks from sea-level rise and increases in the severity and frequency of storms and coastal flooding by 2050.
- Significant loss of biodiversity is projected to occur by 2020 in some ecologically rich sites, including the Great Barrier Reef and Queensland Wet Tropics, Kakadu wetlands, south-west Australia, sub-Antarctic islands and alpine areas of both Australia and New Zealand.
- Risks to major infrastructure are likely to increase such as the failure of floodplain protection and urban drainage/sewerage, increased storm and fire damage, and more heatwaves, causing more deaths and more blackouts.
- Declining production from agriculture and forestry by 2030 over much of southern and eastern Australia, and over parts of eastern New Zealand, due to increased drought and fire⁶.

In its update report issued in mid-2013, the IPCC re-affirmed its previous statements, stating that the ‘warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and oceans have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased’ ⁷.

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⁷ Intergovernmental Panel on Climate Change (IPCC) Climate Change 2013 The Physical Science Basis, Fifth Assessment Report, Working Group 1 Headlines
2.2 Energy Security

Renewable Energy has a key role to play in Australia’s future energy security. Whilst Australia has ample reserves of coal, natural gas and other fossil fuels, the expansion of these industries into broadening export markets acts to link domestic prices to a floating international price. The International Energy Agency (IEA) predicts the world’s energy demand will rise by over 30% between 2013 and 2035\(^8\). High international demand resulted in significant increases in natural gas prices in the Australian domestic market between 2011 and 2012\(^9\).

Due to the resource being free and limitless, the diversification of the Australian energy supply to incorporate renewable energies such as wind acts to minimise the potential longer term impact of fossil fuel price volatility.

2.3 Government Support for Renewable Energy

The Commonwealth and Victorian Governments have responded to the threat of climate change with a number of policies to contain the increase of greenhouse gas emissions in Australia and reduce greenhouse gas emissions from the energy sector.

Below is a summary of these policies.

**Kyoto Protocol**

In December 2007, Australia signed the instrument of ratification of the Kyoto Protocol. The Australian National Greenhouse Accounts (September 2012) states Australia is on track to meet its Kyoto Protocol target of limiting the growth of its emissions to 8% above 1990 levels by 2008-2012\(^10\). Australia will commit to a second commitment period limiting its greenhouse gas emissions from 2013 to 2020 with a Kyoto target of reducing emissions to five per cent below 2000 levels by 2020\(^11\).

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\(^8\) IEA World Energy Outlook 2013  
\(^10\) Australian National Greenhouse Accounts - Quarterly Update of Australia’s National Greenhouse Gas Inventory, September Quarter 2012 (p.15)  
Carbon Pricing and ‘Direct Action’

Australia introduced a price on carbon on 1 July 2012. Around 500 of the biggest polluters in Australia will pay for the pollution they emit, under a carbon pricing mechanism.

The mechanism will have a fixed price for the first three years and starts at $23 per tonne and will rise at 2.5 per cent each year in real terms. On 1 July 2015, the carbon price will transition to a fully flexible price under an emissions trading scheme, with the price determined by the market.

A price on carbon is an incentive for these businesses to use or generate renewable energy, reduce energy consumption, and invest in renewable energy, such as solar and wind\textsuperscript{12}.

The incoming Federal coalition government has pledged to remove the Carbon Price, replacing it with a program of ‘Direct Action’ initiatives. ‘Direct Action’ aims to achieve the same emissions target reductions as that anticipated under the Carbon Pricing arrangement via a process of directly paying emitters to reduce their emissions.

Commonwealth Renewable Energy Target

The Commonwealth Renewable Energy Target (RET) is split into two schemes - the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES). The RET currently enjoys bi-partisan political support at the Federal Level.

The LRET creates a financial incentive for the establishment and growth of larger scale renewable energy projects such as wind and solar farms. It does this by legislating demand for Large-scale Generation Certificates (LGCs), which are created based on the amount of renewable electricity produced by renewable power stations. LGCs are then sold or traded to liable entities (energy retailers) that have a legal obligation to buy LGCs\textsuperscript{13}.

The Commonwealth Government undertook a review of the RET during late 2012, announcing in March 2013 that the RET will remain to ensure at least 20 per cent of Australia’s electricity comes from renewable sources by 2020. Currently the LRET has a target of 41,000 gigawatt hours (GWh) by 2020.

\textsuperscript{13} Australian Government Clean Energy Regulator - About the Renewable Energy Target (April 2012).
The LRET is the key mechanism which will support the development of the Berrimal wind farm. The Federal coalition Government has announced a review of the RET in early 2014, however it is not anticipated that this review will substantially alter the operation of the scheme.

2.4 Greenhouse Gas Emissions Abated by the Proposed Berrimal Wind Farm

The proposed Berrimal wind farm comprises up to 24 turbines. Based on the use of 3.0MW turbines, a conservative standard capacity factor of 35%, and utilising the national average figure of 0.8 tonnes of CO2 abated per MWhr of renewable generation, the Berrimal wind farm is expected to offset 177,000 tonnes of CO2 per annum\(^{14}\). Obviously, should higher capacity turbines be used, additional offsets would be achieved.

With the average Australian household generating 18 tonnes of CO2 per annum\(^{15}\), the Berrimal wind farm is expected to offset the emissions of over 9500 homes.

2.5 Role of Wind Farms in a Renewable Energy Future

Wind power has been the fastest growing source of electricity generation in Australia over the last decade, reflecting similar trends worldwide. As at mid-2013, Australia had installed electricity generation capacity from wind power of just under 3200MW, with wind farms contributing about 3.5% of total electricity production\(^{16}\) as shown in Table 2-1 (Australia November 2013).

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\(^{14}\) SKM Consulting ‘Wind Farm Investment, Employment and Carbon Abatement in Australia’ (July 2012) prepared for the Clean Energy Council.


Table 2-1 Installed Wind Energy Capacity, Australia

<table>
<thead>
<tr>
<th>State</th>
<th>Installed capacity (MW)</th>
<th>Number of turbines</th>
<th>Number of projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Australia</td>
<td>1205</td>
<td>561</td>
<td>16</td>
</tr>
<tr>
<td>Victoria</td>
<td>958.5</td>
<td>467</td>
<td>14</td>
</tr>
<tr>
<td>Western Australia</td>
<td>424</td>
<td>262</td>
<td>17</td>
</tr>
<tr>
<td>New South Wales</td>
<td>282</td>
<td>170</td>
<td>9</td>
</tr>
<tr>
<td>Tasmania</td>
<td>310</td>
<td>124</td>
<td>7</td>
</tr>
<tr>
<td>Queensland</td>
<td>12</td>
<td>22</td>
<td>2</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>3191.5</strong></td>
<td><strong>1606</strong></td>
<td><strong>65</strong></td>
</tr>
</tbody>
</table>

New electricity generation provided by wind farms reduces the need for the construction of new fossil fuel powered electricity generators.

Benefits of wind energy include:

- Production of electricity without emitting greenhouse gases;
- Capitalisation on the abundance of wind energy resource available in coastal south eastern Australia and elevated parts of the inland, such as at Berrimal;
- Wind turbine technology is well proven, safe and reliable with low maintenance and low embodied energy;
- Wind farms do not require water to operate unlike coal and nuclear power plants which require significant quantities of water;
- Wind farms produce electricity without toxic emissions, waste or soil contamination;
- Large volumes of electricity are produced from wind farms at costs only a few cents per kWh higher than the average generation price in the National Electricity Market, with wind energy being the most cost-competitive renewable energy technology;
- Landscape and Visual impacts, unlike those for fossil fuel generating technologies, are temporary, and limited to the operating span of the project;
- Many wind farm components can be reused or recycled at the end of their life and, unlike large scale fossil fuel electricity generating technologies, wind farm sites can be easily returned to their original state; and
- Wind farms are compatible with existing agricultural land uses, occupying only a small percentage of total land area.
There are a number of wind farms operating throughout Australia as shown in Table 2-1.

### 2.6 Existing and Proposed Wind Farms in Victoria

The closest operating wind farm to the Berrimal site is the Waubra wind farm as shown in Figure 2-1, comprising 128 turbines (192MW) and is located approximately 80km south in the Pyrenees Shire.

![Figure 2-1 ACCIONA Energy’s Waubra Wind Farm](image)

The proposed Coonooer Bridge Wind Farm will have five turbines, and is located approximately 3.6km west of the Berrimal site within the Buloke Shire. The Coonooer Bridge proposal was granted planning consent early in 2013, however an amended submission has recently been made to increase the number of approved turbines to six.

There are currently 32 wind farms which are approved and/or under construction in Victoria. Table 2-2 lists the Victoria Wind Farm projects either operating, under construction or approved to build.
Table 2-2 Operating, under construction and approved wind farms in Victoria

<table>
<thead>
<tr>
<th>Wind Farm</th>
<th>Proponent</th>
<th>Number of turbines</th>
<th>Maximum Power (MW)</th>
<th>Location/Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operational Wind Farms in Victoria</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cape Bridgewater</td>
<td>Pacific Hydro</td>
<td>29</td>
<td>58</td>
<td>West of Portland</td>
</tr>
<tr>
<td>Cape Nelson South</td>
<td>Pacific Hydro</td>
<td>22</td>
<td>44</td>
<td>West of Portland</td>
</tr>
<tr>
<td>Challicum Hills</td>
<td>Pacific Hydro</td>
<td>35</td>
<td>52.5</td>
<td>East of Ararat</td>
</tr>
<tr>
<td>Codrington</td>
<td>Pacific Hydro</td>
<td>20</td>
<td>18.2</td>
<td>West of Port Fairy</td>
</tr>
<tr>
<td>Hepburn</td>
<td>Hepburn Wind</td>
<td>2</td>
<td>4.1</td>
<td>South of Daylesford</td>
</tr>
<tr>
<td>Toora</td>
<td>Ratch Australia</td>
<td>12</td>
<td>21</td>
<td>North of Toora</td>
</tr>
<tr>
<td>Yambuk</td>
<td>Pacific Hydro</td>
<td>20</td>
<td>30</td>
<td>West of Port Fairy</td>
</tr>
<tr>
<td>Waubra</td>
<td>Acciona Energy</td>
<td>128</td>
<td>192</td>
<td>Northwest of Ballarat</td>
</tr>
<tr>
<td>Wonthaggi</td>
<td>Regional Wind Farms</td>
<td>6</td>
<td>12</td>
<td>West of Wonthaggi</td>
</tr>
<tr>
<td>Macarthur</td>
<td>AGL</td>
<td>140</td>
<td>420</td>
<td>South of Hamilton</td>
</tr>
<tr>
<td>Morton’s Lane</td>
<td>Goldwind</td>
<td>13</td>
<td>19</td>
<td>North of Mortlake</td>
</tr>
<tr>
<td><strong>Approved/under construction Wind Farms in Victoria</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coonooer Bridge</td>
<td>Windlab</td>
<td>5</td>
<td>15</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Cherry Tree</td>
<td>Infigen Energy</td>
<td>16</td>
<td>56</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Ararat</td>
<td>RES Australia</td>
<td>75</td>
<td>247.5</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Berrimal</td>
<td>ACCIONA Energy</td>
<td>16</td>
<td>24</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Chepstowe</td>
<td>Future Energy</td>
<td>3</td>
<td>6</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Chepstowe</td>
<td>Future Energy</td>
<td>3</td>
<td>6</td>
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</tr>
<tr>
<td>Chepstowe</td>
<td>Future Energy</td>
<td>3</td>
<td>6</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Crowlands</td>
<td>Pacific Hydro</td>
<td>72</td>
<td>172</td>
<td>Approved To Build</td>
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<tr>
<td>Lal Lal</td>
<td>Westwind Energy</td>
<td>64</td>
<td>131.2</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Moorabool</td>
<td>Westwind Energy</td>
<td>107</td>
<td>321</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Portland Stage 4</td>
<td>Pacific Hydro</td>
<td>21</td>
<td>42</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Ryan Corner</td>
<td>Union Fenosa</td>
<td>68</td>
<td>136</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Stockyard Hill</td>
<td>Origin Energy</td>
<td>157</td>
<td>471</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Winchelsea</td>
<td>International Power</td>
<td>14</td>
<td>28</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Yaloak South</td>
<td>Pacific Hydro</td>
<td>14</td>
<td>29.9</td>
<td>Approved To Build</td>
</tr>
<tr>
<td>Berrybank</td>
<td>Union Fenosa</td>
<td>99</td>
<td>247.5</td>
<td>Under Construction</td>
</tr>
<tr>
<td>Wind Farm</td>
<td>Proponent</td>
<td>Number of turbines</td>
<td>Maximum Power (MW)</td>
<td>Location/Status</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Bald Hills</td>
<td>Mitsui &amp; Co</td>
<td>52</td>
<td>104</td>
<td>Under Construction</td>
</tr>
<tr>
<td>Hawkesdale</td>
<td>Union Fenosa</td>
<td>31</td>
<td>62</td>
<td>Under Construction</td>
</tr>
<tr>
<td>Mount Mercer</td>
<td>Meridian Energy</td>
<td>64</td>
<td>131</td>
<td>Under Construction</td>
</tr>
<tr>
<td>Mortlake South</td>
<td>ACCIONA Energy</td>
<td>51</td>
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<tr>
<td>Mt Gellibrand</td>
<td>ACCIONA Energy</td>
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</tr>
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<td>Salt Creek</td>
<td>NewEN Australia</td>
<td>15</td>
<td>29.9</td>
<td>Under Construction</td>
</tr>
<tr>
<td>Woolsthorpe</td>
<td>Wind Farm Dev</td>
<td>20</td>
<td>40</td>
<td>Under Construction</td>
</tr>
</tbody>
</table>
3. Planning Assessment

This chapter covers three key areas relevant to the overall planning assessment of the Berrimal wind farm.

Section 3.1 provides an overview of the planning approval process and the planning approvals history of the Berrimal wind farm.

Figure 3-1 shows the planning process flow chart.

Section 3.2 provides a summary of the legislative context in which the Berrimal wind farm application is made—essentially what legislation is relevant to the assessment of a wind farm in this location in the Buloke Shire. This is summarised in Table 3-1.

Section 3.3 then provides a detailed consideration of the proposal within the relevant assessment framework required to be considered by the Buloke Shire. Table 3-2 assesses the project against the range of planning controls within the Buloke Planning Scheme. Table 3-3 subsequently provides an assessment against the specific requirements of the Planning and Policy Guidelines for Wind Energy Facilities in Victoria (Wind Energy Guidelines).

A planning permit is required for the subject proposal in the Farming Zone of the Buloke Planning Scheme under the following provisions:

Clause 52.32- Wind Energy Facility

The proposal is not located within any of the prohibited locations outlined in the Table to Clause 52.32-2. In particular, the development is:

- Not located within 2km of any existing dwelling (see Figure 1-6);
- Not located on land described in a schedule to the National Parks Act 1975;
- Not located on land declared as a Ramsar wetland under the EPBC Act 1999 (Cwth)
- Not located on land listed in a schedule to clause 52.32-2

Clause 52.17- Native Vegetation

A permit is required under the Planning Scheme for the removal of native vegetation. A ‘net gain’ or, should the revised guidelines be introduced, a ‘no net loss’ assessment will be taken to determine exact amounts of native vegetation to be removed following detailed design of the development. And;

Clause 35.07-4 Buildings and Works
A permit is required within the Farming Zone to undertake a range of ancillary works, including establishment of temporary construction facilities, and obtaining of construction material from on-site borrow pits.

### 3.1 Planning Approval Process

The Berrimal wind farm was first granted planning approval (permit 71/06) by the Buloke Shire Council in June 2007. A copy of the planning permit is attached as Appendix A. The permit allowed for up to 16 x 1.5MW (24MW), associated infrastructure and native vegetation removal.

An application to extend permit 71/06 was sought from Buloke Shire in 2010. The permit extension was granted for an additional 3 years (planning permit 352/10), commencing in June 2010. A copy of permit 352/10 is attached as Appendix B.

A further permit extension was sought from Buloke Shire in December 2012. The permit extension was granted in March 2013 for a further 18 months (planning permit 490/13). A copy of permit 490/13 is attached as Appendix C.

The permit extensions were sought in response to project constraints including the limitations associated with the 66 Kilovolt (kV) transmission network in the area, resulting in significant costs associated with required grid upgrades and connection. This has been exacerbated by the original planning consent limiting development at the site to shorter blade length, lower capacity wind turbines than those now available. These constraints, combined with the subsequent market price softness for Large-scale Generation Certificates (LGCs) within the RET scheme have resulted in deferment of investment in the project.

As a result of the significant cost of upgrading the local transmission network, ACCIONA Energy is submitting the subject planning application for a revised turbine layout, permitting the use of larger, more efficient turbines. This will both increase the electrical output of the project and allow utilisation of improved, more efficient turbine technology, thereby helping to offset the fixed cost of electrical grid network upgrades.

Rather than seek amendments to Permit 430/13, ACCIONA Energy is lodging this new application given the significant changes to the design and layout. ACCIONA Energy is not intending to act upon the existing permit and acknowledges it may therefore expire.
Request for Flexibility

In order to avoid the difficulties faced when permits contain limitations on maximum turbine output of the wind farm and/or individual turbines (namely that an amendment to permit conditions is required for any changes, rather than just amendment of plans), we are keen to ensure Permit conditions (if issued) allow flexibility in this regard. Inflexibility in this regard has been a significant issue recently for ACCIONA Energy and other wind energy developers in Victoria.

We present that the power output of each turbine and the total output of the wind energy facility is not a 'planning' issue. While obviously ACCIONA Energy needs to satisfy the Buloke Shire that the noise impacts of the wind farm comply with the New Zealand Standard (in accordance with the conditions of the permit), we do not consider that there needs to be an additional specific restriction on the generating output, nor blade length of the turbine used. The wind turbine technology is rapidly evolving, such that new and more efficient turbines may become available during the course of any consent period. We consider it reasonable that provided ACCIONA Energy can produce a report demonstrating a new model of turbine can meet relevant noise, shadow flicker, blade glint, visual and traffic conditions of the permit – i.e the key amenity requirements- there is no planning reason to restrict the permit to a particular model of turbine, blade length or maximum power output.

We therefore request that the Buloke Shire consider conditions similar to those imposed by the Tribunal recently in the Cherry Tree Wind Farm case ([2013] VCAT 1939). This permit permission is simply for the "development and use of the land for a wind energy facility in accordance with the endorsed plans". Condition 1 then requires that the plans for endorsement set out the details of the model and capacity of the turbines to be installed. This means that, if there are changes to the proposed turbine model, secondary consent can be sought under condition 3, subject to the limitations in condition 4 and 5 requiring the Responsible Authority to be satisfied that the alteration will not give rise to an adverse change to the assessed landscape, vegetation, cultural heritage, visual amenity, shadow flicker, noise, electromagnetic interference, fire risk or aviation impacts.

ACCIONA Energy respectfully seeks Buloke Shire’s consideration of a similar approach in this case.
Figure 3-1 Victorian Assessment Process for Wind Energy Facilities
3.2 Legislative Framework

The following planning and environmental approvals will be required for the proposed Berrimal wind farm:

- A planning permit for use and development of land within the Farming Zone of the Buloke Shire for a Wind Energy Facility under the provisions of Clause 52.32, comprising up to 24 wind turbines, incorporating an associated permit for:
  - Buildings and Works under Clause 35.07-4 (including the construction of access tracks, underground cabling, overhead power lines, up to two electrical substations, an operations and maintenance facility, up to four permanent meteorological monitoring masts, temporary construction facilities, casting plant, borrow pit for on-site sourcing of construction materials, business identification signage, and car parking and bicycle facilities to the satisfaction of the Responsible Authority); and
  - Removal of Native Vegetation under Clause 12.01-2 Native Vegetation Management (incorporating ‘Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines 2013’ if adopted) of the Buloke Planning Scheme for the removal of native vegetation. Calculations of ‘net gain’ or ‘no net loss’ assessment (depending on timing of adoption of revised vegetation controls) will be undertaken following completion of detailed design activities;

The Berrimal site is not located in any of the prohibited areas listed within the table to Clause 52.32-2. In particular, the development is:

- Not located within 2km of any existing dwelling;
- Not located on land described in a schedule to the National Parks Act 1975;
- Not located on land declared as a Ramsar wetland under the EPBC Act 1999 (Cwth);
- Not located on land listed in a schedule to clause 52.32-2;
- An approved Cultural Heritage Management Plan (CHMP) in accordance with the provisions of the Aboriginal Heritage Act 2006; and

The following approvals may also be required:

- While no permit is required pursuant to the Flora and Fauna Guarantee Act 1988 for works contemplated within the site, a permit may be required under this Act for removal of native vegetation on public land within road reserves; and
• A Cultural Heritage Management Plan and permit for removal of native vegetation may be required to facilitate the grid connection from the subject site to the existing Powercor 66kV network on the Bendigo-Charlton line. These approvals (if required) will be undertaken by Powercor following determination of the main project consent.

In addition:

• A referral has been made to the Victorian Minister for Planning to determine the requirement (if any) to prepare an Environment Effects Statement (EES). Based on Flora and Fauna assessments undertaken, it is unlikely the project will trigger requirements under the Environmental Effects Act 1978; and

• A referral has also been made to the federal Department of the Environment to determine whether the project is to be determined a ‘controlled action’ under the Environment Protection and Biodiversity Conservation Act 1999. Based on Flora and Fauna assessments undertaken, it is unlikely the project will trigger ‘controlled action’ requirements.

Table 3-1 below outlines the key relevant Legislation, Acts and Policies applicable to the proposed Berrimal wind farm.
### Table 3-1 Relevant Legislation, Policies and Strategies

<table>
<thead>
<tr>
<th>Level</th>
<th>Legislation, Policy, Strategy</th>
<th>Key points relevant to the proposed wind farm</th>
<th>Implications for the proposed wind farm</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td>Rio Declaration on Environment and Development and Agenda 21, 1992</td>
<td>Agenda 21 promotes sustainable development and the role of renewable energy sources in controlling atmospheric emissions of greenhouse gases.</td>
<td>The proposed wind farm is consistent with the objective of promoting renewable energy sources.</td>
</tr>
<tr>
<td></td>
<td>United Nations Framework Convention on Climate Change (FCCC), 1992 and the Kyoto Protocol</td>
<td>Australia’s Kyoto Protocol target is to limit growth of emissions to 8% above 1990 levels by 2008-2012. The Commonwealth has also set a long term target of reducing greenhouse gas emissions by 60% on 2000 levels by 2050.</td>
<td>The proposed wind farm will assist Australia in meeting its Kyoto target by offsetting 177,000 tonnes of CO2 per annum&lt;sup&gt;17&lt;/sup&gt;.</td>
</tr>
<tr>
<td></td>
<td>Convention on Biological Diversity</td>
<td>This Convention aims to conserve biological diversity and the sustainable use of its components.</td>
<td>The proposed wind farm will maintain biological diversity over the study area.</td>
</tr>
<tr>
<td>Federal</td>
<td>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</td>
<td>Protects matters of national and international environmental significance which may be impacted upon by an action.</td>
<td>A referral has been made to the Department of the Environment. Based on Flora and Fauna assessments undertaken, it is unlikely the project will be determined a controlled action under the Environment Protection and Biodiversity Conservation Act 1999.</td>
</tr>
<tr>
<td></td>
<td>Renewable Energy (Electricity) Act 2000</td>
<td>The expanded Renewable Energy Target, commencing on 1 January 2011 requires electricity retailers and large wholesale electricity purchasers to source 20 % of Australia’s electrical supply from renewable sources by 2020.</td>
<td>The proposed wind farm will assist in meeting this requirement, within the required legislated timeframe, by providing approximately 72 MW of renewable energy.</td>
</tr>
</tbody>
</table>

<sup>17</sup> SKM Consulting ‘Wind Farm Investment, Employment and Carbon Abatement in Australia’ (July 2012) prepared for the Clean Energy Council.
<table>
<thead>
<tr>
<th>Level</th>
<th>Legislation, Policy, Strategy</th>
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<th>Implications for the proposed wind farm</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Planning and Environment Act 1987</td>
<td>Provides the legislative framework for planning the use, development and protection of land in Victoria in the present and long-term interests of all Victorians. The Act implements this framework through planning schemes which each comprise a State Planning Policy Framework, Local Planning Policy Framework (including Municipal Strategic Statement and Local Planning Policies), Zoning Controls, Overlay Controls and Particular Provisions.</td>
<td>Buloke Planning Scheme controls land use at the wind farm site. A planning permit is required under the Planning and Environment Act 1987 before the proposed wind farm can proceed. The proposed wind farm is consistent with the key objectives of this Act and will result in the orderly and sustainable development and use of land that will have minimal impact on natural resources and ecological processes.</td>
</tr>
<tr>
<td></td>
<td>Environment Effects Act 1978</td>
<td>Provides for the assessment of projects that are capable of having a significant effect on the environment. The Act does this by enabling the Minister administering the Environment Effects Act 1978 to decide whether an EES should be prepared.</td>
<td>A referral has been made to the Victorian Minister for Planning to determine the requirement (if any) to prepare an Environment Effects Statement (EES). Based on Flora and Fauna assessments undertaken, it is unlikely the project will trigger requirements under the Environmental Effects Act 1978.</td>
</tr>
<tr>
<td></td>
<td>Environment Protection Act 1970</td>
<td>This Act provides for the control of water, air and land pollution, industrial waste and noise. Standards for environmental quality are set out in State Environment Protection Policies (SEPPs).</td>
<td>The requirements of relevant SEPPs will be addressed in an Environmental Management Plan (EMP) to be developed prior to construction and for use throughout the construction and operation period. The Environment Protection Authority (EPA) will be consulted in the development of the EMP. A draft EMP for the Berrimal wind farm can be found in Appendix D.</td>
</tr>
<tr>
<td></td>
<td>Aboriginal Heritage Act 2006</td>
<td>This Act requires that Aboriginal Affairs Victoria (AAV) be notified of any proposed Aboriginal archaeological surveys. The legislation requires that a CHMP be developed for high impact activities proposed for culturally sensitive areas.</td>
<td>A Complex CHMP has been prepared and lodged with AAV for the proposed wind farm in accordance with the provisions of the Aboriginal Heritage Act 2006. This CHMP can be found in Volume 1.</td>
</tr>
<tr>
<td>Level</td>
<td>Legislation, Policy, Strategy</td>
<td>Key points relevant to the proposed wind farm</td>
<td>Implications for the proposed wind farm</td>
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</tr>
<tr>
<td>State (continued)</td>
<td>Catchment and Land Protection Act 1994</td>
<td>This Act contains provisions relating to catchment planning, land management, noxious weeds and pest animals.</td>
<td>The construction and operation of the proposed wind farm will be completed in accordance with an EMP which will address issues such as the management of land, water, weeds and pest animals.</td>
</tr>
<tr>
<td></td>
<td>Flora and Fauna Guarantee Act 1988 (FFG Act)</td>
<td>This Act provides for the protection of biodiversity through the listing of threatened species, ecological communities and flora.</td>
<td>The farm site is entirely located on private land and is not considered to be 'critical habitat'. Therefore, no permit is required pursuant to this Act for the works contemplated on the wind farm site. A subsequent permit may be required for removal of limited native vegetation from roadsides accessing the site.</td>
</tr>
<tr>
<td></td>
<td>Heritage Act 1995</td>
<td>This Act provides for the protection and conservation of places and objects of cultural heritage significance and the registration of such places and objects.</td>
<td>The proposed wind farm is not expected to impact on any non-Aboriginal sites of cultural heritage significance. Accordingly the proposed wind farm is consistent with the key objectives of this Act.</td>
</tr>
<tr>
<td></td>
<td>Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria</td>
<td>These guidelines are aimed at facilitating the development and assessment of applications for wind energy facilities.</td>
<td>These guidelines outline key assessment criteria and the process for assessment of Wind Energy Facilities in Victoria. This application and supporting technical documentation respond to each of these criteria in full. Further details are provided in Section 5.4 of this report and in the technical reports in Volume 1 and 2.</td>
</tr>
<tr>
<td></td>
<td>Native Vegetation Management: A Framework for action 2002</td>
<td>About to be superseded State native vegetation controls, which aimed to achieve a reversal, across the entire landscape of the long-term decline in the extent and quality of native vegetation, leading to a net gain.</td>
<td>A 'net gain' assessment would be required under the Framework to determine the extent and quality of vegetation to be removed. A principle of ‘avoid, minimise and offset’ is adopted.</td>
</tr>
<tr>
<td></td>
<td>Permitted Clearing of Native</td>
<td>The aim of the new Guidelines, released in draft in September 2013 is to achieve a ‘no net loss’ approach in</td>
<td>All requirements of the Guidelines will be adhered to for the proposed wind farm. The Flora and Fauna report has</td>
</tr>
<tr>
<td>Level</td>
<td>Legislation, Policy, Strategy</td>
<td>Key points relevant to the proposed wind farm</td>
<td>Implications for the proposed wind farm</td>
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<tr>
<td></td>
<td>Vegetation - Biodiversity Assessment Guidelines 2013</td>
<td>the quality and quantity of indigenous vegetation across the Victorian landscape. It is likely these Guidelines will be adopted prior to Buloke Shire determination of this subject planning application</td>
<td>identified limited areas of generally low quality native vegetation on the subject site. If required, a subsequent planning permit will be sought from Buloke Shire for the removal of native vegetation once detailed access track designs have been undertaken.</td>
</tr>
<tr>
<td></td>
<td>North Central Regional Catchment Strategy 2013-2019</td>
<td>This Strategy provides long-term directions such as goals and targets for managing the future of land, water resources and biodiversity of the catchment. It also provides a framework for investment decisions to ensure improved natural resource outcomes are achieved.</td>
<td>It is considered that the proposed wind farm is in compliance with the long term directions of the North Central Regional Catchment Strategy 2013-2019.</td>
</tr>
<tr>
<td></td>
<td>Local Buloke Planning Scheme</td>
<td>The Buloke Planning Scheme is the headline planning document relevant to the application. It sets out a legislative framework within which decisions about the use and development of land can be made. It articulates state, regional, local and community expectations for areas and land uses. It provides a mechanism for the implementation of State, regional and local policies affecting land use and development.</td>
<td>The Buloke Planning Scheme is the key planning document to which the application must respond. It outlines a range of requirements across the spectrum of planning considerations.</td>
</tr>
</tbody>
</table>
3.3 Assessment Framework and Findings

This section outlines the assessment requirements to which the Berrimal wind farm is required to respond. Section 3.3.3 assesses the project against the specific requirements of the Farming Zone. Table 3-2 assesses the project against the range of planning controls within the Buloke Planning Scheme. Table 3-3 subsequently provides an assessment against the specific requirements of the Planning and Policy Guidelines for Wind Energy Facilities in Victoria (Wind Energy Guidelines).

3.3.1 State Planning Policy Framework

The State Planning Policy Framework (SPPF) seeks to ensure that land use and development planning policies in Victoria meet the objectives of planning in Victoria as set out in the Planning and Environment Act 1987. This is achieved through a number of clauses embedded within each Victorian Planning Scheme relating to settlement, environment and landscape values, environmental risk, natural resource management, built environment and heritage, housing, economic development, transport and infrastructure (incorporating renewable energy).

Table 3-2 provides an outline of the project’s adherence to the objectives of relevant SPPF clauses in the Buloke Planning Scheme.

3.3.2 Municipal Strategic Statement and Local Planning Policy Framework

The Municipal Strategic Statement (MSS) provides the broad strategic framework for land use policies within the Buloke Shire and establishes the preferred vision for future development.

Table 3-2 provides an outline of the project’s adherence to the objectives of relevant MSS clauses in the Buloke Planning Scheme.

3.3.3 Zoning and Overlay Controls

The wind farm site is located within the Farming Zone (FZ) of the Buloke Planning Scheme. The purpose of this zone is to provide for the use of land for agriculture and encourage the retention of productive agricultural land. It also aims to ensure that non-agricultural uses, particularly dwellings, do not adversely affect the use of land for agriculture. It also encourages the use and development of land based on comprehensive
and sustainable land management practices and infrastructure provision and protection and enhancement of natural resources and the biodiversity of the area.

A planning permit is required in the FZ for a ‘wind energy facility’. A permit is also required for buildings and works associated with these uses (Clause 35.07-4) and earthworks (Clause 35.07-4).

Clause 35.07-4 contains decision guidelines which must be considered, as appropriate, by the Responsible Authority. These are summarised as follows:

General Issues:
- How the use or development relates to sustainable land management; and
- Whether the site is suitable for the use and development and whether the proposal is compatible with adjoining and nearby land uses.

Agricultural Uses:
- Whether the use or development will support and enhance agricultural production;
- The potential for the use and development to limit the operation and expansion of adjoining and nearby agricultural uses;
- The capacity of the site to sustain agricultural use;
- The agricultural qualities of the land, such as soil quality, access to water and access to rural infrastructure; and
- Any integrated land management plan prepared for the site.

Environmental Issues:
- The impact of the use or development on the flora and fauna of the site and its surrounds.

Design and site issues:
- The impact of the site choice, design, height, bulk, colours and materials to be used, on the natural environment, major roads, vistas and water features and the measures to be undertaken to minimise any adverse impacts; and
- The impact on the character and appearance of the area or features of architectural, historic or scientific significance or of natural scenic beauty or importance.

There are no overlay controls affecting the Berrimal wind farm site.
### Response to Objectives of Farming Zone

Whilst the Berrimal wind farm is not an agricultural activity, it is presented that it is not inconsistent with the objectives of the zone. In particular, the development:

- Will remove only a minor, and inconsequential amount of land from productive agricultural use;
- Is predominantly located on very poor quality ridge country currently offering limited agricultural opportunity;
- The construction of high quality access tracks on site will enhance the efficient farming of the balance of the property;
- Will not impact the ability of adjoining agricultural activities to proceed, and may, through the upgrade to road infrastructure in the immediate area, improve their opportunities;
- Whilst being visually dominant at close range, it is located in a landscape where the existing Berrimal and Coonooer Bridge projects have been consented and thus deemed by the Shire, on balance, to be visually acceptable in the zone. Visual impacts significantly reduce to a low-negligible status at distance near to towns, major roads and scenic reserves.
- Turbine structures will be finished in a non-reflective white paint, with local topography, vegetation and lack of population limiting views to ancillary infrastructure
- The number of sensitive receivers is limited by the relatively sparse population of the area, and the topographic and vegetation conditions which act to reduce visual impact;

### 3.3.4 Victorian Planning Provisions

The Victorian Planning Provisions (VPP) provides the framework, standard provisions and State planning policy for all Victorian planning schemes. The planning authority (Buloke Shire in this case) provides the local planning policy content, including a Municipal Strategic Statement, and selects the appropriate zones and overlays from the VPP for inclusion in their planning scheme. The VPP also has references to a number of documents which are incorporated documents common to all planning schemes.

The key VPP relevant to the subject development is Clause 52.32-Wind Energy Facility, and the associated reference document the Policy and Planning Guidelines for development of Wind Energy Facilities in Victoria (Wind Energy Guidelines). These are discussed in Section 3.3.5 below and in Table 3-3.
Other relevant VPP provisions of the Buloke Planning Scheme are considered in Table 3-2 below.
### Table 3-2 Assessment Framework - Planning Responses to the Buloke Planning Scheme

<table>
<thead>
<tr>
<th>Planning Objective</th>
<th>Source of Objective</th>
<th>Planning Response</th>
<th>Report Location</th>
</tr>
</thead>
</table>
| Reduced greenhouse gas emissions, opportunities for increased renewable energy sources and support of sustainable development | Clause 15.02-1 Energy and Resource Efficiency  
Clause 19.01-1 Renewable Energy  
Clause 19.03-5 Waste and Resource Recovery | While reducing reliance on fossil fuels, the proposed wind farm will generate enough electricity to power approximately 33,000 homes and additionally offset the CO2 emissions of over 9500 homes (approximately 177,000 tonnes of CO2 per annum).  
The ridgeline location at Berrimal offers a nationally competitive wind resource.  
Accordingly, the proposed wind farm is consistent with Government objectives for reducing greenhouse emissions, increasing public awareness about greenhouse issues and promoting the use of renewable energy in Victoria.  
The proposed wind farm will result in the sustainable development and use of land that will have minimal impact on natural resources and ecological processes. | Section 2.3 & Section 2.4 |
<table>
<thead>
<tr>
<th>Planning Objective</th>
<th>Source of Objective</th>
<th>Planning Response</th>
<th>Report Location</th>
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</thead>
</table>
| Impacts on land and water | Clause 19.01-1 Renewable Energy  
Clause 19.03-3 Stormwater  
Clause 21.06 Economy of the Shire  
Clause 21.07 Natural Resources and Environment  
Clause 21.10 Objectives Strategies and Implementation  
Clause 21.11 Monitoring and Review  
Clause 22.03 Rural Land and Sustainable Agriculture  
Clause 22.05 Environmental Management | Due to the small development footprint and relatively shallow depth of foundations, impacts to surface and ground water, water bodies and waterways are expected to be minimal through construction and operation.  
Construction and operational EMPs will be developed to ensure that the proposed wind farm proceeds in an environmentally acceptable manner. | Section 7.11 and Appendix D |
| Impacts on biodiversity | Clause 12.01-1 Protection of Habitat  
Clause 12.01-2 Native Vegetation Management a Framework for Action (Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines 2013 may be relevant by assessment stage)  
Clause 21.07 Natural Resources and Environment  
Clause 21.10 Objectives Strategies and Implementation  
Clause 21.11 Monitoring and Review  
Clause 22.03 Rural Land and Sustainable Agriculture  
Clause 22.05 Environmental Management | A flora and fauna assessment has been undertaken which identified that the Berrimal ridgeline has been substantially altered through historic land management practices. Extensive areas of introduced pasture species have resulted in the loss of indigenous vegetation and habitats. Areas of low quality native vegetation remain in certain locations.  
This application incorporates a concurrent request for removal of native vegetation. Detailed design of the site will incorporate the process of ‘avoid’, ‘minimise’ and ‘offset’ under the provisions of the current Native Vegetation Management Framework. A ‘net gain’ assessment will be undertaken at that detailed design stage for subsequent secondary consent endorsement by the Buloke Shire and DEPI. It is envisaged a ‘no net loss’ assessment would be undertaken at the same time under the provisions of the | Section 7.1, Appendix D and Volume 1 |
### Planning Objective

**Impacts on air quality**

**Source of Objective**
Clause 13.04-2 – Air Quality

**Planning Response**
Any air quality impacts associated with the construction phase of the proposed wind farm will be minimal. The construction phase will be undertaken in accordance with an EMP, ensuring that dust emissions, or any other potential air quality impacts, are minimised.

**Report Location**
Appendix D

### Control of noise effects on sensitive land uses

**Source of Objective**
Clause 13.04-1 – Noise Abatement

**Planning Response**
A noise impact assessment of the proposed wind farm concluded that the development is not expected to result in any significant loss of amenity to adjoining residences as a result of noise. This assessment identifies that the objective of this clause is able to be met.

Specifically, the assessment demonstrates that no dwellings will exceed the noise limits stipulated in the relevant noise standard for wind farms, NZ6808:2010. It was found that both the 24 hour and night-time noise limits are achieved at all assessed residential properties. Furthermore, noise emissions from the proposed Berrimal wind farm at all assessed residential properties were predicted below the lowest possible noise limit of 40dBA.

**Report Location**
Section 7.3, Appendix D and Volume 1

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**Planning Objective**

Clause 22.06 Conservation of Native Flora and Fauna

**Planning Response**
‘Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines 2013’ should they be adopted in the interim period.

The proposed wind farm is considered to have a low impact on any listed threatened fauna species or ecological communities.

Construction and operational EMPs will be developed to ensure these principles are upheld.

**Report Location**

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**Planning Objective**

Clause 13.04 – Air Quality

**Planning Response**
Any air quality impacts associated with the construction phase of the proposed wind farm will be minimal. The construction phase will be undertaken in accordance with an EMP, ensuring that dust emissions, or any other potential air quality impacts, are minimised.

**Report Location**
Appendix D
<table>
<thead>
<tr>
<th>Planning Objective</th>
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<th>Planning Response</th>
<th>Report Location</th>
</tr>
</thead>
</table>
| Impacts from fires | Clause 13.05-1 Bushfire Planning Strategies and Principles  
Clause 22.07 Wildfire Protection | The risk of fire caused by the proposed wind farm is considered to be very low. In addition, the presence of the proposed wind farm may provide increased support for responding to bushfires with improved access tracks available on the site as a result of the proposed wind farm.  
Consultation with the County Fire Authority has been undertaken, and will be further progressed in finalisation of the EMP.  
Accordingly the proposed wind farm is considered appropriate in the context of these clauses. | Section 4 and Appendix D |
| Impacts on sites of cultural and historic significance | Clause 15.03-1 – Heritage Conservation  
Clause 15.03-2- Aboriginal Cultural Heritage  
Clause 21.10 Objectives Strategies and Implementation | A complex CHMP has been prepared for this project in accordance with the *Aboriginal Heritage Act 2006*. The Aboriginal and cultural heritage values of the proposed wind farm site has been investigated. The proposed wind farm is not expected to impact any non-Aboriginal sites, whilst all areas of Aboriginal cultural heritage sensitivity, with the exception of one low level potential artefact, will be protected. | Section 7.2 and Volume 1 |
| Impacts on visual amenity | Clause 12.04-2 Landscapes  
Clause 21.10 Objectives Strategies and Implementation | A landscape and visual impact assessment has been carried out. This report concludes that there will be a minor-moderate impact landscape impact to the Undulating Pastoral environment in the immediate vicinity of the site. Lower impacts will occur to locations more distant. Impact is offset by the relatively sparse settlement patterns of the area.  
Advertising signs, proposed to be located at the temporary construction compound and at substations, will be designed to | Section 7.4 and Volume 1 |
### Planning Objective
- Amenity impacts on adjoining properties
- Loss of productive agricultural land

### Source of Objective
- Clause 13.02-1 Floodplain Management
- Clause 18.04-3 – Planning for Airfields
- Clause 19.03-4 – Telecommunications
- Clause 22.03 Rural Land and Sustainable Agriculture
- Clause 11.05-3 Rural Productivity
- Clause 14.01-1 Protection of Agricultural Land
- Clause 14.01-2 Sustainable Agricultural Use

### Planning Response
- Amenity impacts have been carefully considered in terms of noise, blade glint, shadow flicker, electromagnetic interference and visual amenity of infrastructure to minimise off-site impacts.

- Telephone and television signals are not expected to be affected by the proposed wind farm. If any impacts do occur the potential interference is expected to be minimal and rectifiable.

- The proposed wind farm is not expected to have any significant impacts on aviation safety, being located well distant from registered and unregistered airfields. Should turbine tip heights be above 150m Above Ground Level (AGL), night aviation lighting will be installed. This lighting will be designed to minimise downward light spill in order to mitigate any impact to adjoining residences and localities.

- The proposed wind farm is not anticipated to have an impact on the surrounding land use zones- with all activities in the adjacent Farming Zone able to continue unaffected by the presence of the wind farm.

- The proposed wind farm is a complimentary land use to the current agricultural use occurring on the site and will facilitate the continuation of agricultural activity. It will provide host landholders with an additional income source whilst allowing agricultural production to continue with minimal impact.

### Report Location
- Section 7.4, Section 7.9, Section 7.10, and Volumes 1 and 2
- Section 7.11, Appendix D and Volume 2
<table>
<thead>
<tr>
<th>Planning Objective</th>
<th>Source of Objective</th>
<th>Planning Response</th>
<th>Report Location</th>
</tr>
</thead>
</table>
| Clause 21.06 Economy of the Shire  
Clause 21.08 Key Issues and Influences  
Clause 21.09 Strategic Framework and Vision  
Clause 21.10 Objectives Strategies and Implementation  
Clause 21.11 Monitoring and Review  
Clause 22.03 Rural Land and Sustainable Agriculture  
Clause 22.05 Environmental Management | There is also the potential for income generated from the wind farm to be reinvested by landholders into the agricultural enterprises. The proposed wind farm will also have no impact on the continued use of neighbouring properties for agricultural use. Additionally the construction of improved access tracks may improve the agricultural efficiency of the sites.  
Likewise the improvement to the local road network required to facilitate construction will result in a lasting improvement to neighbouring landowner’s productive opportunities.  
A community benefit fund and local sponsorship program will operate through the life of the development. | | |
| Clause 17.02-4 Innovation and Research  
Clause 21.06 Economy of the Shire  
Clause 21.08 Key Issues and Influences  
Clause 21.09 Strategic Framework and Vision  
Clause 21.10 Objectives Strategies and Implementation  
Clause 22.03 Rural Land and Sustainable Agriculture | The proposed wind farm will contribute to the economic well-being of the local community and the State throughout the construction and operation phase of the project. The construction phase will generate positive economic activity through manufacturing and employment. During the operation of the wind farm there will also be several revenue streams that will have a positive impact on the local economy; these include annual operations and maintenance expenditure, host landholder payments, annual Municipal rates, and the establishment of a community benefit fund and local sponsorship program. | Section 7.11 and Volume 2 |
<table>
<thead>
<tr>
<th>Planning Objective</th>
<th>Source of Objective</th>
<th>Planning Response</th>
<th>Report Location</th>
</tr>
</thead>
</table>
| Impact on traffic and tourism      | Clause 17.03 – Tourism  
Clause 18.02-4 -Management of the Road System  
Clause 18.02-5 – Car Parking  
Clause 22.08 -Infrastructure                         | The traffic and transport assessment concludes the proposed wind farm is not expected to create any significant adverse traffic impacts in the locality. The proposed wind farm has been sited and designed to ensure minimal impacts on the surrounding road network.  
Road and intersection upgrades will occur to Council local road assets to facilitate the construction of the wind farm.  
Nevertheless, there may be minor disruption to the local movement of stock on roads used for wind farm construction vehicle access. This issue is known, and appropriate communications protocols will be established to minimise this short term, but genuine concern.  
The proposed wind farm may have a limited, but positive impact on tourism within the surrounding area. | Section 4, 7.7 and Volume 2 |
| Overall benefits to the community  | Clause 21.01 Introduction  
Clause 21.06 Economy of the Shire  
Clause 21.08 Key Issues and Influences  
Clause 21.09 Strategic Framework and Vision  
Clause 21.10 Objectives Strategies and Implementation  
Clause 22.03 Rural Land and Sustainable Agriculture | The preparation of the application has involved an assessment which encompasses and integrates relevant environmental, social and economic factors. Based on this assessment of policies and factors it is considered that the project will result in a sustainable development that will have an overall net community benefit.  
The proposed wind farm will have an overall net community benefit in terms of:  
- Reducing greenhouse gas emissions;  
- Providing a source of renewable energy in the region;  
- Providing opportunities for supplementary income for | Section 2 and 7.11 |
<table>
<thead>
<tr>
<th>Planning Objective</th>
<th>Source of Objective</th>
<th>Planning Response</th>
<th>Report Location</th>
</tr>
</thead>
</table>
|                    |                    | - Supporting the continuation of agriculture, whilst protecting the qualities of rural areas by preserving the ecological and historical environment.  
- Acting to diversify the highly agriculturally dependent economy of the Buloke Shire.  
- Providing additional annual municipal rates to the Buloke Shire, and;  
- The establishment of a community benefit fund and local sponsorship program.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |
3.3.5 Planning and Policy Guidelines for Development of Wind Energy Facilities in Victoria

The Wind Energy Guidelines are a reference document under Clause 52.32 in all Victorian Planning Schemes that must be considered by the responsible authority in assessing planning permit applications. The Wind Energy Guidelines include aspects such as government policy, relevant planning frameworks for the consideration of wind energy projects and the role of wind farms in achieving a sustainable energy future for Victoria.

A detailed response, outlining ACCIONA Energy’s process and consideration of Wind Energy Guidelines Section 4.3 ‘Meeting Application Requirements’ is provided in Section 5 of this report. Section 5 provides an overall description of the comprehensive site analysis and design response undertaken.

Table 3-3 below outlines how the Berrimal wind farm responds to the specific requirements of Section 5 ‘Information for responsible authorities assessing a wind energy facility’ of the Wind Energy Guidelines.
### Table 3-3 Assessment Framework - Specific Responses to Clause 52.32 and Section 5 of the Policy and Planning Guidelines for Wind Energy Facilities in Victoria

<table>
<thead>
<tr>
<th>Assessment Criteria and relevant Guidelines Section</th>
<th>Basis</th>
<th>Matters to be considered</th>
<th>Report Findings</th>
<th>Relevant report section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribution to Government Policy Objectives (Section 5.1.1)</td>
<td>The Expanded Renewable Energy Target demonstrates the strong government commitment to the development of renewable energy as an important action to address the threat of climate change and diversify the source of energy generation in Australia.</td>
<td>Contribution to Australia’s efforts to ensure the equivalent of at least 20% of Australia’s electricity supply is generated by renewable sources by 2020. Encouraging and supporting the development of sustainable industries. Contribution to increasing the security and diversity of Victoria’s energy supply.</td>
<td>Approximately 177,000 tonnes of CO₂ emissions to be abated each year. Contribution to the Commonwealth renewable energy target. Enhancement of the security and diversity of electricity supply in the lower Mallee.</td>
<td>Section 2</td>
</tr>
<tr>
<td>Amenity of the Surrounding Area (Section 5.1.2)</td>
<td>Noise (5.1.2(a)) Wind turbine noise is required to comply with the noise levels recommended for dwellings as specified in NZS 6808:2010 Wind Farm Noise Construction noise needs to</td>
<td>The compliance level set out in the Standard is an absolute level of 40 dB(A) or 5 dB(A) above the background, whichever is greater. The compliance level of each residence is related to the existing background level at the residence for varying wind.</td>
<td>Noise Predicted noise levels at neighbouring residences will comply with NZS 6808:2010. Noise impacts will be monitored post construction. Construction noise will be in compliance with EPA guidelines.</td>
<td>Section 7.3, Appendix D and Volume 1</td>
</tr>
<tr>
<td>Assessment Criteria and relevant Guidelines Section</td>
<td>Basis</td>
<td>Matters to be considered</td>
<td>Report Findings</td>
<td>Relevant report section</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
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<td>--------------------------</td>
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<td>------------------------</td>
</tr>
<tr>
<td>Be managed in accordance with relevant EPA guidelines.</td>
<td>speeds.</td>
<td><strong>Blade Glint (5.1.2(b))</strong>&lt;br&gt;Blade glint resulting from the reflection of the sun from the rotor blades needs to be managed.</td>
<td><strong>Blade Glint</strong>&lt;br&gt;Blade glint should be minimised by finishing the blades with a surface treatment of low reflectivity.</td>
<td>Blade Glint will be minimised by the use of a low reflectivity gel finish on wind turbine blades.</td>
</tr>
<tr>
<td><strong>Shadow Flicker (5.1.2(c))</strong>&lt;br&gt;The shadow flicker experienced at any dwelling can be modelled in advance and mitigated through siting and design.</td>
<td><strong>Shadow Flicker</strong>&lt;br&gt;Shadow flicker experienced at any dwelling in the surrounding area must not exceed 30 hours per year.</td>
<td>The proposed wind farm will meet the Wind Energy Guidelines requirements for shadow flicker.</td>
<td></td>
<td>Section 7.5 and Volume 2</td>
</tr>
<tr>
<td><strong>Electromagnetic Interference (5.1.2(d))</strong>&lt;br&gt;The potential for interference of electromagnetic waves can be calculated from information about affected telecommunications stations or other transmitters. The potential for</td>
<td><strong>Electromagnetic Interference</strong>&lt;br&gt;Locations of nearby telecommunications towers need to be identified.</td>
<td>Locations of nearby telecommunication towers have been identified.</td>
<td></td>
<td>Location of nearby telecommunication towers have been identified.</td>
</tr>
<tr>
<td>Assessment Criteria and relevant Guidelines Section</td>
<td>Basis</td>
<td>Matters to be considered</td>
<td>Report Findings</td>
<td>Relevant report section</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
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</tr>
</tbody>
</table>
| Landscape and Visual Amenity (Section 5.1.3)      | The Wind Energy Guidelines set out the factors that vary the magnitude of changes to the existing landscape. The Guidelines also identify that local government planning schemes may include landscape objectives such as environmental significance overlays, vegetation protection overlays and significant landscape overlays. | - The significance of the landscape and its capacity to accommodate or accept change.  
- The number, height, scale, spacing, colour and surface reflectivity of the wind turbines.  
- The visibility of the proposed wind farm, considering the types of locations within the viewshed and the distances from which the development will be viewed.  
- The number and sensitivity of potential viewers (e.g. residents, tourists etc).  
- The strategic approach taken in site selection.  
- Any appropriate impact | - The proposed wind farm will have a generally minor-moderate visual impact on its surrounds within an undulating pastoral area of Buloke and adjacent Loddon Shires.  
- It is located in a man-modified landscape.  
- It is located in a sparsely populated area, with minimal diversity in sensitive receivers | Section 7.4 and Volume 1 |
<table>
<thead>
<tr>
<th>Assessment Criteria and relevant Guidelines Section</th>
<th>Basis</th>
<th>Matters to be considered</th>
<th>Report Findings</th>
<th>Relevant report section</th>
</tr>
</thead>
</table>
| Flora and Fauna (Section 5.1.4)                    | Surveys are required where species listed under the EPBC Act and the FFG Act are considered reasonably likely to be present on the site. Survey work should determine the species present, likely impacts and appropriate mitigation measures. | - Whether species and communities protected under the EPBC Act and the FFG Act are found on the wind farm site.  
- The sensitivity of protected species to disturbance.  
- The potential loss of habitat of these species. | - The wind farm site is located on predominantly cleared, heavily modified agricultural land.  
- The proposed wind farm is not expected to result in any significant impact on habitat or threatened species listed under the EPBC Act and the FFG Act.  
- The proposed wind farm will not have a significant impact on bird or bat populations including any species of conservation significance.  
- Targeted surveys may be required for specific EPBC species on the basis of feedback on an EPBC Act referral.  
- The Native Vegetation Management Framework principles of ‘avoid, minimise and offset’ will be applied to reduce impact and removal of native vegetation on site. Existing native vegetation on site is of typically a low quality with substantial modification having occurred. | Section 7.1 and Volume 1 |
<p>| Aircraft Safety                                   | The height of wind turbines has the potential to impact | - Wind turbines should not intrude into any obstacle | - No infrastructure will intrude on any | Section 7.10 |</p>
<table>
<thead>
<tr>
<th>Assessment Criteria and relevant Guidelines Section</th>
<th>Basis</th>
<th>Matters to be considered</th>
<th>Report Findings</th>
<th>Relevant report section</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Section 5.1.5) on the operation of nearby airfields. Consultation with CASA is necessary to determine airfields within 30 km radius and associated requirements.</td>
<td>limitation surface for any airfield. CASA should be consulted.</td>
<td>obstacle limitation surface for any airfield The development presents a generally low risk to aviation activities in the vicinity of the site Recommendations for actions to ensure the presence of the wind farm is noted on relevant aviation charts Aviation lighting will be required should turbine tip height exceed 150m AGL</td>
<td></td>
<td>and Volume 2</td>
</tr>
<tr>
<td>Construction Impacts and Decommissioning (Section 5.1.6) Construction and decommissioning of a wind farm has the potential to create on and offsite adverse impacts on the amenity of residents and the environment.</td>
<td>An EMP to be prepared outlining approaches and techniques to minimise adverse amenity impacts EMP to outline principles, standards, mitigation &amp; monitoring measures, complaints &amp; emergency management protocols and a decommissioning &amp; rehabilitation plan.</td>
<td>A comprehensive draft EMP has been prepared responding to the key requirements</td>
<td></td>
<td>Appendix D</td>
</tr>
</tbody>
</table>
3.4 Planning Conclusions

Based on a balanced assessment of the proposed wind farm against the Buloke Planning Scheme and other planning policies and strategies, it is concluded that the proposed wind farm will be an appropriate planning outcome that will result in the development of an additional renewable energy resource in Victoria. Furthermore, the development will result in an overall net community benefit, and represent an example of sound, orderly and responsible land use planning.
4. Community Consultation

4.1 Summary

This Community Consultation chapter outlines how ACCIONA Energy has engaged and consulted with the local community and key stakeholders regarding the Berrimal Wind Farm. It additionally provides details of proposed future community and stakeholder engagement activities.

4.2 Consultation objectives

The objectives of community engagement for the Berrimal Wind Farm are:

- To engage the local community and key stakeholders to support the planning permit application process for the Berrimal Wind Farm;
- To build a foundation of community support and relationships to ensure the success of the Berrimal Wind Farm;
- To provide a sound basis for the ‘Social Licence to Operate’ necessary for a project of the scale of Berrimal to succeed;
- To ensure the general community and key stakeholders are provided with timely, effective and two-way communication opportunities regarding the Berrimal Wind Farm; and
- To provide a mechanism for feedback to ACCIONA Energy from which to make adjustments and refinements to the project.

Inherent in these objectives is the need to engage the community consistently to support the planning permit application process. Importantly, the activities are aimed at building a relationship of trust and transparency with the local community, forming a basis for ACCIONA Energy’s long term development and operation at the Berrimal site- our ‘social licence’.

4.3 Consultation activities

ACCCIONA Energy commenced engaging with the local community in 2006 to support the original and subsequently approved planning permit application for 16 turbines. An intensive community relations initiative has been undertaken in 2012 and 2013 to coincide with the both an extension to the original application and in support of the
current revised planning application. The history of the consultation undertaken in relation to the Berrimal Wind Farm is shown in Table 4-1.

**Table 4-1 History of Community Consultation**

<table>
<thead>
<tr>
<th>Date</th>
<th>Consultation Activity</th>
</tr>
</thead>
</table>
| April-September 2006 | • **Project information desk** was set up with a free call 1800 number.  
• Email address and stakeholder database created.  
• **Meetings** were held with neighbours and interested parties living within a 10km radius of the Berrimal Wind Farm site (15 meetings in total).  
• **Community newsletters** distributed as inserts to the North Central News on 31 May and 6 September 2006.  
• **Advertisements** were placed in the North Central News, the Buloke Times and the Loddon Times newspapers to coincide with the Community Information Day, 17 September 2006.  
• **Community Information Day** was held 17 September 2006 at Charlton Senior Citizens Club. Feedback on the day was subsequently provided to the Buloke Shire Council. |
<p>| June 2007 | • <strong>Media Release</strong> stating that ACCIONA Energy had received planning approval for the Berrimal Wind Farm with Buloke Shire Council. |
| July 2007 | • <strong>Newsletter 1</strong> informing of approval of wind farm |
| February 2008 | • <strong>Newsletter 2</strong> providing an update on project activities, including progress through secondary planning consents |
| May 2010 | • <strong>Visit</strong> to neighbouring holders and Buloke Shire Council by Community Relations Co-ordinator and Environmental and Planning Co-ordinator. Planning permit extension was discussed with both land holders and Buloke Shire Council. |
| June 2010 | • <strong>Letter</strong> to landowners explaining the recent planning permit extension with Buloke Shire Council. |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Consultation Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 2012</td>
<td><strong>Door knocking</strong> to project neighbours and updated stakeholder mapping. All neighbour properties within a 5km radius of the wind farm were approached. Meetings were conducted with 18 neighbours, with calling cards and fact sheets delivered to neighbours who weren't home.</td>
</tr>
<tr>
<td>November 2012</td>
<td><strong>Media release</strong> regarding Berrimal Wind Farm informing of upcoming Open Houses and door knock.</td>
</tr>
<tr>
<td>November 2012</td>
<td><strong>Letter to neighbours</strong> to all the landowners within 5kms of the Berrimal wind farm to update them about the activities associated with the Berrimal Wind Farm and also invite them to the open houses.</td>
</tr>
<tr>
<td>December 2012</td>
<td><strong>Open houses (Community Information Day)</strong> at Charlton, Wedderburn and St Arnaud. Newspaper advertisements were placed in the Buloke Times and North Central News. At these meetings 9 people attended in Wedderburn, 9 in Charlton and 3 in St Arnaud.</td>
</tr>
<tr>
<td>December 2012</td>
<td><strong>Event</strong> at the ACCIONA Energy sponsored Wedderburn Harness Racing day. Project staff in attendance.</td>
</tr>
<tr>
<td>January 2013</td>
<td><strong>Berrimal newsletter edition 3</strong>, highlighting upcoming sponsorship opportunities for community groups in Charlton and Wedderburn.</td>
</tr>
<tr>
<td>November 2013</td>
<td><strong>Berrimal newsletter edition 4</strong> updates on new planning application submission for the Berrimal Wind Farm and details of benefits flowing from sponsorship distributions.</td>
</tr>
<tr>
<td>November 2013</td>
<td><strong>Open houses (Community Information Day)</strong> at Wedderburn and Charlton. Advertisements were placed in the Buloke Times and North Central News. At these meetings 10 people attended in Charlton and two people in Wedderburn.</td>
</tr>
<tr>
<td>November 2013</td>
<td><strong>Door knocking</strong> and meetings with neighbours within 5kms of the Berrimal Wind Farm. 39 neighbours were called and of this meetings were held with 9 neighbours. Calling cards were left.</td>
</tr>
<tr>
<td>Date</td>
<td>Consultation Activity</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>November 2013</td>
<td><strong>Stakeholder engagement</strong> with the following Departments:</td>
</tr>
<tr>
<td></td>
<td>- Berrimal CFA</td>
</tr>
<tr>
<td></td>
<td>- Yeungroon CFA</td>
</tr>
<tr>
<td></td>
<td>- Loddon Mallee Region CFA</td>
</tr>
<tr>
<td></td>
<td>- Buloke Shire Mayor and Councillors, CEO, Planning Officer, Community Development Officer and Assets and Operations Manager</td>
</tr>
<tr>
<td></td>
<td>- Loddon Shire Director Economy and Community</td>
</tr>
<tr>
<td></td>
<td>- Vic Roads Senior Road Safety and Traffic Engineer, and Senior Engineer – Traffic</td>
</tr>
<tr>
<td></td>
<td>- North Central Catchment Management Authority</td>
</tr>
<tr>
<td></td>
<td>- Department of Environment and Primary Industries</td>
</tr>
<tr>
<td></td>
<td>- Dja Dja Wurrung Clans Aboriginal Corporation</td>
</tr>
</tbody>
</table>

### 4.4 Consultation approach

All interactions with landowners, neighbours and other stakeholders (by phone, email, letter or visit) are recorded in the Consultation Manager stakeholder database software.

Project staff maintain a record of all interactions with project stakeholders for continuity, and to assist with relationship building with the community. There are a number of methods which have been utilised by ACCIONA Energy to engage with the community and stakeholders that may have an interest in the project:

**Stakeholder Consultations Undertaken**

- **Community hotline**: ACCIONA Energy has a free call 1800 number to take enquiries regarding developments with the Berrimal Wind Farm.
- **Email and website**: The Berrimal Wind Farm has a dedicated email address whereby enquiries regarding the project can also be taken through the website.
Copies of the current newsletter can also be accessed through the ACCIONA Energy website.

- **Newsletter:** Newsletters are produced periodically to update the Berrimal community of the developments with the Berrimal Wind Farm. The Berrimal Wind Farm newsletter is distributed by mail to all the project neighbours within 5kms of the Berrimal Wind Farm. Newsletters have also been distributed by email to both the Loddon and Buloke Shires, to Councillors, CEO’s and associated staff along with local community groups in Wedderburn and Charlton.

- **Resources:** Copies of various project supporting information was provided at the open house information sessions, including the original planning permit, layout map, key facts and figures and reference documents, plus the latest newsletter.

- **Neighbour doorknocking:** ACCIONA Energy project staff, in an effort to meet with all the project neighbours, has conducted two doorknocking exercises to discuss the Berrimal Wind Farm.

- **Calling cards:** Calling cards and a project fact sheet with relevant contact details were left at households when there was no-one home during the door knocking process.

- **Community open houses:** ACCIONA Energy has held a number of community open houses or drop in sessions in which project staff are available to meet with the community. These have been held in Wedderburn, Chartlon and St Arnaud in order to capture interested parties at the various ends of the project area. Some of the trends in topics that have been raised by the attendees were potential jobs created by a wind farm, construction timeframes, as well as potential sponsorship opportunities for community groups.
Future Stakeholder Consultations

The following consultations are planned for the coming months, to support the planning application and continue to build support and knowledge about the project:

- **Meet and greet BBQ:** After further consultation with Berrimal project neighbours, ACCIONA Energy will host a community BBQ in 2014 at the CFA fire sheds in both Berrimal and Yeungroon. This method of contact was deemed preferable for updating and engaging the local community within 5kms of the Berrimal Wind Farm.

- **Stakeholder meetings:** Throughout the planning application process, ACCIONA Energy has consulted with Buloke Shire, Loddon Shire, neighbours, landowners, community groups, Yeungroon CFA, Berrimal CFA and Loddon Mallee Region CFA, Mallee Catchment Management Authority, Vic Roads, and the Department of Environment and Primary Industries. Further consultations and discussions will occur with these key stakeholder groups through the planning process. Correspondence with these groups is found at Appendix E.

- **Landowner meetings:** Throughout the whole project lifecycle ACCIONA Energy has updated the two landowner families on the progress of the Berrimal Wind Farm. This has been achieved by meetings, phone calls, emails and letters. The families of both landowners have a rich family history in the area and both live and have farming interests in the Berrimal area. Both families are also passionate about the local area and have forged positive relationships with their neighbours and with local community groups. For these reasons both families have been instrumental in assisting with developing relationships with the local communities in and around Berrimal.

These consultations and discussions will of course continue.

4.5 Consultation outcomes

Throughout the consultation process, ACCIONA Energy has continued to educate itself about the needs, views and perspectives of project neighbours and local community by adjusting and continually refining the ways and means in which engagement is undertaken.
Community Outcomes

Generally, the community response to the Berrimal Wind Farm has been positive. The feedback received from doorknocking and meetings with neighbours was that there was a general interest in:

- The project specifications;
- Turbine layouts; and
- Infrastructure locations relative to their dwelling and friends and neighbours dwellings.

More specific interest came from a limited number of interactions in:

- Locations and numbers of vehicle movements during construction;
- The potential impacts on local utilisation of rural roads for stock movements; and
- Likely noise and visual impacts.

In response to these more specific levels of interest, ACCIONA Energy has:

- Provided more detailed information on traffic routes, required road upgrades and traffic volumes;
- Met more frequently with interested parties, providing additional information and discussion on key issues;
- Commenced an internal process of design review to determine further opportunities to mitigate construction traffic/livestock interaction; and
- Agreed to continue discussions with an open minded approach to achieve a reduced level of disruption to farming activities, particularly during the intensive construction phase.

Project neighbours have confirmed they are receiving their newsletters and (with the exception of a limited number of individuals where the above conversations are occurring), that the content is sufficient to keep them updated on the progress of the project.

Stakeholder Outcomes

Likewise, feedback from relevant stakeholder groups has been positive throughout.

Stakeholder discussions have focused on the three shire councils relevant to the site: Buloke, Loddon and Northern Grampians. Of the three, discussions with Buloke Shire have been the most intensive given the location within the Shire boundaries. Stakeholder
engagement has additionally occurred with key external referral agencies including the CFA, Catchment Management Authorities, DTPLI, DEPI and VicRoads.

Councils have taken a specific interest in the following issues:

- Impact on local roads;
- Extent of economic and social benefit which may flow from the development;
- Background and issues which led to ACCIONA Energy's disinvestment in the original Berrimal consent - in particular the challenges faced in achieving a viable, economic connection to the national grid; and
- The extent and views of the immediate local community.

In response, and in anticipation of these as key issues, ACCIONA Energy has provided updates to relevant stakeholder groups, providing information on:

- Efforts to minimise potential impacts on local roads, including proposals for road upgrades;
- Providing regular updates on project progress, including estimates of economic benefits and activities as knowledge in these areas advances as the wind industry matures in Australia;
- Providing updates on the specific challenges associated with grid connection in a relatively weak location in the national grid;
- The general mood of the local community, and activities ACCIONA Energy is undertaking to engage and consult with the community; and
- Specific issues relevant to individual referral agencies.

### 4.6 Community Enhancement and Benefit Program

ACCIONA Energy will establish a Community Enhancement and Benefit program for the operational life of the Berrimal Wind Farm. This program will comprise three key components:

- An enhancement, education and community collaboration program, involving local schools, community groups and neighbours. This program will involve ACCIONA Energy acting collaboratively with the community to enhance pre-existing community initiatives and to expand the knowledge and understanding of renewable energy in the district;
- A Community Benefit Fund of approximately $35,000 per annum, indexed to CPI; and
- A Local Sponsorship program of approximately $15,000 per annum.
Each of the three initiatives of the program will work in unison to ensure an overall net benefit to the nearby community. This is an important undertaking for ACCIONA Energy.

4.6.1 Proposed Community Benefit Fund

ACCIONA is strongly committed to ensuring local communities in the vicinity of its projects share in the benefits of renewable energy projects. At Berrimal, a Community Benefit Fund is envisaged, which will commence at beginning of project operation. The structure of the fund will be developed in consultation with the local community in the coming months and prior to construction commencing. It is envisaged a committee will be established to oversee the responsible distribution of funds under a terms of reference. These terms of reference will be focused on ensuring an equitable distribution of funds to appropriate local enhancements and projects- potentially on both private freehold and public lands. This fund will focused on delivering a direct and material benefit into immediate neighbourhood of the project.

It is envisaged the Community Benefit Fund will commence at a level of $35,000 per annum, indexed to CPI for the operational life of the project.

The Community Benefit Fund and the way it may operate is currently in its infancy, and further consultation will be undertaken to ensure that the model is generally accepted within the community. It is important to ACCIONA Energy that the fund responds to the specific needs of the local community.

4.6.2 Sponsorship

ACCIONA Energy chooses to support the communities in which we have wind farm interests. Typically with wind farm projects there is an associated local sponsorship fund, where funds are made available to community groups. In 2012 and 2013 ACCIONA Energy supported a number of community groups in Wedderburn and Charlton with small but wide ranging financial support being provided.

Further sponsorship money will be made available in 2014 through the Berrimal wind farm sponsorship fund for local community groups. A program of local sponsorship, indexed to CPI will continue to be allocated for the life of an operating Berrimal wind farm. It is envisaged the Local Sponsorship program for the operating wind farm will commence at a level of $15,000 per annum, indexed to CPI for the operational life of the project.
ACCIONA Energy’s sponsorship allocations for 2012 and 2013 are shown in Table 4-2 and Table 4-3.

**Table 4-2 Sponsorship allocation for 2012**

<table>
<thead>
<tr>
<th>Community Group</th>
<th>Sponsorship spend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wedderburn Harness Racing Club</td>
<td>Wedderburn Racing Cup December 2012</td>
</tr>
<tr>
<td>Charlton Community Garden</td>
<td>Community garden equipment</td>
</tr>
<tr>
<td>Charlton Men’s Shed</td>
<td>Upgrade shed facilities</td>
</tr>
<tr>
<td>Charlton Courthouse Committee</td>
<td>Charlton floods photographic display</td>
</tr>
<tr>
<td>Charlton Back-to Committee</td>
<td>150th anniversary Back-to event</td>
</tr>
</tbody>
</table>

**Table 4-3 Sponsorship allocation for 2013**

<table>
<thead>
<tr>
<th>Community Group</th>
<th>Sponsorship spend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charlton Angling Club</td>
<td>Rainwater tank, fridge</td>
</tr>
<tr>
<td>Wedderburn Community Garden</td>
<td>Community Garden Equipment</td>
</tr>
<tr>
<td>Wedderburn Football Club</td>
<td>Sponsorship of club activities</td>
</tr>
<tr>
<td>Charlton Croquet Club</td>
<td>Printer and seating</td>
</tr>
<tr>
<td>Charlton Pre School</td>
<td>Split system heating</td>
</tr>
<tr>
<td>Charlton Catholic School Auxiliary</td>
<td>New drinks fridge</td>
</tr>
<tr>
<td>Charlton Playgroup</td>
<td>Slide</td>
</tr>
<tr>
<td>Charlton Rotary Club</td>
<td>Art Show</td>
</tr>
<tr>
<td>Charlton Golf Club</td>
<td>Ladies golf day</td>
</tr>
</tbody>
</table>

**4.7 Future community engagement activities**

Table 4-4 displays the projected community engagement activities for 2014-2017.

**Table 4-4 Projected community engagement activities for 2014-2017**

<table>
<thead>
<tr>
<th>Action</th>
<th>Purpose</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stakeholder Mapping</td>
<td>Continue to build a database of neighbours, community representatives, groups and key stakeholders.</td>
<td>Underway and ongoing</td>
</tr>
<tr>
<td>2. Champions</td>
<td>Identify local project champions and provide information / support to assist them with discussing the project in the local community.</td>
<td>Jan 2014</td>
</tr>
<tr>
<td>3. Materials</td>
<td>Produce up to four newsletters each year. Provide general and up-to-date information on the ACCIONA website.</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Action</td>
<td>Purpose</td>
<td>Timing</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
</tbody>
</table>
| 4. Waubra Site Visit           | Invite Buloke and Loddon Shire Councillors and officers (and DEPI/DPTLI) to visit the Waubra Wind Farm.  
Invite the general public to visit the Waubra Wind Farm. | Early 2014     |
| 5. Local Sponsorship           | Allocate sponsorship annually.                                         | Ongoing        |
| 6. Events                      | Identify local events and opportunities to support, promote, and participate. | Ongoing        |
| 7. Regional Media              | Build relationships with key local media organisations.               | ASAP           |
|                                | Develop planned media campaigns around specific project milestones.     | As required    |
|                                | Monitor media coverage and respond as required                         | Ongoing        |
| 8. Recording                   | Record all interactions in Consultation Manager                        | Ongoing        |
| 9. Information Desk            | Maintain Information Desk (1800 number, email and website)             | Ongoing        |
| 10. Berrimal Neighbours BBQ    | Invite Berrimal neighbours to a local BBQ                              | Early 2014     |
| 11. Yeungroon Neighbours BBQ   | Invite Yeungroon neighbours to a local BBQ                              | Early 2014     |
| 12. Berrimal Community Reference Group | Seek applications from the community.  
Hold periodic meetings during and post construction. | 2017           |
| 13. Neighbour Enhancement Fund | Set up a Berrimal neighbour payment committee in 2017.                  | 2017           |

### 4.8 Conclusions

ACCIONA Energy will continue to consult, liaise and engage with the Berrimal community and the neighbouring towns of Wedderburn and Charlton. These communities are vital to the success of the project as is the professional reputation of ACCIONA as an active and visible corporate neighbour.

Community benefits to the Berrimal community will not be limited to local sponsorship and the proposed Community Benefit fund. There is also the possibility to work
collaboratively with the community on events that support the Berrimal community. These include local wind farm tours, educational opportunities for local schools and promotion of increased tourism in the area.

Community and Stakeholder consultation is critical to the success of the Berrimal project. The focus of our engagement in this area is to build and maintain a high level of ‘Social Licence to Operate’ where the company is an important, engaged member of the local community.

Continued, positive and transparent engagement with the Berrimal and surrounding community is a high priority. ACCIONA Energy has demonstrated this to date and will continue to reach out to the community into the future to ensure benefits of the project can be shared, communicated and understood.
5. Site Analysis and Design Response

5.1 Preliminary Site Analysis

The Berrimal wind farm site has been subject to a previous detailed analysis, which ultimately formed the basis of an approved development for 16 wind turbines, approved by Buloke Shire in 2007. As part of that process, a detailed site analysis was undertaken to determine the site’s suitability for development.

Consistent with the general provisions set out in the Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (Wind Energy Guidelines), ACCIONA Energy reviewed the original site analysis to determine the suitability of the site for an expanded project, as currently proposed.

The Berrimal wind farm was originally selected on a number of factors including the inland location, modified farmland character, low housing density, environmental conditions, competitive wind resource, the potential for the creation of local jobs and the likely supportive community in the region. These factors have not materially changed between 2007 and 2013.

Other primary criteria for wind farm siting include:

- **Exclusion Areas** – The following areas are not available for wind farm development, as specified in the Wind Energy Guidelines:
  - Areas reserved under the *National Parks Act 1975*.
  - Ramsar wetlands.
  - Yarra Valley Ranges, Dandenong Ranges, Macedon Ranges, and McHarg Ranges.
  - Bellarine Peninsula and Mornington Peninsula.
  - Within 5kms of the high water mark of the Great Ocean Road and the Bass Coast (west of Wilsons Promontory).
  - Urban growth zones.

- **Proximity to the electricity grid** – wind farms need to be connected to power lines in order to export the large quantities of electricity to the grid. There is a large cost associated with providing new power line connections. For this reason wind farms are usually located close to an existing power line where capacity is available; and

- **Availability of freehold land with supportive landowners.**
Based on the findings of the preliminary site analysis work, including grid constraints, desktop review of new/revised planning policies, revised environmental provisions and current knowledge of the local community, it was determined that the Berrimal site continued to offer an opportunity to progress to detailed analysis for an expanded project.

5.2 Detailed Site Analysis

As the results of the preliminary site analysis indicated no significant barrier to the development, and initial discussions with Council indicated support and interest in the proposal, ACCIONA Energy committed to developing the project further. A detailed site analysis was undertaken involving the following:

- Community consultation;
- Landscape and Visual assessment;
- Planning assessment;
- Fauna and Flora assessment;
- Cultural heritage assessment;
- Review of previous Geotechnical assessment undertaken;
- Acoustic assessment;
- Shadow flicker assessment;
- Electromagnetic interference assessment; and
- Traffic and transport assessment

Expert consultants were engaged to undertake the majority of the assessments. ACCIONA Energy used its in-house skills and resources to undertake the consultation program, planning assessment and to prepare the shadow flicker and electromagnetic interference reports.

Section 7.0 discusses the results of these studies and full reports of each assessment are provided in Volumes 1 and 2. The Consultation undertaken is discussed in Section 4.0.

5.3 Design Response

The turbine and infrastructure siting has incorporated the recommendations from technical studies in its layout and proposed footprint, minimising impacts where possible. The following key factors have influenced the layout of the wind farm:

- Consultation with community, stakeholders and government organisations;
• Landscape and visual impact studies;
• Cultural heritage assessment;
• Energy resource calculations; and
• Other issues arising from detailed feasibility studies.

The design response responds to the technical, environmental and community needs of the project and reconciles these determinants with the identified local wind resource and any other constraints such as grid capacity.

5.3.1 Technical Factors

Technical factors taken into consideration when designing the wind farm include all of the elements associated with the construction of the project. They have direct influence on the economics of the project. Factors considered in refining the design of the Berrimal wind farm include:

- Turbine capacity and cost per megawatt produced;
- Proximity of connection point to electricity grid;
- Access and extent of upgrades required to local roads;
- Terrain features influencing positioning of tracks and wind turbines;
- Geotechnical conditions and optimal foundation designs; and
- Landform stability related to excavation of cable trenches, tracks and foundations.

5.3.2 Environmental, economic and social factors

Environmental, economic and social factors can have an influence on the size, design and micro-siting of wind turbines and associated facilities. The extent to which the design and layout of a wind farm responds to relevant environmental and social factors can have a bearing on community attitudes to such projects.

Some of the assessments raised issues that requires mitigation or requires those issues to be accommodated within the wind farm layout plan. The wind farm has been designed to respond to these issues.

Mitigation measures and design responses to environmental considerations may be found in Section 7.0.

5.3.3 Micro-siting

Micro-siting of the turbine positions is undertaken during the detailed design engineering phase of the project. During development of a final wind farm layout, several iterations
of changes to the wind turbine positions are generally required relative to the initial draft layout used for feasibility study purposes. The reasons for needing to make these changes may relate to practical construction issues, a differing final turbine to the reference turbine used in the initial assessment, environmental compliance issues or an improved understanding of the wind regime at the site.

This level of flexibility is required for the final wind farm design to allow for issues outlined in the following specific examples:

**Geotechnical**

Excavations for wind turbine foundations may reveal geotechnical issues such as subterranean voids or other unsuitable formations in the immediate area proposed for the turbine, requiring it to be moved to a more suitable adjacent area.

**Cultural heritage**

Micro-siting of proposed turbines may be required if consultation with indigenous people or preliminary excavations reveal any cultural heritage issues with specific locations.

**High-resolution contours**

Typically, wind farms are designed during the feasibility stages using publicly available contour data, which may be coarse in resolution or may be several years old. Surveying the site to develop current high-resolution data is expensive and is usually conducted at a mature stage of the project. The use of high-resolution contour data may reveal small variations in site topography which can be used to maximise the wind farm energy output, requiring re-siting or turbines.

**Additional wind data**

As additional wind data is recorded at a site, the understanding of the site wind regime is improved. Slight variations in the shape of the wind rose, atmospheric turbulence or the wind speed may result in changes to the assessment of the ‘wake effect’ between turbines, or the mean wind speed experienced by different turbines. This may require the adjustment of turbine positions to reduce turbine dynamic loads or increase the likely energy output.

**Flora and Fauna**

Further targeted surveys of the site may reveal local vegetation which is of value in itself or as a habitat. In order to minimise impact on this vegetation due to turbine foundations or construction access, turbine locations and/or site roads may require adjustment.
Other construction considerations

When detailed topographic or vegetation information is available, other construction issues can be considered. These may include the need to identify areas for hardstands for the erection cranes and the requirement for a lay-down area during rotor assembly. Each of these requirements combined with topographic (i.e. ground slope) or vegetation considerations may result in the need for slight variation in the planned turbine location.

Run-off

The control of water run-off may impose constraints on roads and on turbine locations in the later stages of detailed engineering design.

5.4 Meeting application requirements

This section directly responds to the requirements of a planning application submitted for the development of a wind farm in Victoria. Table 5-1, Table 5-2 and Table 5-3 outline the requirements as listed in the Wind Energy Guidelines, ACCIONA Energy’s responses, and where further information can be found within this planning report.
Table 5-1 Site and context analysis of Berrimal Wind Farm

<table>
<thead>
<tr>
<th>Requirements under Wind Energy Guidelines</th>
<th>Response</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site analysis in relation to the site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site shape, dimensions and size</td>
<td>Technical assessments, based on potential access track locations and associated infrastructure have considered a development of area of just under 66 hectares. It is anticipated that actual disturbance will be significantly less than this.</td>
<td>Section 1.3</td>
</tr>
<tr>
<td>Requirement under Wind Energy Guidelines Section 4.3.2(a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orientation and contours</td>
<td>The site is located on a north west to south east oriented 5km long ridgeline 16km west of Wedderburn and 19km south of Charlton. To the north of the site begin flat, open paddocks forming the southern extent of the Mallee wheat belt. The hills that form the wind farm site are part of an elevated ridge which tends to rise gently southeast to northwest. It forms a higher section of a series of complex hills and small ridgelines, of which the Berrimal ridge is the most northerly in the immediate area. Most of the hills in the district are prominent, rounded high points on a broad, rolling plateau on top of the range. Some, including Mt Kerang and Mt Korong are more rugged, steep projecting peaks that include rocky outcrops and cliffs.</td>
<td>Section 1.4</td>
</tr>
<tr>
<td>Current land use</td>
<td>The Berrimal Wind Farm is largely cleared, with scattered trees in paddocks and remnant stands occurring along the existing road reserves.</td>
<td>Section 1.4</td>
</tr>
</tbody>
</table>
### Requirements under Wind Energy Guidelines

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Response</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 4.3.2(a)</td>
<td>The land is contained within small to moderate size properties used for grazing by sheep or cropping.</td>
<td></td>
</tr>
<tr>
<td>The existing use and siting of existing buildings or works on the land</td>
<td>There are no buildings on the wind farm ridge or immediate surrounding area.</td>
<td>Section 1.4</td>
</tr>
<tr>
<td>Section 4.3.2(a)</td>
<td>While remnant vegetation was recorded across upper slopes and ridgelines, the majority of the overstorey trees and shrubs have been removed, with a modified cover of native grasses and herbs remaining. Within the study area footprint, remnant vegetation was predominantly considered to be of Low quality, with Moderate quality vegetation only existing within the trees area along Gap Road.</td>
<td>Section 7.1 and Volume 1</td>
</tr>
<tr>
<td>The landscape of the site</td>
<td>The Berrimal Wind Farm is largely cleared, with scattered trees in paddocks and remnant stands occurring along the existing road reserves. The land is contained within small to moderate size properties and most of these are used for grazing by sheep or cropping.</td>
<td>Section 1.4</td>
</tr>
<tr>
<td>Species of flora and fauna listed under the FFG Act and the EPBC Act</td>
<td>Three Ecological Vegetation Classes were recorded within the study area; Metamorphic Slopes Shrubby Woodland, Low Rises Grassy Woodland, and Hillcrest Herb – rich Woodland. A total of 60 flora species (including 34 indigenous and 26 exotic species) were recorded within the study area during the survey. No nationally listed flora species were recorded during the assessment. One State listed</td>
<td>Section 7.1 and Volume 1</td>
</tr>
<tr>
<td>Requirements under Wind Energy Guidelines</td>
<td>Response</td>
<td>Further Information</td>
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<tr>
<td>species, Buloke <em>Allocasuarina luehmannii</em> was recorded in the study area. A total of 46 fauna species were observed during the survey, none of which were listed as significant fauna species. Suitable habitat was recorded within the study area for three nationally significant fauna species (<em>Golden Sun Moth Synemon plana</em>, <em>Pink-tailed Worm-Lizard Aprasia parapulchella</em> and <em>Striped Legless Lizard Delma impar</em>) and one state significant fauna species (<em>Yellow-bellied Sheathtail Bat Saccolaimus flaviventris</em>).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Sites of cultural heritage significance Section 4.3.2(a) | A total of four Aboriginal archaeological sites are located within the activity area:  
- VAHR 7525 – 0800 (Berrimal 1)  
- VAHR 7527 – 0133 (Berrimal 2)  
- VAHR 7525 – 0134 (Berrimal 3)  
- VAHR 7525 – 0135 (Berrimal LDAD1)  
Only LDAD1 was located during the preparation of the most recent CHMP prepared to support the expanded footprint of the (up to) 24 turbine proposal.  
One non-aboriginal cultural heritage item was identified - a potential former mine site. This will be avoided in the final turbine and infrastructure design. | Section 7.2 and Volume 1 |
| Wind characteristics Section 4.3.2(a) | The project site is situated on a ridgeline which receives favourable wind conditions that are suitable for a wind farm facility.  
In 2006 a 45m wind monitoring mast was installed to the south of the | Section 7.3 and Volume 1 |
### Section 5: SITE ANALYSIS AND DESIGN RESPONSE

<table>
<thead>
<tr>
<th>Requirements under Wind Energy Guidelines</th>
<th>Response</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>site. This mast has been continually measuring the wind and weather conditions of the site for more than 7 years. In 2012 a second 100m wind monitoring mast was installed to the north of the site. This mast was installed to provide a better understanding of the wind regime at turbine hub height and will enable ACCIONA Energy to confidently design a wind farm which will be as efficient as possible based on the wind characteristics of the site. The data from both masts has provided ACCIONA Energy with a thorough understanding of wind conditions of the site and reveals the site has a strong and consistent, nationally competitive wind flow.</td>
<td>None applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

| Any other notable features, constraints (e.g. acid sulphate soils, highly erodible soils and land instability) or other characteristics of the site. Section 4.3.2(a) | None applicable                                                                                                                                  |                     |

<table>
<thead>
<tr>
<th>Site analysis in relation to the surrounding area- Section 4.3.2(a)</th>
<th>Agriculture, specifically grain production, is the primary land use in the surrounding area.</th>
<th>Section 1.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing land uses Section 4.3.2(a)</td>
<td>Agriculture, specifically grain production, is the primary land use in the surrounding area.</td>
<td>Section 1.4</td>
</tr>
<tr>
<td>Existing land uses Section 4.3.2(a)</td>
<td>Agriculture, specifically grain production, is the primary land use in the surrounding area.</td>
<td>Section 1.4</td>
</tr>
<tr>
<td>Requirements under Wind Energy Guidelines</td>
<td>Response</td>
<td>Further Information</td>
</tr>
<tr>
<td>------------------------------------------</td>
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</tr>
<tr>
<td>Above ground utilities Section 4.3.2(a)</td>
<td>No above ground utilities are located in the immediate environs of the site. Local distribution 22kV lines exist in the wider area, however none cross the subject ridgeline.</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
| Access to infrastructure Section 4.3.2(a) | The site is well serviced by transport infrastructure:  
- Calder Highway is located approximately 12kms to the north east of the site. This is the most heavily trafficked road in the vicinity of the site.  
- Charlton-St Arnaud Road is located approximately 8 kilometres to the west of the site.  
- There is an extensive network of minor roads providing access to farms and residences in the area. The majority are all weather gravel roads.  

A 66kV transmission line will be built and connected to the existing Charlton - Bendigo 66kV powerline at Bridgewater. | Section 6.7, Section 7.6 and Volume 2 |
<p>| Directions and distances to local interest areas Section 4.3.2(a) | The surrounding features include the Wychitella Flora and Fauna Reserve 12km to the east, Mt Korong 30km to the east, and the Avoca River 9km to the west. Nine Mile mine historic reserve is located 5km east of the site. | Section 1.4 &amp; 2.6 |
| The siting and use of buildings on | There are no buildings located within 2 kilometres of a wind turbine. | Not applicable |</p>
<table>
<thead>
<tr>
<th>Requirements under Wind Energy Guidelines</th>
<th>Response</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>adjacent properties</td>
<td>Section 4.3.2(a)</td>
<td></td>
</tr>
<tr>
<td>The location of all existing dwellings</td>
<td>There are no residential dwellings located within two kilometres of the nearest turbine. There are approximately 17 dwellings located within five kilometres of the site and 32 dwellings between five and 10kms of the site. The closest inhabited dwelling is located approximately 2.3 kilometres to the nearest turbine.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>within two kilometres of the nearest</td>
<td>Section 4.3.2(a)</td>
<td></td>
</tr>
<tr>
<td>turbine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The landscape, including any significant</td>
<td>The landscape surrounding the site is characterised by moderately undulating to steeply undulating cleared farmland. There are no significant landscape overlays or other planning recognition of significant landscapes within the immediate surrounds of the project site.</td>
<td>Section 1.4, Section 3.3.3 and Volume 1</td>
</tr>
<tr>
<td>landscape features.</td>
<td>Section 4.3.2(a)</td>
<td></td>
</tr>
<tr>
<td>Views to and from the site.</td>
<td>The fairly uniform landscape character of the study area typically results in a commensurately uniform set of viewing conditions across the study area, with minor variations occurring as a result of localised topographic and vegetative conditions. Views into the site are limited in part through to mature stands of native vegetation along public roads in the area.</td>
<td>Section 7.4 and Volume 1</td>
</tr>
<tr>
<td>Section 4.3.2(a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sites of flora and fauna listed under the</td>
<td>Two nationally threatened ecological communities were identified in the Protected Matters Search Tool as potentially occurring in the wider area, although were not located on site. Significant flora previously recorded from the local area and which have the potential to occur (or their habitats as potentially occurring) within a 10 kilometre radius of the study area are listed within the technical report</td>
<td>Section 7.1 and Volume 1</td>
</tr>
<tr>
<td>FFG and EPBC Acts, including significant</td>
<td>Section 4.3.2(a)</td>
<td></td>
</tr>
<tr>
<td>habitat corridors, and movement corridors</td>
<td></td>
<td></td>
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<tr>
<td>for these fauna.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Requirements under Wind Energy Guidelines</td>
<td>Response</td>
<td>Further Information</td>
</tr>
<tr>
<td>-------------------------------------------</td>
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<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Sites of cultural heritage significance.</td>
<td>Archaeological studies outside the activity area have been limited, however they have suggested that there is a potential that artefact scatters, isolated artefacts or scarred trees could be located on elevated ridgelines through the area.</td>
<td>Section 7.2 and Volume 1</td>
</tr>
<tr>
<td>National Parks, State Parks, Coastal Reserves and other land subject to the National Parks Act 1975</td>
<td>The closest nature reserve is the Coonooer East bushland reserve, 3km north of the site. The larger Wychitella Nature Reserve, located 12km east of the site, Mt Gowar Scenic Reserve, approximately 4km west and the Nine Mile Mine Historic Reserve are other reserves of note in the immediate area.</td>
<td>Section 1.4, Figure 1-5, Section 7.4 and Volume 1</td>
</tr>
<tr>
<td>Land declared a Ramsar wetland as defined under Section 17 of the EPBC Act</td>
<td>There are no Ramsar wetlands located within proximity to the proposed development.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Location of any nearby land included in the Schedule Clause 52.32-2 of the planning scheme</td>
<td>The Berrimal Wind Farm is not located on land described in Schedule Clause 52.32-2 of the Buloke Planning Scheme.</td>
<td>Section 3.0</td>
</tr>
<tr>
<td>Requirements under Wind Energy Guidelines</td>
<td>Response</td>
<td>Further Information</td>
</tr>
<tr>
<td>-------------------------------------------</td>
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<td>---------------------</td>
</tr>
<tr>
<td>Any other notable features or characteristics of the area Section 4.3.2(a)</td>
<td>There are no other notable features for discussion.</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
| Wildfire risks Section 4.3.2(a) | ACCIONA Energy has incorporated a number of fire management initiatives to be implemented during the construction and operation phases of the project. These include:  
• Development of an emergency response plan including agreed notification protocols, contacts and response planning;  
• Design of internal access tracks to allow emergency vehicle access;  
• Commitment to adhere to fuel load regulations and local fire service requirements regarding fuel loads around electrical compounds, transmission and distribution lines, buildings and other structures;  
• Identification of water reserves in the local area which could be used for fire-fighting, or provision of static water supply tanks and appropriate fittings for fire fighting at agreed locations;  
• Provision of local fire fighting equipment at each active site;  
• Provision for mobile telephone and UHF radio communications at constructions sites;  
• Compliance with State Acts regarding high risk work | Appendix D |
### Table 5-2 Design response of Berrimal Wind Farm

<table>
<thead>
<tr>
<th>Requirements of Wind Energy Guidelines</th>
<th>Response</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Plans – Section 4.3.3(a)</td>
<td>Detailed plans showing the layout of the wind turbine generators and associated buildings, proposed connection to the electricity grid and access roads to the site</td>
<td>Section 6.1, Figure 6-1 &amp; Figure 1-3</td>
</tr>
<tr>
<td>Local electricity grid (including capacity) and access roads</td>
<td>A 66kV transmission line will be built and connected to the existing Charlton - Bendigo 66kV powerline.</td>
<td>Section 6.9, Figure 6-6 and Figure 1-2 &amp; 1-3</td>
</tr>
<tr>
<td>Activities on high fire danger days; and Provision of access keys where applicable to local rural fire services where appropriate.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Location Plan- Section 4.3.2(b)

<table>
<thead>
<tr>
<th>Requirements under Wind Energy Guidelines</th>
<th>Response</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Plans – Section 4.3.3(a)</td>
<td>Detailed plans showing the layout of the wind turbine generators and associated buildings, proposed connection to the electricity grid and access roads to the site</td>
<td>Section 6.1, Figure 6-1 &amp; Figure 1-3</td>
</tr>
<tr>
<td>Activities on high fire danger days; and Provision of access keys where applicable to local rural fire services where appropriate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Requirements of Wind Energy Guidelines</td>
<td>Response</td>
<td>Further Information</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>----------</td>
<td>---------------------</td>
</tr>
<tr>
<td>A concept plan that includes the capacity of new grid connections, network transmission infrastructure, electricity utility works and access road options</td>
<td>A concept plan that includes the capacity of new grid connections, network transmission infrastructure, electricity utility works and access road options is shown in Section 6.7, Figure 6-6</td>
<td>Section 6.7, Figure 6-6</td>
</tr>
<tr>
<td>Accurate visual simulations showing the appearance of the development in the context of the surrounding area and from key public viewpoints</td>
<td>Visual simulations showing the appearance of the development in the context of the surrounding area and from key public viewpoints may be seen in the Landscape and Visual Assessment technical report in Volume 1.</td>
<td>Section 7.4 and Volume 1</td>
</tr>
</tbody>
</table>
| Measures to manage any fire risks associated with the facility or connections to the electricity grid | Measures include:  
- Development of an emergency response plan including agreed notification protocols, contacts and response planning;  
- Design of internal access tracks to allow emergency vehicle access;  
- Commitment to adhere to fuel load regulations and local fire service requirements regarding fuel loads around electrical compounds, transmission and distribution lines, buildings and other structures;  
- Identification of water reserves in the local area which could be used for firefighting, or provision of static water | Section 8.0 and Appendix D |
<table>
<thead>
<tr>
<th>Requirements of Wind Energy Guidelines</th>
<th>Response</th>
<th>Further Information</th>
</tr>
</thead>
</table>
| • supply tanks and appropriate fittings for fire fighting at agreed locations;  
  • Provision of local fire fighting equipment at each active site;  
  • Provision for mobile telephone and UHF radio communications at constructions sites;  
  • Compliance with State Acts regarding high risk work activities on high fire danger days; and  
  • Provision of access keys where applicable to local rural fire services where appropriate. | | |

A rehabilitation plan for the site, including plans for revegetation and regeneration works.  
Section 4.3.3(a)

At this stage of the project it is anticipated that native vegetation removal will be restricted to lopping, and isolated tree removal. All access tracks constructed will remain for the life of the project for operation and maintenance activities.  
If due to design changes native vegetation is to be removed a Native Vegetation Management Plan will be developed.  
A rehabilitation plan including plans for re-vegetation and regeneration works will be developed during the secondary consent phase of the project.  
Appendix D

Written response- Section 4.3.3(b)

A written response that explains how the proposed design derives from and responds to the site analysis  
The turbine and infrastructure siting has incorporated the recommendations from technical studies in its layout and proposed footprint, minimising impacts where possible.  
Section 5.3 and Section 7.0
<table>
<thead>
<tr>
<th>Requirements of Wind Energy Guidelines</th>
<th>Response</th>
<th>Further Information</th>
</tr>
</thead>
</table>
| Section 4.3.3(b)                      | The following key factors have influenced the layout of the wind farm:  
  - Consultation with community, stakeholders and government organisations;  
  - Landscape and visual impact studies;  
  - Cultural heritage assessment;  
  - Energy resource calculations; and  
  - Other issues arising from detailed feasibility studies.  
  
The design response responds to the technical, environmental and community needs of the project and reconciles these determinants with the identified local wind resource and any other constraints such as grid capacity.  
<p>| A description of the proposal including the number, location and specifications of the wind generator turbines, the amount of electricity to be exported from the site, a summary of the contribution of the proposal to greenhouse gas emissions, infrastructure requirements and traffic movements. Section 4.3.3(b) | Turbines will have a height of up to 185 m (at the blade tip), comprising up to 120 m towers. Based on a 3.0MW turbine, the total maximum generation capacity of the proposed wind farm would be 72 MW, and the anticipated greenhouse gas emission abatement is 177, 000 tonnes of CO₂ equivalent. Abatement rates would naturally be higher if a higher capacity turbine is utilised. | Section 2.0, Section 6.0, Section 7.6 and Volume 2 |</p>
<table>
<thead>
<tr>
<th>Requirements of Wind Energy Guidelines</th>
<th>Response</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>How the proposal responds to any significant landscape features for the area identified in the planning scheme Section 4.3.3(b)</td>
<td>No significant landscape features are present in the planning scheme within the nearby area.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>An assessment of the visual impact of the proposal Section 4.3.3(b)</td>
<td>An assessment of the visual impact of the proposal has been undertaken by AECOM and can be found in Volume 1.</td>
<td>Section 7.4 and Volume 1</td>
</tr>
<tr>
<td>An assessment of the impact of the proposal on fauna Section 4.3.3(b)</td>
<td>An assessment of the impact of the proposal on fauna was undertaken by Ecology and Heritage Partners Pty Ltd and can be found in Volume 1.</td>
<td>Section 7.1 and Volume 1</td>
</tr>
<tr>
<td>An assessment of the noise impact of the proposal prepared in accordance with the New Zealand Standard NZS 6808:2010 Section 4.3.3(b)</td>
<td>An assessment of the noise impact of the proposal prepared in accordance with the New Zealand Standard NZS 6808:2010 was undertaken by Marshall Day Acoustics and can be found in Volume 1.</td>
<td>Section 7.3 and Volume 1</td>
</tr>
<tr>
<td>An assessment of the impacts upon Aboriginal and non-Aboriginal cultural heritage Section 4.3.3(b)</td>
<td>An assessment of the impacts upon Aboriginal and non-Aboriginal cultural heritage was undertaken for the original 16 wind turbine layout proposed at Berrimal by Andrew Long and Associates, and subsequently a further assessment was undertaken for the extended configuration of the (up to) 24 turbine layout by Ecology and Heritage Partners Pty Ltd.</td>
<td>Section 7.2 and Volume 1</td>
</tr>
<tr>
<td>An explanation of why the site is</td>
<td>The Berrimal Wind Farm was selected on a number of factors including the</td>
<td>Section 5.1 and</td>
</tr>
</tbody>
</table>
Section 5: SITE ANALYSIS AND DESIGN RESPONSE

Table 5-3 Remaining design response requirements

(Sections 4.3.4, 4.3.5 and 4.3.6) to meet the application requirements outlined in the Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria.

<table>
<thead>
<tr>
<th>Requirements of Wind Energy Guidelines</th>
<th>Response</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>suitable for a wind energy facility</td>
<td>inland location, rural farmland character, housing density, environmental conditions, wind resource, the potential for the creation of local jobs and the supportive community in the region. The noise assessment undertaken by Marshall Day Acoustics considers the wind characteristics of the site in their analysis.</td>
<td>Section 5.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Requirements- Section 4.3.4, 4.3.5 &amp; 4.3.6</th>
<th>Response</th>
<th>Further information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flora and fauna impacts assessment</td>
<td>A flora and fauna impacts assessment was undertaken by Ecology and Heritage Partners Pty Ltd and can be found in Volume 1.</td>
<td>Section 7.1 and Volume 1</td>
</tr>
<tr>
<td>Environmental Management Plan</td>
<td>The Environmental Management Plan (EMP) is a DRAFT EMP that establishes the environmental management procedures and controls to be implemented by ACCIONA Energy, its employees, construction contractors and associated sub-contractors during the construction, operation and decommissioning phases of the Berrimal Wind Farm.</td>
<td>Appendix D</td>
</tr>
<tr>
<td>Aircraft safety issues</td>
<td>The nearest commercial, unlicensed airport is located at Charlton, some 19 kilometres to the north. Two private airstrips may be in operation near</td>
<td>Section 7.10 and Volume 2</td>
</tr>
<tr>
<td>Requirements- Section 4.3.4, 4.3.5 &amp; 4.3.6</td>
<td>Response</td>
<td>Further information</td>
</tr>
<tr>
<td>------------------------------------------</td>
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<tr>
<td></td>
<td>the site, one 5.5kms east, the other approximately 9km west of the nearest turbine. The aviation assessment determined that there would be no aircraft safety issues. An aviation assessment was undertaken by HART Aviation and can be found in Volume 2.</td>
<td></td>
</tr>
</tbody>
</table>
6. Detailed Project Description

This section provides a detailed description of the proposed Berrimal Wind Farm during its construction and operation. Construction activities, including site works, wind turbine installation, electrical connections and turbine commissioning are also discussed, as are operation and maintenance activities, decommissioning and site rehabilitation.

An indicative layout of the proposed Berrimal Wind Farm is shown in Figure 6-1. The technical and environmental studies were undertaken using a ridgeline ‘corridor’ approach, with the entire ridgeline assessed for potential constraints. Within this corridor a maximum of 24 turbine locations and associated infrastructure were investigated.

The final location for each wind turbine, underground cabling, access tracks and substation(s) will be sited within the assessed corridor, but may vary from that shown in Figure 6-1 as a result of further investigations during the detailed design phase.
Figure 6-1 Berrimal Wind Farm with associated infrastructure and access tracks
6.1 Wind Farm Overview

The proposed Berrimal Wind Farm will comprise of the following elements:

- Up to 24 wind turbines with a maximum tip height of 185 metres, installed on tower heights of up to 120 metres, in locations generally in accordance with locations shown in GPS coordinates shown in Table 6-1;
- Internal access tracks linking the wind turbines and associated infrastructure to the existing public road network;
- Upgrading some parts of the local public road network to allow for the passage of over dimensional vehicles;
- Up to four permanent meteorological monitoring masts;
- Up to two substations;
- One operations and maintenance building;
- Installing underground electrical and fibre optical cabling linking the wind turbines and substation(s) and a small section of overhead line in the immediate vicinity of each substation;
- A temporary on-site borrow pit from which to source road and building materials;
- A temporary construction compound;
- A temporary concrete tower casting plant (if concrete turbine towers are utilised); and
- A temporary concrete batching plant.

The Berrimal Wind Farm will be connected to the existing 66kV Charlton to Bendigo electrical line at Bridgewater. This line will be constructed by Powercor and will form part of a separate regulatory approval to be undertaken by Powercor. This process will proceed following an approval of the subject wind energy facility application, and (depending on ultimate design) may require approval of a Cultural Heritage Management Plan and a permit to remove native vegetation.
## Table 6-1 Turbine GPS coordinates

<table>
<thead>
<tr>
<th>Turbine Number</th>
<th>Coordinates (MGA, Zone 54)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
</tr>
<tr>
<td>1</td>
<td>715724</td>
</tr>
<tr>
<td>2</td>
<td>715655</td>
</tr>
<tr>
<td>3</td>
<td>715996</td>
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</tr>
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<td>5</td>
<td>716240</td>
</tr>
<tr>
<td>6</td>
<td>716329</td>
</tr>
<tr>
<td>7</td>
<td>715978</td>
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<tr>
<td>8</td>
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<tr>
<td>23</td>
<td>718328</td>
</tr>
<tr>
<td>24</td>
<td>718697</td>
</tr>
</tbody>
</table>

### 6.2 Wind Turbines

Technical supporting documents for this proposal have been prepared utilising the ACCIONA Wind Power AW3000 as a reference turbine. This is currently the proposed turbine to be utilised at Berrimal. However, to cater for rapidly evolving wind turbine technology, ACCIONA Energy requests flexibility such that there is no prescriptive individual and project capacity, nor blade length restriction of wind turbines within permit conditions. Further details and the planning precedent for this approach are provided in Section 3.1. Regardless, the ultimate turbine to be installed will have a height of up to 185 m (at the blade tip), installed on steel or concrete towers of up to 120 m in height.

Each wind turbine will comprise:

- A concrete foundation of up to 25 m² and 2-3 m depth (exact dimensions determined during detailed design);
• A tubular steel or concrete tower of up to 120 m in height, painted non reflective off-white;

• A nacelle clad in reinforced fibreglass will be placed on top of the tower supporting the rotor and containing the generator, gearbox, control equipment and a transformer; and

• A rotor with three blades, joined at the centre to the hub. The hub is of cast iron, clad in reinforced fibreglass. The blades are glass reinforced epoxy material.

An example of an ACCIONA Wind power wind turbine is shown in Figure 6-2.

![ACCIONA Windpower wind turbines](image)

**Figure 6-2 ACCIONA Windpower wind turbines**

Consistent with other wind farms throughout Victoria, ACCIONA Energy may undertake micrositing of turbines at the detailed design stage, for specific issues such as geotechnical or drainage requirements. Re-siting of turbines may also be necessary
following final selection of a turbine model to optimise turbine spacing along the ridgeline.

### 6.3 Supply of wind turbines

Turbines and associated equipment will be delivered from the point of assembly or manufacture during the same construction phase as the installation of the turbine foundations. Delivery of the tower foundation rings (if used) will generally occur earlier as they will be cast into the foundation concrete.

The turbines are delivered in a number of components and sub-components as they are too large to be transported whole. The delivery is broken down into the following:

- Delivery of the tower sections from the fabrication and/or painting shop by trailer;
- Delivery of the blades on extended trailers; and
- Delivery of the nacelles and hubs by low loader.

The turbine towers are delivered in up to six separate parts by extended articulated trucks with a rear steerable dolly to minimise the required road width on curves. Transport of the turbine blades requires a low loader combination with a total length of up to approximately 70 metres (including prime mover). The trailer will have electric/hydraulic manually controlled steerable rear wheels. Transport of the nacelle requires a low loader float.

If concrete towers are to be used for some or all turbines, they may be produced onsite at an onsite casting facility. Deliveries associated with this method of construction would include casting forms, concrete components and reinforcement, and other associated plant.

### 6.4 Access Tracks

Access tracks will be constructed to enable heavy vehicle access to the wind turbine locations during the construction, operation and decommissioning phases. These will be constructed in part by incorporating existing farm tracks, where practicable.

Access track construction will involve grading and removing topsoil, placement and compaction of a suitable crushed rock base, and installation of required drainage works.

The total length of access track required within the site is approximately 10.3 km
The formed width of the access tracks will generally be 6m (wider at some places as required for turning or passing) and will be retained for the life of the wind farm. They will be used for the ongoing maintenance and replacement of large wind turbine components such as blades and nacelles.

The access tracks will be constructed using crushed rock for the pavement overlay which will be sourced onsite, or obtained from an appropriate local quarry and delivered to site. Material excavated from turbine foundations will also be used if suitable.

Figure 6-3 shows an example of a finished wind farm access track.

![Figure 6-3 Example of a wind farm access track](image)

### 6.5 Monitoring Towers

There are two wind monitoring towers present on the proposed Berrimal Wind Farm site. The Berrimal 1 wind monitoring tower is 45 metres high and has alternate red and white markings on the tower itself. This tower is located in the Loddon Shire. The Berrimal 2 wind monitoring tower is 106 metres high and has orange markers balls attached to the guy wires.

Planning consent is sought for up to an additional 2 wind monitoring masts of up to 120m height.
6.6 Hardstand Areas

Adjacent to each turbine, a hardstand area is built to support the lifting plant required to erect the turbines. This area is approximately 40 metres wide and 55 metres long, dependent on the final turbine model selected, local topography, orientation of the turbine to the access track, and local ground conditions. The hardstand will generally extend to the foundation pedestal, meaning there is some overlap of the hardstand and the buried foundation. Construction of the hardstand consists of stripping topsoil and soft material (where necessary), placing up to 500 millimetres of fill and capping material, and compacting each.

6.7 Underground Cabling

Underground electrical cabling will be installed between the wind turbines in trenches, linking them to the on-site electrical substation(s), thus enabling electricity generated by the proposed wind farm to be fed into the national grid. Fibre optic cabling for remote and onsite monitoring and control of the turbines is run in the same trenches to each turbine.

Trenches are generally excavated adjacent to access tracks, with the separation between each dependant on local topography, ground conditions, and whether access track construction coincides with trench excavation.

A 500 millimetre wide trench can accommodate up to two power cables and numerous earth and fibre optic cables. If more than this is required in a cable run, two or more parallel trenches can be excavated or a wider trench will be installed. Trench depths are dictated by safety regulations for burial of high voltage cables – generally up to 1000 millimetres of excavation is required. Bedding sand is placed in the trench before and after cables are laid, mechanical protection is installed on top of the sand layer, and marker tape installed at required depths as the trench is backfilled. Backfilled trenches are rehabilitated as soon as practicable to avoid runoff and erosion and to ensure safety of landholders, staff and stock.

6.8 Electrical Substation(s) and connection

Up to two substations will be installed on site. Each substation will comprise a pre-constructed demountable building housing high-voltage infrastructure, a transformer, outdoor switchgear, and will be approximately 25 by 40 metres.
For construction, the site is stripped and levelled, and a copper earthing grid is placed beneath the site up to 10 metres beyond the substation footprint depending on conductivity. Strip footings are installed, ground cover material consisting of course crushed rock is placed and infrastructure is installed, secured and connected.

A concrete bund will be constructed to provide containment in the event of an oil spillage from a transformer failure, together with an oil/water separator to remove traces of oil from stormwater collected in the bund. The substation will include a chain wire security fence and will be constructed in accordance with relevant regulatory requirements.

An overhead 66kV electrical line will be constructed from the on-site substation(s) to the National Electricity Grid. The detailed design of the overhead power line is anticipated to be undertaken by Powercor once the planning permit for the project has been granted. These works will form part of a separate regulatory process, potentially involving Cultural Heritage and native vegetation removal consent (if required).

The local electrical network around the proposed Berrimal Wind Farm site is owned and operated by Powercor Australia. In an electrical sense, the area is quite remote from Victoria’s main transmission network, which passes through Bendigo. Powercor’s main power line assets in the area are the 66kV line from Bendigo to Charlton (shown in Figure 6-4), the 22kV line from Charlton to St Arnaud, and several 22kV feeders supplying rural load.
Section 6: DETAILED PROJECT DESCRIPTION

It is anticipated that the ultimate point of connection for the Berrimal wind farm will be to Powecor's 66kV network at Bridgewater via a new 66kV line. This new line will, in part form completely new line and easement, and in part form an 'overbuild' and upgrade to existing 22kV local distribution lines between the site and Bridgewater. These designs will be prepared by Powecor. The local electricity grid, including indicative grid connections is shown in Figure 6-5. It is stressed at this stage that the proposed route to connection for Berrimal is conceptual, and will be subject to detailed design, impact mitigation and technical consideration by Powecor.

Figure 6-4 Existing 66kV line from Bendigo to Charlton
Figure 6-5 Indicative corridor for the line connection to the grid
6.9 Construction Compound

A temporary construction compound will be located at the main access point to the wind farm on Gap Road and will occupy an area of approximately 100 m x 100 m. Temporary portable buildings will be utilised as site offices, from which the construction operations will be managed. The final number and layout of these will be determined upon selection of the civil and electrical works contractors. It is expected that a maximum of fifteen 3m by 12m buildings would be located within the compound at any one time, depending upon the phase of the construction program. The remainder of the construction compound will be hardstand areas for the temporary storage of equipment and vehicles.

An example of a construction compound for a wind farm can be shown in Figure 6-6, albeit this is for a larger wind farm project than proposed at Berrimal.

![Construction Compound Example](image)

Figure 6-6 Example of a construction compound for ACCIONA Energy’s wind farm at Waubra

6.10 Operations and Maintenance Facilities

A maintenance and operations facility will be constructed on site. This will be located in a relatively central location to the turbine array. This facility will form a small office from which maintenance crews will be based. Adjacent to the office will be a storage shed for maintenance equipment and a range of spare parts to assist in servicing turbines. The
facility will be surrounded by an appropriately sized and constructed car park for maintenance vehicles and a substantial laydown area for the storage of bulky spare materials.

Detailed design of the Maintenance and Operations facility will occur during the Development Plan phase following planning consent. It is anticipated the building will be relatively modest in size reflecting the demands of a staff of 5-10 maximum on site. Its design will be in-keeping with rural service structures common on farms in the district.

### 6.11 Wind Turbine Foundation Construction

Excavation will be required at the location of each wind turbine to prepare for the construction of its foundation. The excavated material will be removed and will be stockpiled appropriately. The material removed from the excavation is expected to be utilised within the site in forming hard stand areas (sub-soil) and in reinstating access tracks up to 6 m in width after construction (top-soil).

The tower foundations as shown in Figure 6-7 will be designed to suit the prevailing ground conditions at each individual wind turbine location and will be determined during the detailed design phase.

![Figure 6-7 Completed tower foundation](image)
The geotechnical assessment prepared by Coffey has indicated the potential suitability of the Berrimal site to support the use of rock anchors, whereby turbines are directly anchored to the bedrock of the site. If this foundation type is proved viable following detailed design, a substantial reduction in concrete movements and processing would occur.

6.12 Turbine Assembly

A wind turbine will arrive on site in four main components:

- Tower (if steel, in up to 6 sections; if concrete then up to 25 tower ‘segments’);
- Nacelle;
- Hub; and
- Blades.

The turbines will be erected using cranes as shown in Figure 6-8. An area around the base of each turbine called a ‘hard stand’ is to support assembly and lifting equipment for assembling the turbine.
6.13 **Heavy Machinery and Truck Movements**

It is estimated that the proposed turbine construction will generate in the order of 270 over dimensional trips, 2854 standard truck movements and 6022 concrete vehicle trips across the 15 month construction period.

The main access route will be via Charlton – St Arnaud Road. No significant problems are expected on these routes. Access routes to the site will include Nine Mile Road, Seven Mile Road, Yeungroon – Coonooer Road, Yeungrron – Nine Mile Road, Lees Road, Olives Road and Gap Road.

The principal sources of traffic to and from the site will be:

- Travel of employees to and from the wind farm site during construction;
- Delivery of raw materials required for the access track and foundation construction;
• Delivery of water for dust suppression and concrete production (if water is not sourced on-site);
• Delivery of the tower sections (Figure 6-9), nacelles, blades and cranes by over dimensional vehicles;
• Delivery of electrical and communications cables; and
• Delivery of materials required for construction of the operations and maintenance buildings and substations.

Figure 6-9 Transporting a steel tower section

Internal traffic movements will be associated with construction of the access tracks, excavation of foundations, concrete agitator trucks moving between the concrete batch plant (if used) and the wind turbine locations during construction of the foundations and installation of underground cabling.

Further details on traffic and transport are provided in Section 7.7.

6.14 Concrete

Batching Plant

A concrete batching plant may be installed at the wind farm site for the preparation of the concrete required for construction of the wind turbine towers (if used), foundations,
operations and maintenance buildings and substations. The location of the batching plant is shown in Figure 6-1.

By locating the concrete batching plant or plants on-site, fewer truck movements on local roads would be required to deliver the tower and foundation construction material including sand, aggregate, cement, reinforcing steel and water. If the concrete is provided by an off-site source it will be delivered from a local source, using concrete agitator trucks.

Construction and operation of the concrete batch plant(s) would be in accordance with the EPA’s *Environmental Guidelines for the Concrete Batching Industry* (EPA Victoria, 1998).

**Casting Plant**

In the event that concrete turbine towers are utilised, an on-site casting plant may be established. The proposed location of this plant is shown in Figure 6-1.

The casting plant is used to form and mould concrete tower sections for subsequent movement to their respective turbine positions. The plant takes the form of:

- Temporary buildings for the storage of materials, casting moulds, steam curing plant, concrete agitator equipment, gantries and transport structures;
- Temporary water, steel reinforcing rods, cement and aggregate storage facilities;
- Outdoor, hardstand storage yards for completed tower sections undergoing extended curing and awaiting transport; and
- Auxiliary facilities including car parking, site offices, ablution blocks.

The need for a casting plant will be avoided in the scenario where steel turbine towers are utilised. A decision on concrete or steel towers will be informed by the relative economic attractiveness of each at the time of detailed project design. With considerable variability in exchange rates and therefore the relative economic attractiveness of either technology, it is desirable not to commit to either at this stage of development.

### 6.15 Workforce and Equipment Requirements

ACCIONA Energy proposes to source construction workers from the local region where feasible, supplemented by external labour and management for specialist tasks such as the wind turbine erection and commissioning where required. Suitable staff amenities will be located at the wind farm site.

A peak construction workforce of 80-100 staff is anticipated.
6.16 Working Hours

The operating hours will comply with legislation and workplace agreements.

6.17 Site Restoration

Rehabilitation of the construction areas will be an ongoing process in the months immediately post commissioning of the site. ACCIONA Energy will support appropriate revegetation and land management projects on the wind farm site to restore the site following construction. Further details of this activity are provided in the Draft EMP in Appendix D of this report.

6.18 Commissioning

The commissioning program will test the safety and control aspects of the wind farm and associated network interconnection infrastructure and connect each turbine to the electrical grid.

The communications systems into the wind farm will be commissioned first to enable the communications to be used during the construction and later phases of the wind farm.

The substation(s) and transmission line would then be commissioned to enable the sequential commissioning of each wind turbine generator as soon as it is fully assembled and wired. The wind farm power distribution system (high voltage cables and switchgear in the wind turbine generator) will be tested during the installation of the equipment.

Commissioning of the wind turbines will generally involve:

- Safe start-up;
- Safe shutdown;
- Safe emergency shutdown;
- Safe shutdown from over speed or representative simulation; and
- Functional test of all protection systems.

Commissioning for the full development will involve similar tests but on a larger scale over a longer period of time. Specific activities will involve the testing of the underground power and communications cables and the testing of the wind turbines after each one is assembled and wired.
6.19 Operations and Maintenance

Wind farms are designed to generally operate without intervention, with each wind turbine capable of operating independently of all other wind turbines within the wind farm.

The vast majority of all maintenance undertaken on the operational farm will be preventative maintenance that will be undertaken through a schedule which will cycle through all the machines to ensure service intervals are met. Implementing this preventative maintenance schedule will occupy the majority of the time of the staff employed on the proposed wind farm once operational.

In addition to the preventative maintenance work outlined above, some repair work will be required should break downs occur. In these cases, priority works would be undertaken as soon as possible to ensure all turbines are generating electricity.

The wind turbines are computer controlled and this allows for the following to occur during operation:

- Automatic control;
- Condition monitoring;
- Collection and display of operating information;
- Power metering;
- Fault diagnosis;
- Alarm and protection functions; and
- Remote monitoring using Supervisory Control and Data Acquisition (SCADA) Systems.

Once commissioned all turbines would be remotely monitored and controlled from a central control facility. All necessary operating strategies would be programmed in the automatic controls. The local operator would only be required to monitor operation on a routine basis by checking data displays and accessing condition monitoring data.

Once the wind farm becomes operational, visits to the turbine sites will be regular, utilising usually only small trucks and light commercial vehicles approximately 2 to 3 per day. A typical wind turbine maintenance plan is shown in Table 6-2.
Table 6-2 Typical wind turbine maintenance plan

<table>
<thead>
<tr>
<th>Period</th>
<th>Scheduled Maintenance Activities*</th>
</tr>
</thead>
</table>
| Monthly       | • Preventative and condition monitoring of the WTGs and site infrastructure including communications and control equipment, civil and electrical infrastructure; and  
• Energy and generation metering. |
| Semi-annual   | • Lubrication of the gearbox, generator, bearing and other turbine systems;  
• Inspection of braking and yaw control mechanism and coolers;  
• Oil and air filters changed and oil levels checked; and  
• Condition monitoring activities such as oil sampling undertaken. |
| Annual        | • All of semi-annual service plus inspection of the tension of a sample of bolts from each bolted connection assembly, such as the blade connection bolts and tower section joint bolts; and  
• A selection of structural welds would be examined visually. |
| Four-year     | • Consists of a full annual service plus complete inspection of all bolted assemblies, couplings, machine alignment, and blade mechanism inspections/cleaning;  
• Inspection of structural welds for signs of fatigue; and  
• Corrosion protection activities such as painting would be considered. |
| As required   | • Environmental monitoring; and  
• Out of hours fault attendance. |

* The maintenance activities will vary according to the type of wind turbines.

Maintenance of the wind farm will require vehicles to use the access tracks to the substation(s), site building and turbines for routine inspections. Monthly maintenance is required for preventative and condition monitoring of the wind turbines and site infrastructure including communications and control equipment, civil and electrical infrastructure. Energy and generation metering is also planned for monthly visits.

Routine scheduled maintenance is usually required every six months. It involves the inspection of all machinery, greasing of bearings, checking of hydraulic oil and so on. For generator maintenance activities, access is via an internal lift within the tower. When maintaining large components (e.g., Gearbox or generator), a large crane may be required.

The wind turbines are designed for an operational life of 20 to 25 years. After this time, the main mechanical components are approaching their design life and a major refurbishment is likely to be required. From recent trends with modern wind turbine design, replacement of some gearboxes within a 5 to 10 year period can be expected.

Periodic painting of the tower structure is another major maintenance procedure to be considered. Patch painting is expected to be necessary at infrequent intervals. The tower structure may need repainting after fifteen years. The paint finish on the towers is
in accordance with ISO-12944 C4 that states a surface lifetime of greater than 15 years. It is unlikely that the fibreglass blades or the fibreglass nacelle will require repainting during the design life of the wind turbines.

Other minor maintenance would be carried out as required. This includes activities such as the replacement of electronic components such as computer boards or sensors and electrical components such as contactors and circuit breakers.

In principal, the site visits will be minimised where possible. Maintenance for 24 wind turbine generators would involve 5-10 full time employees working on each turbine on a rotational basis. Fewer operators would be required should fewer turbines ultimately be installed. It may be that a larger crew visits the site and undertake maintenance intensively across the site, rather than a few people over a longer period. Staffing options for the maintenance program will be confirmed once final turbine numbers are known.

6.20 Other maintenance activities

Roads and hardstand areas, including drainage and erosion control structures, will be maintained to ensure that access is available to all structures. The maintenance requirements that are identified during the periodic inspections will be arranged by the local maintenance staff. Procedures to be implemented for the monitoring of site access roads and hardstand areas will be detailed in the OEMP.

The substation(s) will require routine maintenance including insulator cleaning, removal of debris from the switchyard, greasing of contacts and other works will need to be carried out.

6.21 Decommissioning and Rehabilitation

Rehabilitation will occur at various stages of the project. All rehabilitation will be undertaken in accordance with best practice environmental management principles and in consultation with host landowners and appropriate regulatory authorities. Following construction, areas requiring reinstatement will be reseeded with pasture, in keeping with the existing land use.

At the end of the approximate 25 year operational life of the wind farm, a decision will be made as to whether to refurbish the existing turbines, erect new turbines on the site or to decommission and remove the existing turbines and rehabilitate the site.
The following activities would be undertaken during the decommissioning phases of the project:

- Undertake a review and upgrade where necessary of local road network to prepare for decommissioning traffic volumes, including over dimensional vehicles;
- Electrically isolate the turbines from the substation(s);
- Rotors and nacelles would be lowered to the ground using a suitable crane and removed from the site for appropriate disposal or recycling;
- Tower sections would be disassembled and would be cut off at the top of the foundation concrete;
- Access tracks and hardstand areas not required for ongoing land use activities would be rehabilitated by allowance of natural grassland to re-populate these areas over time;
- All substation above ground infrastructure would be removed and reused if appropriate, recycled or disposed;
- A site contamination assessment of the switchyard area would be carried out and any contaminated material removed from site to an appropriate disposal facility;
- Foundations in the substation(s) would then be broken up and buried on site or removed for disposal, and below ground substation infrastructure will be dug up and removed;
- A validation survey would be carried out to ensure that all contaminated material at each substation had been removed. Any contaminated material identified would be removed from site to an appropriate disposal facility; and
- Cabling would not be removed, as it is unlikely to cause any operational health and safety problems. The trench depth for the cabling will be around 800-1000mm deep; in areas of agriculture activities the trench depth of the cabling is generally deeper to accommodate activities such as ploughing.

If it is decided to erect new turbines on the site, then it is envisaged that any further development would use as much of the existing infrastructure (particularly the substation(s), maintenance and operations building and electrical equipment) as possible. If the existing turbines are to be refurbished this will likely involve replacement of some major components (blades, nacelles, possibly tower sections), however there are unlikely to be significant changes to the other site infrastructure.
7. Supporting Information

This Section provides a summary of the environmental and technical aspects associated with the proposed Berrimal Wind Farm.

Each environmental and technical summary comprises:

- The assessment criteria;
- Methodology used;
- Consideration of potential impacts against the relevant assessment criteria, and
- Management measures proposed to minimise potential impacts followed by a conclusion of the assessment.

Information contained in this section is drawn from specialist reports undertaken in support of this planning application. Complete specialist reports are provided in the separate Technical Report volumes.

7.1 Flora and Fauna

Ecology and Heritage Partners Pty Ltd were engaged to undertake a detailed flora and fauna and bird and bat assessment of the proposed site. Their complete report is included in the Technical Volumes.

The Ecology and Heritage Partners report has additionally been prepared to support the concurrent application for removal of native vegetation on the wind farm site.

7.1.1 Assessment Criteria

The Wind Energy Guidelines state that flora and fauna found should be considered in relation to:

- Whether the species and communities are protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or the *Flora and Fauna Guarantee Act 1988* (FFG Act);
- The potential loss of habitat of species protected under the EPBC act and/or the FFG Act; and
- The sensitivity of any protected species to disturbance.

7.1.2 Methodology

*Flora surveys*

Botanical surveys were undertaken on 15 November 2012 and 1 March 2013 with the aim of documenting and mapping the flora and vegetation types within the study area. The primary vegetation survey techniques employed were selective sampling and
incidental observations conducted while walking and/or driving throughout the study area, and by noting flora species (both indigenous and introduced) in the various vegetation strata.

**General Fauna Census**

A general fauna assessment was conducted on 20 and 21 November 2012 to obtain information on terrestrial fauna within the study area. Binoculars were used to scan the area for birds, and observers listened for calls and searched for other signs such as nests, remains of dead animals, droppings and footprints.

**Bird utilisation survey**

Bird utilisation surveys were conducted over eight days between 19 November and 7 December 2012. Bird utilisation surveys are the most commonly used method for generating quantitative data on bird use of a potential wind farm site.

**Bat survey**

In total, 10 Anabat detectors were deployed throughout the study area, with eight deployed on the ground and two on a wind monitoring tower (one at 50 metres and one on the ground) in December 2012 and January 2013.

**7.1.3 Impact Assessment**

**Vegetation condition**

The majority of the study area has been subject to modification from previous land use activities (livestock grazing, land clearing). While remnant vegetation was recorded across upper slopes and ridgelines, the majority of the over-storey trees and shrubs have been removed, with a modified cover of native grasses and herbs remaining.

Within the study area footprint, remnant vegetation was predominantly considered to be of Low quality. Moderate quality vegetation was limited within the treed area along Gap Road which will be almost entirely avoided by the project.

A conservative estimate of the impact on vegetation associated with the construction of the wind farm is approximately 16 hectares of Low quality remnant vegetation patches with two Ecological Vegetation Classes, and approximately 0.1 hectares of vegetation considered Moderate quality.

The only state listed species identified on site was a number of isolated specimens of Buloke *Allocaurina luehmannii*. 
Fauna

Suitable habitat was recorded within the study area for three nationally significant fauna species (Golden Sun Moth *Synemon plana*, Pink-tailed Worm-Lizard *Aprasia parapulchella* and Striped Legless Lizard *Delma impar*) and one state significant fauna species (Yellow-bellied Sheathtail Bat *Saccolaimus flaviventris*).

Bird utilisation survey

Forty one species of birds were recorded, none of which are listed as significant species in Victoria. During the observations, a relatively low proportions of birds were surveyed within or above the Rotor Swept Area. Given the low proportion of birds recorded within the Rotor Swept Area during the fixed point count surveys, it is suggested that the Berrimal Wind Farm will have a minimal impact on significant avifauna of the region. Due to the numbers and potential movements, there may potentially be occasional impacts on locally common avifauna.

Bat survey

Eight native microbat species were detected during the current assessment, none of which are listed as significant species in Victoria and all of which are relatively common throughout south-eastern Australia.

7.1.4 Proposed Mitigation Measures

The following mitigation measures are proposed to avoid or reduce residual impacts on native flora and fauna:

- An Environmental Management Plan (EMP) as described in Appendix D will be developed with procedures to minimise flora and fauna impacts during construction and operation of the proposed Berrimal Wind Farm;
- Turbines are positioned in a non-grid like manner, across a relatively restricted area;
- To reduce impacts to native vegetation, access tracks will be aligned with existing farm tracks present within the development footprint, with detailed final design of infrastructure following the principles of ‘avoid, minimise and offset’ under the Native Vegetation Management Framework (or such requirements as exist under any revised policy);
- A Bat and Avifauna Management Plan will be developed following any planning consent, in consultation with the DEPI;
• An EPBC Referral has been prepared for the potential disturbance to the Golden Sun Moth, Striped Legless Lizard and Pink-tailed Worm-Lizard habitat;

• With the exception of the final link to the electrical substation(s), all cables within the wind farm site forming part of this application will be located underground to minimise avifauna collision risk; and

• The site layout has been refined to avoid patches of native vegetation wherever possible.

7.1.5 Conclusion

Potential impacts on flora and fauna on the wind farm site will be minimised through careful design and siting of the wind farm infrastructure and the implementation of a range of mitigation measures as listed in Section 7.1.4.

The overall quality of native vegetation remaining on the ridge is low. This application incorporates a concurrent request for removal of native vegetation. Detailed design of the site will incorporate the process of ‘avoid’, ‘minimise’ and ‘offset’ under the provisions of the current Native Vegetation Management Framework. A ‘net gain’ assessment will be undertaken at that detailed design stage for subsequent secondary consent endorsement by the Buloke Shire and DEPI. It is envisaged a ‘no net loss’ assessment would be undertaken at the same time under the provisions of the ‘Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines 2013’ should they be adopted in the interim period.

7.2 Cultural Heritage

A series of cultural heritage assessments have been prepared for the subject site. Reports prepared in support of the previous 16 turbine wind farm remain valid and relevant to the current assessment as they cover substantial areas of the current project extent. These reports include:

• Berrimal Wind Farm Preliminary Cultural Heritage Assessment, prepared by Andrew Long and Associates for ACCIONA Energy in 2006;

• Cultural Heritage Management Plan (CHMP), prepared by Andrew Long and Associates for ACCIONA Energy in 2009; and

• Cultural Heritage Management Plan, prepared by Ecology and Heritage Partners Pty Ltd for ACCIONA Energy in 2013. The 2013 CHMP has been submitted to AAV
for consideration, with approval anticipated well within the assessment timeframe of the subject planning application.

These complete technical reports are included in the Technical Reports - Volume 1.

The two most recent CHMP reports deal solely with Aboriginal Cultural Heritage. The 2006 Andrew Long and Associates report considers both Aboriginal and Non-Aboriginal Cultural Heritage.

### 7.2.1 Assessment Criteria

Under Section 47 of the Victorian *Aboriginal Heritage Act 2006*, a Cultural Heritage Management Plan (CHMP) is required for the proposed wind farm site as outlined in the *Aboriginal Heritage Regulations 2007*. The Regulations state that a CHMP must be completed for any area that has Aboriginal cultural heritage sensitivity, will be subject to a high impact activity and contains ground that has not been subject to significant previous disturbance.

The requirement for a CHMP for the Berrimal Wind Farm was triggered as the proposed site includes areas of Aboriginal cultural heritage sensitivity (identified as part of the previous CHMP).

All non-Aboriginal archaeological sites and places in Victoria that are older than 49 years are protected under the *Heritage Act 1995*, whether or not they are recorded by Heritage Victoria.

### 7.2.2 Methodology

The 2009 CHMP had been prepared and endorsed by Andrew Long and Associates for the approved 16 turbine development. A subsequent CHMP was developed by Ecology and Heritage Partners to accommodate additional areas required for the (up to) 24 turbine layout and associated infrastructure.

The assessments undertaken as part of the 2013 CHMP were a desktop review, a standard field survey and a complex subsurface excavation. The desktop assessment consisted of reviews of relevant heritage registers and databases, previous archaeological publications and unpublished reports, and a review of the environmental context of the activity area.

The standard assessment consisted of a ground surface survey of the activity area by qualified archaeologists, in conjunction with representatives of the Registered Aboriginal Party (RAP), the Dja Dja Wurrung Clans Aboriginal Corporation.

The complex assessment consisted of a sub-surface testing program designed to adequately test the landforms and the areas of Aboriginal cultural heritage likelihood identified in the standard assessment.
### 7.2.3 Impact Assessment

**Aboriginal Cultural Heritage**

A total of four Aboriginal archaeological sites are located within the activity area:

- VAHR 7525 – 0800 (Berrimal 1);
- VAHR 7527 – 0133 (Berrimal 2);
- VAHR 7525 – 0134 (Berrimal 3); and
- VAHR 7525 – 0135 (Berrimal LDAD1).

Berrimal 1, 2 and 3 were identified in the Andrew Long and Associates CHMP, with LDAD1 located during the preparation of the most recent CHMP.

It was concluded in the previous CHMP that Berrimal 1 and Berrimal 2 would be impacted as a result of the proposed 16 turbine Berrimal Wind Farm. This CHMP was endorsed by the Dja Dja Wurrung Clans Aboriginal Corporation, and subsequently approved by Buloke Shire Council in 2007. This CHMP is shown in Volume 1.

The cultural heritage assessment undertaken in November 2012 identified one new Aboriginal Place during the Survey (Berrimal LDAD 1). This place was an isolated occurrence comprising two quartz artefacts: a flat adze/ angular fragment and a rounded end scraper. It is proposed that the artefacts are salvaged to ensure that they are not impacted during construction activities.

**Non Aboriginal Cultural Heritage**

The 2006 Andrew Long and Associates report identified that an isolated, individual gold prospecting site exists along the subject ridgeline. No broader evidence of prospecting within the subject site was identified.

### 7.2.4 Proposed Mitigation Measures

**Aboriginal Cultural Heritage**

Two Cultural Heritage Management Plans have been developed to identify and manage any issues relating to cultural heritage relevant to the proposed activity. Detailed contingency plans have also been developed as a part of the CHMP’s to manage Aboriginal cultural heritage issues that may affect the conduct of the activity. This includes contingency measures for the discovery of Aboriginal cultural heritage, removal, curation and custody of Aboriginal cultural heritage (artefacts), discovery of human remains and dispute resolution.
The original CHMP was approved by the Registered Aboriginal Party for the proposed 16 turbine configuration. As a result, a subsequent CHMP was developed for the (up to) 24 turbine configuration and has been submitted to the Registered Aboriginal Party for endorsement.

**Non Aboriginal Cultural Heritage**

The potential mine location has been identified and will be avoided by infrastructure associated with the development.

**7.2.5 Conclusion**

It was determined in the CHMP that as the ‘Place’ contains small numbers of artefacts that are of a common occurrence, it is assessed to be of low scientific significance. As such it is concluded that no further scientific investigation of the activity area is required.

Likewise, with the avoidance of the potential former mine site, it is concluded that there will be no impact on areas of non-Aboriginal cultural heritage. Approval of the 2013 CHMP is anticipated within the assessment timeframe of the subject planning application.

**7.3 Noise**

This Section reports the findings of the Noise Assessment undertaken by Marshall Day Acoustics (MDA). The complete report is included in the Technical Reports in Volume 1. Noise modelling has been undertaken using ACCIONA Wind Power machines, AW125/3000 and AW116/3000. As outlined in section 3.0 of this report, consent is requested which does not limit the development to the use of these machines. In the event a different turbine to the above was to be proposed, it is expected a subsequent independent Noise Assessment report would be prepared to demonstrate predicted compliance for the benefit of the Responsible Authority.

**7.3.1 Assessment Criteria**

The response of a noise receptor to noise specifically from wind turbines is likely to depend on the following:

- Absolute noise level for worst case (usually downwind) propagation conditions;
- The variation in wind direction and strengths at the site and its effect on the amount of time the receptor is exposed at various levels;
- The nature of the noise output from the wind turbine including any tonal content, modulation and/or low frequency effects;
• Background noise levels at the receptor location, in the absence of noise from the site, which can be divided into wind related and non-wind related effects; and
• Non-acoustic factors such as the attitude of the receptor towards the development.

The original (2007) planning permit for Berrimal Wind Farm required noise compliance to be assessed with respect to the New Zealand Standard NZS6808:1998. This standard has since been revised in the Victorian Government’s Policy and planning guidelines for development of wind energy facilities in Victoria, which now requires adherence to the revised standard: NZS6808:2010. MDA have therefore assessed the current Berrimal permit application against the revised standard.

The noise standard NZS6808:2010 states that the noise level from a wind farm at a residential site should not exceed the background noise level \(L_{A90}\) by more than 5 dBA or a level of 40 dBA \(L_{A90}\), whichever is greater. This should be valid for a range of wind speeds that cover the operation of the wind farm.

Residences neighbouring Berrimal Wind Farm are located within the Farming Zone of the Buloke Planning Scheme. No overlay provisions apply to the site, nor are there any pertaining to the surrounding residences. Confirmed by the recent decision of VCAT in Mitchell Shire v Cherry Tree Wind Farm Pty Ltd, it is considered that the appropriate interpretation is that the Farming Zone at Berrimal is not considered to be within a ‘High Amenity’ area – as defined in NZS6808:2010. ‘High Amenity’ area under NZS6808:2010 is a peculiar reference to relevant NZ Planning codes. The provisions do not translate effectively to the Victorian planning system, particularly not in an area which has no specific planning controls which may be otherwise interpreted as providing that area with any unique, specific or additional amenity protection.

The noise standard NZS6808:2010 (Sec 7.2.1) requires a minimum of 10 days continuous background noise monitoring at selected noise sensitive receptors, together with simultaneous wind speed measurements every ten minutes.

A regression analysis is then performed to describe the relationship between the background noise levels and wind speed.

### 7.3.2 Methodology

Noise predictions for the two candidate turbine models (AW125/3000 and AW116/3000) were calculated with acoustic modelling software SoundPLAN v7.1. Noise propagation methodology ISO 9613-2:1996 was selected, which is generally accepted as being...
slightly conservative (i.e. a likely over-estimation of noise at a receptor). This assumes 50% hard ground, down-wind propagation and maximum screening effect of 2dB.

Background noise measurements were taken at five (5) of the six (6) dwellings within 3km of the proposed development between 1 December 2012 and 22 February 2013. An example of a noise logger is shown in Figure 7-1. Note that as H18 was relatively close to H19, the background noise measurements taken at H19 were deemed to be indicative of H18.

![Figure 7-1 Example of a noise logger](image)

Noise monitoring was undertaken for at least 26 days at each site. The background noise monitoring undertaken at the sites is considered to be an adequate sample size upon which to base the assessment.

Plotting of the background noise data allowed for the formulation of the compliance limits to be applied to each location by fitting the ‘best fit regression’ curves to the background data. Noise limits determined for H19 were applied to the nearby H18.

The predicted noise levels that will occur once the wind farm is operational, across the various wind speeds, were then determined in the vicinity of the site and compared to the compliance limits.
As noise emissions from the proposed wind farm are dependent on the wind speed at hub height, the noise impact assessment was undertaken with wind speeds referenced at this height (120 m) in order to eliminate the potential effect of air stability on predicted noise levels.

Both night-time and 24 hour noise limits were derived by separately correlating data against wind speed for periods from 10:00pm-7:00am, as well as 24 hour periods.

### 7.3.3 Impact Assessment

The results of the noise analysis show that both the 24 hour and night-time NZS6808:2010 noise limits are achieved at all six (6) residential properties. Furthermore, noise emissions from the proposed Berrimal Wind Farm are predicted to be below the lowest possible NZS6808:2010 noise limit of 40dBA at all assessed residential properties. All non-assessed sites further from the proposed wind farm will experience worst-case noise levels less than 35 dBA, and will therefore comply with the NZS6808:2010 lowest possible limit of 40 dBA by at least 5 dBA. The noise contours at the proposed Berrimal Wind Farm site can be seen in Figure 7-2.
Special Audible Characteristics were assessed during the analysis and it was found that measured test data for the AW3000 indicates that tonality would be inaudible at a distance of 100-200m from the turbine. Given the generous setback distances at Berrimal of 2km, tonality is not considered to be an issue and hence a penalty is non-applicable.
Wind farm construction noise will comply with the Victorian EPA’s Interim Guidelines for Control of Noise from Industry in Country Victoria (N3/89). Construction impacts will be addressed in more detail during the preparation of the Environmental Management Plan.

### 7.3.4 Proposed Mitigation Measures

As the proposed wind farm meets the Victorian Noise Standard for the turbines being considered, no additional mitigation measures are required to reduce noise levels. All wind turbines have been sited such that the noise levels at all residential locations in the vicinity of the proposed wind farm are below the noise compliance limit.

When the proposed wind farm is operational, noise level monitoring at the same noise locations at which the background noise measurements were taken will need to be undertaken. These operational levels can be compared with the preconstruction background levels to determine compliance. Any post construction noise monitoring program (if deemed necessary) will be determined in conjunction with the responsible authority.

### 7.3.5 Conclusion

The results of the noise assessment conclude that noise levels from the proposed Berrimal Wind Farm will not exceed noise compliance limits at any residential location in the vicinity of the proposed wind farm. Additional noise monitoring can be undertaken during the operational phase to ensure compliance with noise limits.

### 7.4 Landscape and Visual

This Section reports the findings of the Landscape and Visual Assessment undertaken by AECOM. The complete report is included in the Technical Reports.

#### 7.4.1 Assessment Criteria

The Wind Energy Guidelines set out the main factors that determine the degree of visual impact as:

- The visibility of the development;
- The locations and distances from which the development can be viewed;
• The significance of the landscape as described in the planning scheme;
• Landscape values associated with nearby parks, National Parks, Ramsar wetlands or and other areas of landscape and environmental significance;
• The sensitivity of the landscape features to change;

The Wind Energy Guidelines also refer to the need to consider planning scheme objectives applicable to the site under investigation in assessing the acceptability of the potential visual impact of a proposed wind farm. The Berrimal wind farm site and its immediate surrounds are zoned Farming Zone (FZ) under the Buloke Planning Scheme. There is no Significant Landscape Overlay (SLO), Vegetation Protection Overlay or Environmental Significance Overlay over the wind farm site, nor over any land in the immediate vicinity.

7.4.2 Methodology

A detailed summary of the landscape and visual assessment methodology undertaken by AECOM is provided in Appendix B to the Landscape and Visual Impact Assessment technical provided in Volume 1 to this report. In summary, AECOM’s methodology has been to:

1. Establish an understanding of the project; namely the location, form and scale of the proposed turbines and any supporting infrastructure;

2. Understand and describe the existing landscape and visual character of the study area, via desktop studies and site work, as a means of establishing a baseline against which impacts associated with the wind farm can be assessed. This stage of the methodology resulted in five landscape character types being identified within the Berrimal wind farm study area:
   a. Avoca River Corridor;
   b. Towns;
   c. Mallee Shrubland;
   d. Undulating Pastoral (comprising the wind farm site itself and immediate surrounds); and
   e. Flat Pastoral.

3. Prepare visualisations which depict the likely visual character of the wind farm within the landscape; and

4. Evaluate the expected landscape and visual impacts of the wind farm.
7.4.3 Impact Assessment

AECOM’s assessment identified that there may be both direct and indirect landscape impacts upon landscape character due to the presence of the Berrimal wind farm.

Direct Landscape impacts of a minor to moderate nature may occur within the Undulating Pastoral landscape character area in the immediate surrounds of the wind farm site. AECOM determined that whilst the presence of the wind farm would represent a considerable change in the character within a relatively restricted area of the Undulating Pastoral character area, its presence is not expected to result in a fundamental change in landscape character. It determined that the project would not impact on the defining characteristics of the landscape - rolling topography, expansive pasture and scattered native trees.

The greatest level of impact are expected from representative public viewpoints 3, 5 and 6, which are located relatively close to the wind farm (2.1-2.4km distant) where a Moderate impact is anticipated.

Indirect impacts of a more minor nature are expected to parts of the remaining 4 landscape character areas. Impact to the Towns, Mallee Shrubland and Avoca River environs are expected to be negligible, whilst minor impacts are expected to more open and expansive parts of the Flat Pastoral country. Impacts on these locations are mitigated by their distance from the site.

**Night Lighting Impacts**

Aviation obstacle lighting may be required in the event turbine tip height of constructed turbines exceeds 150m above ground level. Up to 13 turbines may require lighting in this scenario. Should lighting be required, it will take the form of a series of uniform, synchronised flashing lights.

AECOM have assessed that lighting is not expected to be visibly dominant from within dwellings or their immediate surrounds when internal and external dwelling lighting is in use. When dwelling lighting is not in use, or where it is of very low intensity, the wind farm lighting may be clearly evident where there are direct, unobscured views from the dwelling to turbines.

Impacts would be most noticeable for dwellings within 3km to the south west and north east of the site, where no landscape screening is in place.
Views of night lighting would be available from local roads, as well as more trafficked locations such as the Calder Highway. Impacts on these locations is minimised by a combination of very low traffic volumes, presence of existing vegetation on roadside reserves and/or increasing distance from the site.

7.4.4 Proposed Mitigation Measures

AECOM have formed the view that the scale of a wind farm development is such that on site mitigation- within the wind farm boundary itself- is not readily feasible. There remains however opportunity to screen smaller elements of supporting infrastructure such as the electrical substation(s) and operations and maintenance facility.

Mitigation for Publicly Accessible Viewpoints

Given the scale of the wind farm and the extent to which it is expected to be visible within the wider landscape, it is not feasible to attempt to screen the development from all public areas. Additionally, the case for this is complicated due to differing perceptions of visual impact of wind farms amongst members of the public.

Mitigation for Residential View Points

Whilst no private visits have occurred to directly assess potential visual impact from nearby residences, landscaping is a mitigation option available for nearby residential properties. As the viewing location is relatively fixed, planting may be designed to either screen the wind turbines from view or significantly reduce the visual dominance of wind turbines through filtering.

Landscape mitigation at private dwellings should be focused on locations where sensitive receptors are expected to experience views frequently or for long durations, such as from dwellings, driveways or other outdoor residential spaces. It is recognised that a landholder may not wish to establish landscape mitigation planting, for a range of reasons unique to each case, but it is presented such landscaping may have benefit in certain situations.

Mitigation of Night Lighting effects

Landscape treatments focused on mitigating views toward the project from dwellings in the immediate vicinity of the site will additionally act to limit any night lighting impacts. Additionally, given the type of lighting involved and its downward light spill shielding, light spill toward the surrounding landscape (particularly closer to the site where viewing angles are more acute) is not expected to be significant. The function of the aviation lighting is to provide a single point light source upwards to aircraft rather than downward to illuminate the surrounding area in the manner of street or outdoor building lighting.
7.4.5 Conclusion

The Assessment concluded that the proposed Berrimal wind farm will have a low-moderate landscape impact on its immediate Undulating Pastoral surrounds, and a negligible to minor impact on other landscape character areas. The assessment concluded that visual impacts would be minor to moderate from each of the 6 representative public viewpoints assessed.

The potential for offsite mitigation of visual impacts to private dwellings is available, which is most appropriate to those within close proximity to the site.

7.5 Shadow Flicker

This Section reports the findings of the shadow flicker assessment undertaken by ACCIONA Energy. The complete report is included in the Technical Reports in Volume 2.

7.5.1 Assessment Criteria

The Victorian Guidelines specify that shadow flicker at any dwelling must not exceed 30 hours per year. There are a number of factors influencing the effect and duration of shadow flicker, they include:

- Position of the sun in respect to the turbine (season/time of day);
- Position of the house/viewer in respect to the turbine and the sun;
- Rotor size and height of the wind turbines;
- Distance from the wind turbines;
- Terrain undulation;
- Vegetation;
- Presence of wind/direction of wind (turbines rotating/swept shadow area);
- Weather/cloud cover; and
- Airborne particles/haze.

Flickering light or shadow may cause physiological and psychological reactions. Clarke (1991)18 recommends a threshold of 2.5Hz, that is, flickers per second at which an adverse reaction may occur. The predicted frequency of shadow flicker at the site of approximately 0.9Hz will be well below the recommended threshold of 2.5Hz (flickers per second).

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Clarke further recommends that in order to avoid any negative influence of shadow flicker, the minimum distance between the turbine and a house should exceed 10 rotor diameters. Assuming a maximum rotor diameter of 130m gives a recommended separation of 1300m.

*SA Planning Bulletin*¹⁹ “Wind Farms, Draft for consultation” suggests that the influence of shadow flicker is insignificant once a separation of 500m between the turbine and the house is exceeded.

### 7.5.2 Methodology

This reassessment employs the same shadow flicker assumptions adopted in the *Shadow Flicker Report* prepared by Acciona Energy (Sep 2006), as part of the original planning permit application. This current assessment concludes that the modified turbine layout remains compliant with the Victorian Planning Guidelines.

Shadow flicker impact at Berrimal Wind Farm has been modelled using GL Garrad Hassan WindFarmer® software. The following information was used to generate the model:

- A Digital Terrain Model (DTM) for the area with 25m horizontal resolution;
- The twenty-four (24) wind turbine locations;
- The wind turbine physical characteristics (a generic turbine with a 120m hub-height and 130m rotor diameter);
- Location of houses surrounding the wind farm;
- No impact of shadow flicker beyond a distance of 3,000m from the turbine;
- Use of terrain elevation to calculate turbine and sun visibility;
- Calculation time interval of 1 minute; and
- Minimum sun height over the horizon for causing shadow flicker is 3º.

### 7.5.3 Impact Assessment

Shadow flicker has been modelled and no dwellings are expected to exceed 30 hours per year as shown in Figure 7-3. The property closest to the proposed wind farm is further than 2km from the nearest turbine.

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Conclusion 7.5.4

It was determined in the assessment that there are no dwellings expected to receive shadow flicker for more than 30 hours/ year, and therefore proposed mitigation measures are not required.
7.6 Blade Glint

This Section reports the findings of the blade glint assessment undertaken by ACCIONA Energy. The complete report is included in the Technical Reports in Volume 2. Blade glint is defined as sunlight reflecting off the turbine blades and visible to a person. Under rare circumstances this may reduce visibility and affect some motorists or result in annoyance at dwellings.

Modern turbine blade manufacturers have acknowledged the possibility of adverse effects due to blade glint and are now using low reflectivity gel finish to reduce any reflections. The proposed wind farm at Berrimal will use turbine blades with a low reflectivity finish. Blade glint should not affect any of the dwellings close to the proposed wind farm or any motorist travelling on nearby gazetted roads.

7.7 Traffic and Transport Assessment

This Section reports on the findings of the Traffic and Transport Assessment undertaken by GTA Consultants. The complete report is included in the Technical Reports in Volume 2.

7.7.1 Assessment Criteria

Relevant traffic and transport assessment criteria include:

- Ensuring local residences are not unduly inconvenienced by increased traffic as a result of the proposed wind farm;
- Ensure that roads and bridges retain their integrity after heavy load use;
- Compliance with VicRoads requirements; and
- Compliance with the Shire of Buloke requirements.

7.7.2 Methodology

Assessment of traffic loading was undertaken through a preliminary desktop review of background data on likely transport activities associated with construction, operation and decommissioning of the proposed wind farm and consultation with regulatory authorities including VicRoads and the Shire of Buloke. Projections were then undertaken on the traffic likely to be generated during the various stages of the development. The report also reviewed the access roads to the proposed sites via a visual inspection and identified preferred transport routes.
### 7.7.3 Impact Assessment

#### Traffic Generation

Major transport activity associated with the proposed wind farm will occur during the construction and decommissioning phases of the project. As the wind turbines are designed to operate largely unmanned, transport impacts during the operational phase will be minimal.

During construction, traffic will be generated on the local road network by the following activities:

- Construction of access tracks;
- Construction of the foundations; and
- Delivery and erection of the wind turbines and associated infrastructure.

It is estimated that the proposed turbine construction will generate in the order of 270 over-dimensional trips, 2,854 standard truck movements, 6,022 concrete vehicle trips and 19,000 car movements across the 15 month construction period.

#### Proposed Construction Routes

There are a number of route options which could be used to facilitate the associated vehicle movements to and from the subject site. These are shown in Figure 7-4, along with an indication of whether one or two way vehicle movements can be accommodated within the currently available carriageway width. Two-way consecutive vehicle movements on the narrower roads could be facilitated through the provision of intermittently spaced passing areas.

Roads proposed to be used for main construction access to the site are:

- The Sunraysia Highway from port through the town of St Arnaud (VicRoads);
  and
- St Arnaud-Charlton Road (VicRoads) for port and other material traffic originating from elsewhere in the Buloke Shire.

Then via local Buloke Shire roads, comprising:

- Seven Mile, Yeungroon, Nine Mile, Olives and Lees Road to site;
- Nine Mile, Yeungroon-Coonooer, Yeungroon-Nine Mile and Lees Road to site;
  or
- The most appropriate combination of the above local routes.
Figure 7-4 Proposed route options for construction
Two way vehicle movements can presently be accommodated along the majority of the length of Seven Mile Road, Yeungroon Road and Yeungroon – Coonooer Road.

### 7.7.4 Proposed Mitigation Measures

The following measures will be adopted to minimise traffic impacts associated with the construction of the proposed Berrimal Wind Farm:

- Details of access routes to be utilised, with preference given to the use of VicRoads Arterial Roads rather than local roads wherever possible;

- Development of a traffic management plan to respond to issues raised by the Shire of Buloke and Vic Roads to include:
  - Restrictions on the hours of construction vehicle operation in order to avoid the time and routes travelled by school buses and to provide for resident safety;
  - A requirement to repair any road damage that occurs as a result of this project, to pre-existing standard at the applicant’s cost;
  - A process for seeking approval from Council for any access points from local roads;
  - Details of access routes to be utilised by over-dimensional trucks and loads;
  - Use of on-site concrete batching plants (if required) instead of a remote plant will also assist in minimising heavy vehicle movements to and from the proposed wind farm; and
  - Use of an on-site borrow pit from which to source internal access track construction materials.

### 7.7.5 Conclusion

The effects of traffic generated during construction will be managed by the implementation of a detailed Traffic Management Plan to assist in minimising impacts associated with traffic generation.

### 7.8 Geotechnical, Surface Water and Groundwater

This Section summarises the findings of the Geotechnical Investigation undertaken by Coffey Geotechnics. The complete report is included in the Technical Reports, Volume 2.
7.8.1 Scope of Investigation

The aims of the geotechnical investigation included:

- Review of geology and geotechnical conditions at the site, including various parameters and recommendations relevant to design and construction;
- Assessment of suitability of site materials for use in construction; and
- Investigation of site hydrogeology.

7.8.2 Methodology

The following tasks were carried out in the course of the investigation:

- A desktop assessment;
- A site walkover;
- Excavation and analysis of onsite test pits;
- Drilling of boreholes and analysis of extracted cores;
- Offsite laboratory analysis of samples collected onsite;
- Placement and observation of standpipes to detect groundwater; and
- Analysis of findings and development of recommendations.

7.8.3 Findings

The investigation found that the site (primarily along the ridgeline) is dominated by clayey silt soils and weathered schist (with hard underlying rock). No groundwater was detected in the standpipes located across the site, however perched groundwater may occur in places across the site at shallow depth after heavy rainfall. Conditions were generally suitable for founding large structures such as wind turbines, and site materials may (with appropriate treatment) be suitable for use in construction – though not for concrete aggregates. Engineering parameters were provided for input into design and construction planning.

The investigation additionally found that the underlying rock structure to be of high, to very high strength. This provides the potential opportunity on site to employ rock anchor foundation design, whereby turbine foundations are formed directly to the underlying bedrock of the site. The feasibility of this approach over traditional concrete foundation methods will be further investigated during detailed design, post planning approval.

No immediate risks or adverse impacts on surface or ground water were identified, and recommendations were made for suitable civil and structural design parameters to
mitigate potential hazards or issues which could arise during construction and the life of the project.

7.9 Electromagnetic Interference

This Section reports the findings of the Electromagnetic Interference Analysis undertaken by ACCIONA Energy. The complete report is included in the Technical Reports.

7.9.1 Assessment Criteria

The criteria used for avoiding diffraction effects on point to point signals are normally based on an exclusion zone of circular cross-section around the direct path from the transmitter to the receiver. This exclusion zone is defined in terms of Fresnel zones. To avoid interference to point to point signals, 60% of the first Fresnel zone should be unobstructed by large, static objects such as buildings. However, for the varying geometry of a wind turbine, a more conservative approach is taken and the exclusion zone around a signal that includes the entire first Fresnel zone has been adopted.

The interference mechanisms for television broadcasts (point to area) are complex to calculate and can have limited predictive accuracy. Television interference around a cluster of wind turbines is generally limited to less than 1 km, but can extend to 5 km from the wind turbines, and is a function of the visibility of the wind turbines and the transmitter from the receptor.

7.9.2 Methodology

The method used for assessing potential electromagnetic interference included:

- A desktop review of available information to locate all of the telecommunications towers within 100 km of the proposed wind farm; and
- Modelling using ICS Telecom software to produce theoretical coverage maps for relay stations.

7.9.3 Impact Assessment

The following assessments were made as a result of the Electromagnetic Interference analysis.

AM Radio Broadcasting

Since no AM transmitter antennas are located within 20km of the closest wind turbine, no impact of this nature is anticipated, except for a possible reception disruption in the immediate vicinity of operating wind turbines.
**FM Radio Broadcasting**

The turbines projected at Berrimal Wind Farm lie far outside the consultation zones for FM transmitters, which are a 1km radius around the transmitter antennas. No FM transmitter antennas are located within 20km of the closest wind turbine, therefore no impact on FM broadcasting is anticipated, except for a possible reception disruption in the immediate vicinity of operating wind turbines.

**Terrestrial Television Signal**

The consultation zone around a television transmitter is considered to be a 2km radius around the transmitter antenna. Since no television transmitters are located within 2km of the Berrimal wind farm, this restriction is satisfied. However, studies carried out by ACCIONA Energy have proved that this restriction is occasionally insufficient to ensure there is no impact to residences.

In Australia, the switch from analogue to digital television will be completed at the end of 2013. In the region of Berrimal, the switch is now complete and the analogue television signal is no longer broadcasted. Therefore this study focuses only on impacts to the digital signal due to the wind farm.

As all digital TV channels can be received from multiple relay stations within the region (Ballarat, Bendigo, Swan Hill and Charlton) reception issues could be remedied by simply realigning the residence’s TV’s antenna towards an unaffected relay station. On this basis the construction and operation of the Berrimal wind farm is not likely to pose an issue for digital television reception.

**Satellite Television Signal**

A desktop study concludes that there will be no interference to Satellite television reception due to construction and operation of the Berrimal wind farm.

**Point-to-point Links**

A desktop study concludes that there will be no interference to Point-to-point links due to construction and operation of the Berrimal wind farm.

**Mobile or Stationary VHF/UHF Radio Systems**

The closest mobile radio tower (frequency 161MHz) is located near St Arnaud. Since the distance to the closest turbine is 15km, there will be no interference to Mobile or Stationary VHF/UHF Radio Systems due to construction and operation of the Berrimal wind farm.
Cellular Telephony

The closest mobile tower is located in Coonooer Bridge, and is operated by Telstra. Since the distance to the turbines is 15.5km, no impact to mobile coverage is anticipated.

Other EM communications

- No objections about aeronautical navigation aids, airfields and radars are expected due to the construction and operation of the proposed Berrimal wind farm;
- No weather radars will be interfered with by the proposed Berrimal wind farm;
- Any coast guard radar will not be interfered with by the proposed Berrimal Wind Farm;
- No seismic stations will be interfered with by the wind farm. The nearest seismic station is located in Buckrabanyule, 22km from the proposed site; and
- No astronomical observatory or radio telescopes will be interfered with by the proposed Berrimal Wind Farm.

7.9.4 Proposed Mitigation Measures

To manage any potential local television interference, ACCIONA Energy is intending to offer free pre-construction television reception quality surveys to potentially affected dwellings. This will assist in determining impacts and resolving any potential problems.

In the event that television interference is an issue during wind farm construction or after commissioning there are several amelioration options available:

- Realignment of householder’s TV antenna towards existing transmitter;
- Turning the householder’s antenna into alternative sources of the same suitable TV signal;
- The installation of more directional and/or higher gain antenna at the affected dwelling;
- Relocating the antenna to a less affected position;
- The installation of cable/satellite TV at the affected dwelling; and
- Installation of a TV relay station.

7.9.5 Conclusion

It can be concluded that severe electromagnetic interference issues are not expected to arise due to the wind farm. A minimal impact on the terrestrial television signal could be experienced at a few dwellings in the wind farm area. In the case this interference is confirmed, it would be easily solved by re-tuning the antennas to other available relay stations.
7.10 Aviation

This Section reports the findings of the Assessment of Aviation Related Issues undertaken by HART Aviation. The complete report is included in the Technical Reports, Volume 2.

7.10.1 Assessment Criteria

Relevant aviation assessment criteria include:

- Aeronautical impact assessment necessary to understand the potential impact on agricultural application and on private airstrips, commercial aerodromes, military operations etc;
- Obstacle lighting and marking assessment giving regard, where necessary, to the NASAG Guidelines for Land Use Planners to manage the risk of wind turbine farms; and
- Aviation impact statement covering aviation communications and those other issues required for consideration from the various regulatory authorities.

7.10.2 Methodology

Assessment methodology comprised:

- Review of all aviation activities and potential aviation activities occurring, or likely to occur, within the boundaries of the proposed wind farm, or within a 30km radius from the wind farm site that may be potentially affected by the presence of the wind farm, including both civil and military operations;
- Consideration of Australian regulatory authority requirements, international standards, recommendations and guidelines; and
- On the basis of the above assessments, an assessment of risks associated with aviation operations and the need of otherwise for obstacle lighting.

7.10.3 Impact Assessment

The following impacts have been summarised as a result of the aviation assessment undertaken by HART Aviation:

- There are no major airports within 30km of the wind farm site;
- There are no licensed aerodromes within a 30km radius of the wind farm site;
- There are up to two unlicensed airstrips within a 30km radius of the wind farm site;
• With the exception of special low level specialised operations as might occur with agricultural operations, Night VFR and IFR operations should be sufficiently clear of any wind turbines; and

• Since the wind turbine tip height chosen for the wind turbines may exceed 500ft above ground level, turbines will potentially penetrate navigable air space. As such, this introduces a risk factor in which obstacle lighting is considered necessary.

Further assessments can be found in the technical report in Volume 2.

### 7.10.4 Proposed Mitigation Measures

ACCIONA Energy proposes to undertake the following mitigation measures as a result of the assessment undertaken by HART Aviation:

- Obstacle lighting will be investigated and installed as per the requirements if turbines are to have an above ground tip height in excess of 150m (just under 500ft);
- The following agencies will be advised of the Berrimal Wind Farm proposal to ensure mitigation measures are in place:
  - Civil Aviation Safety Authority (Australia);
  - Aerial Agriculture Association of Australia;
  - RAAF;
  - Air Services Australia; and
  - Department of Defence.

### 7.10.5 Conclusion

It was found in the aviation assessment that the overall risk to aviation operations in the vicinity of the proposed Berrimal Wind Farm is considered to be low.
**7.11 Socio-Economic Considerations**

This Section summarises the findings of the Socio-Economic Considerations assessment prepared internally by ACCIONA. The complete report is included in the Technical Reports.

**7.11.1 Assessment Criteria**

The Wind Energy Guidelines specify a requirement to undertake an analysis of the project’s potential impact on:

- Economic considerations; and
- Social considerations.

**7.11.2 Methodology**

The socio-economic report provides a summary of anticipated impact through consideration of:

- Key existing socio-economic indicators and trends present in the Buloke Shire, utilising Australian Bureau of Statistics (ABS) census data, with associated commentary on implications for future economic growth in the Shire;
- Anticipated numbers, duration and range of employment opportunities presented by the construction of the Berrimal wind farm;
- Direct economic benefits flowing from rates, landowner payment, Community Benefit Fund and local sponsorship programs; and
- The socio-economic outcomes in communities where comparable wind energy developments have been constructed.

**7.11.3 Impact Assessment**

The Berrimal Wind farm has the potential to bring significant investment and local employment opportunity to the Buloke Shire. Whilst the Buloke Shire and immediate surrounding shires are not equipped to provide the project with the significant manufacturing high value equipment to be constructed (turbine blades, nacelles and towers), the Shire is well equipped to provide substantial support services and employment. It is anticipated this will result in a considerable benefit to the Shire, peaking during the construction period, but present throughout the operation of the development.

In addition, the project will result in the establishment of a Community Benefit fund and local sponsorship program.
It is expected these positive impacts will offset the negative impacts of construction traffic nuisance and any amenity impacts associated with the operation of the turbines.

### 7.11.4 Proposed Mitigation Measures

The project has been located in a relatively sparsely populated location- thus limiting the negative amenity impacts of a large scale wind energy facility on the local population. Residual visual impact will be mitigated by targeted landscaping treatments.

Likewise, the establishment of a Community Benefit fund and local sponsorship program are designed to assist in delivering a broader range of benefits to the host community.

### 7.11.5 Conclusion

The Berrimal wind farm is expected to bring significant economic and social benefits to Buloke and surrounding shires. Census and other Government data clearly indicate the Buloke Shire has a number of long term economic and social challenges presented by a falling population and heavy reliance on the agricultural sector. The Berrimal project will provide a substantial additional economic focus in the shire, independent of, but complimentary to, ongoing agricultural activities.

In summary, the project will:

- Generate a construction peak workforce of 80-100 jobs
- Provide 5-10 ongoing full time positions on site;
- Provide a diversified income for host landowners;
- Result in increased business activities within nearby towns to the site- peaking during the construction phase, but continuing throughout the life of the project
- Provide a substantial increase in the Buloke Shire’s limited rates base
- Result in the establishment of a community benefit fund of approximately $35,000 per annum, indexed to CPI, to share the benefits of the project with the immediate community surrounding the development
- Result in the establishment of an ongoing local sponsorship program of approximately $15,000 per annum, indexed to CPI, supporting local services operating within nearby service towns to the site.
7.12 Cumulative Impacts

This Section reports the findings on cumulative impacts which could arise from potential wind farm developments in the local area surrounding the proposed Berrimal Wind Farm. As detailed in Section 2.6, there are currently 32 operating, under construction or approved wind farms in Victoria. The nearest of these operating sites is approximately 80km distant from Berrimal, and thus well outside the shared viewshed.

Relevant to the Berrimal proposal is the proposed Coonooer Bridge Wind Farm, located approximately 3.6km west as shown in Figure 7-5. The Coonooer Bridge Wind Farm will comprise 5, and potentially 6 turbines. The turbines will have a maximum blade tip height of 150 metres, hub height of 90 metres, and a rotor diameter of up to 125 metres.

Figure 7-5 Approved Coonooer Bridge Wind Farm relative to the proposed Berrimal Wind Farm

The Wind Energy Guidelines require that wind farm proposals address "the cumulative effects of the proposal having regard to other existing or proposed wind energy facilities in the area". However, the guidelines does not provide details on how the cumulative impacts are to be assessed.
This cumulative impact assessment for the proposed Berrimal Wind Farm covers four key areas, including noise, landscape and visual, aviation, and socio-economic and tourism.

7.12.1 Noise

A cumulative noise impact assessment was undertaken by Marshall Day Acoustics on the proposed Berrimal Wind Farm and approved Coonooer Bridge Wind Farm development. Noise levels from the Coonooer Bridge Wind Farm have been predicted using the six turbine layout which will reflect that project’s maximum number of turbines.

30dB $L_{Aeq}$ noise contours were calculated for each proposed wind farm and it was determined that there are three residential properties located in the region of intersection for the two 30dB $L_{Aeq}$ contours.

It was determined in this assessment that the predicted noise contribution of the approved Coonooer Bridge Wind Farm in addition to the predicted level of noise from the Berrimal Wind Farm at the identified dwellings is up to 4dB across the considered noise sensitive locations.

Predicted cumulative noise levels from the Berrimal and Coonooer Bridge wind farms indicate that they will comply with the lowest possible NZS6808:2010 noise limit of 40dB $L_{A90}$, at all assessed wind speeds, at all assessed noise sensitive locations.

An assessment of cumulative noise based on installation of AW125/3000 turbines at Berrimal Wind Farm is provided in the technical volumes for information purposes.

7.12.2 Landscape and Visual

Potential cumulative impacts to landscape and visual values have been analysed in the Landscape and Visual Assessment undertaken by AECOM. The cumulative impact assessment for landscape and visual values is based on assessing the potential for simultaneous and sequential views along with a discussion of the potential for change in community perceptions.

Cumulative visual impacts can arise as a result of:

- The presence of multiple wind farms within an area (not necessarily visible together), which result in changes to receptors perceptions of an area as a result of repeated/ frequent exposure to wind turbines within a landscape; and/ or
- Simultaneous views to multiple wind farms from publicly accessible or private viewing locations.

The Coonooer Bridge Wind Farm is, by comparison to Berrimal, relatively small, in terms of both the number and the size of the turbines. As the two wind farms are relatively
close to one another, AECOM have determined they will often be viewed together and read as one wind farm. As such, cumulative impacts from many areas are diminished as opposed to the case where the wind farms are geographically disparate. Given the consolidation of the turbines within a geographically restricted area, there are not expected to be significant additional impacts upon perceptions of the broader landscape beyond those that would be experienced if either of the wind farms were considered in isolation.

Overall, AECOM concluded that the cumulative landscape and visual impact would be minor.

The greatest cumulative impacts are expected upon dwellings which are located between the two wind farms. From these locations, turbines will be visible in two directions and as such impacts are increased, with a greater percentage of the landscape from these viewpoints occupied by the turbines.

7.12.3 Aviation

In assessing the overall risks to aviation operations in the vicinity of the proposed Berrimal Wind Farm, HART Aviation looked at what other wind farm development exist, or are proposed to be built, within a 30km radius.

HART Aviation considers that the presence of the Coonooer Bridge Wind Farm will have no effect on the assessment in respect of the Berrimal Wind Farm. The height and number of the wind turbines are such that the aviation risk issues associated with the Coonooer Bridge Wind Farm are likely to be less than those of the Berrimal Wind Farm and the presence of the additional six turbines will not create any adverse accumulative effect.

7.12.4 Socio-Economic

An assessment of cumulative impacts from a socio-economic perspective involves consideration of the potential impacts on the local and regional economy and the effects.

Major regional projects offer significant potential benefits to a region in terms of the supply of goods and services, employment and skills development. In the context of the Buloke Shire economy overall, the Coonooer Bridge and Berrimal wind farms represent significant investments. However, each are relatively small wind farms by the standards of others constructed recently in Victoria. As such, in the event that both projects happened to progress concurrently, it is unlikely the regional service economy would be overwhelmed by the additional demands. Such timing may result in the further
distribution of economic benefit to other parts of the shire as services such as accommodation become fully occupied.

In the event of a staggered construction timing, a more consistent flow of economic benefit would occur - to the likely benefit of both local service industry and project developers.

These additional employment opportunities will not be to the detriment of the agricultural industry, with farming activities able to continue on both sites and in surrounding areas as normal.
8. Environmental Management

ACCIONA Energy adopts a best practice approach to environmental assessment and management. All activities proposed – construction, commissioning, operation and maintenance of the wind farm would be undertaken with minimal impact on the surrounding environment.

A Draft Environmental Management Plan (EMP) has been developed for the proposed Berrimal Wind Farm, incorporating control measures that would be implemented during construction and operation. The EMP is found in Appendix D.

The EMP includes:

- Principles of environment management;
- Measures to mitigate environmental effects;
- Standards to be met;
- Monitoring requirements;
- Decommissioning and rehabilitation requirements; and
- Post construction review of management measures to ensure best possible outcomes.

The EMP is currently draft in nature and will be amended accordingly as detailed design of the Wind Farm is understood during secondary consent phase. The draft EMP may be found in Appendix D of this planning application.
9. Conclusions

Key conclusions of this report are as follows:

1. The proposed wind farm is expected to abate approximately 177,000 tonnes in CO$_2$ emissions assuming a capacity factor of 35%, providing clean renewable energy to over 33,000 homes. This will assist in meeting the Commonwealth renewable energy target.

2. The proposed wind farm is estimated to cost $150 million to construct, with considerable anticipated flow on effects to local service suppliers in the Buloke Shire.

3. The proposed wind farm is estimated to generate 80-100 peak construction period jobs and 5-10 ongoing operations and maintenance jobs on site.

4. The proposed Berrimal Wind Farm is located in a relatively sparsely populated part of the state, with no dwellings within 2km of the site, and proportionally few out to 5km distance.

5. The proposed wind farm is considered to have a low potential to impact on any listed threatened species or ecological communities.

6. No significant Aboriginal cultural heritage sites were identified within the Berrimal site. The CHMP includes a series of management measures to ensure that impacts on areas of cultural heritage sensitivity are minimised. Non-Aboriginal cultural heritage sites on the Berrimal site will be avoided.

7. Traffic generated during construction is not expected to have significant impacts on local regions. Local roads and intersections will be upgraded to a standard able to handle the anticipated traffic volumes and weights.

8. The proposed Berrimal Wind Farm is located near to the approved Coonooer Bridge wind farm. Cumulative impacts have been assessed from a landscape and visual, flora and fauna, noise and socio-economic perspective. These assessments have determined that the cumulative impact between the projects will be acceptable, as indeed the Buloke Shire must have determined in approval of the Coonooer Bridge project against the current Berrimal project consent.

9. The proposed wind farm will have a generally low visual impact on its surrounds, increasing to moderate in the immediate vicinity of the development. It is located in an infrequently utilised, highly man-modified landscape.

10. All other potential amenity impacts including noise, shadow flicker, blade glint and electromagnetic interference will comply with relevant requirements and can be effectively managed.

11. Environmental management measures have been identified that will assist in further ameliorating potential impacts. These measures will be developed in more detail during the detailed design and micro-siting process, including incorporation of any conditions set by the Shire.
Considering all of the above, it is concluded that the proposed Berrimal Wind Farm is consistent with all relevant planning policy objectives and requirements, including the Buloke Planning Scheme and the Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria.

The proposed Berrimal Wind Farm will help to sustainably meet future energy needs by producing electricity without generating greenhouse gas emissions and will have a positive impact on the local and regional economy through jobs creation, investment and diversification of the local economy.

This planning application report has articulated a response across the spectrum of planning considerations. It is concluded that the Berrimal wind farm, as proposed, represents sound, responsible and orderly land use planning. On this basis, the proposal warrants approval.
10. References


ACCIÓN Energy Oceania Pty Ltd (2013). Wind Farm – Amendment to Approved Development Plans – Updated Shadow Flicker and Blade Glint Assessment. A Memo to ACCIONA Energy Oceania Pty Ltd


Environmental Protection Agency (1998) Environmental Guidelines for the Concrete Batching Industry, Environmental Protection Authority, Victoria.


Appendix A  Planning Permit 71/06
Appendix B  Planning Permit 352/10
Appendix C  Planning Permit 490/13
Appendix E  Stakeholder Correspondence