# RYAN CORNER WIND FARM AMENDMENT

## Landscape and Visual Impact Assessment Review

*For: Ryan Corner Development Pty Ltd*

*REFERENCE: 0105123 RCWF RPT4/ Final/ February 2017*

ENVIRONMENTAL RESOURCES MANAGEMENT AUSTRALIA PTY LTD

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*For: Ryan Corner Development Pty Ltd*

*0105123 RCWF RPT4/ Final/ February 2017*

For and on behalf of
**Environmental Resources Management Australia**
Approved by: Alan Simonic
*Position:* *Partner*

Signed:
Date: 1 February 2017
Managed by Hayden Burge
*Position:* *Principal Landscape Architect*

Signed:
Date: 1 February 2017

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# 1 EXECUTIVE SUMMARY

Ryan Corner Development Pty Ltd (RDPL) seeks to amend the permit to allow an increase to the overall height of the wind turbines from 126.3 m to 180 m and to reduce the wind turbine numbers from 68 (approved) to 56 wind turbines.

## 1.1 Physical changes to layout and height

There are two changes to the approved Ryan Corner Wind Farm which may result in a different level of visual impact.

The first proposed change is to reduce the number of wind turbines. While the numbers of wind turbines in any particular view would be reduced such as for views from dwellings nearest to the location of the removed turbines, such a reduction in numbers would have a minor or insignificant impact on viewers' perception of the landscape, unless as a result of the Amended Layout, there were no wind turbines visible in a view, in which previously wind turbines were visible. From the analysis undertaken within this assessment, this does not seem to be the case and the diminution in numbers would only result in a slight reduction in impact. This reduction in the visual impact on a viewer in the public domain would be insignificant.

The second proposed change would increase the height of the wind turbines. As their siting has not changed, (with the exception of micrositing allowed within the approved permit), this increase in height is perceptible when viewed from a static location. Figure 1-1 shows a comparison of the approved and proposed wind turbines for an observer located approximately one kilometre from a wind turbine.

While, the previously approved overall height of wind turbines is 126.3 m, for simplicity of 3d modelling, all photomontages of approved layout within this report are slightly overstated to an overall height 126.5 m. As such this difference in overall height will have no discernible change to the levels of impact assessed within this report.

The photomontages show the change between the visual impact of an approved wind turbine with an overall height of 126.5 m (above) and a proposed wind turbine with an overall height of 180 m (below). It is apparent that there is a change in visibility, but in both cases a wind turbine is a dominant element in this landscape. The overall visual impact remains unchanged.

Therefore, with the increase in height, the perceptual change to the scale of the overall wind farm and the resultant visual impact would not significantly change from the original assessment. An identical impact would have occurred as a viewer moved closer to the approved wind turbine along the road from which the photomontage was taken.

The visual impact from other viewpoints is further explained within this assessment.

## 1.2 Changes to policy and guidelines

Since the Planning Permit was issued for the approved wind farm on 21 August 2008, planning guidelines and landscape studies have changed and/ or new policies and guidelines have been drafted.

This assessment examines the proposed wind farm in light of current guidelines and policies and reaches the conclusion that these do not significantly change the level of visual impact bought about by the proposed wind farm.

## 1.3 Mitigation measures

Given the increased height of the wind turbines, it is acknowledged that the amended wind turbines may be *"Highly visible and will usually dominate the landscape"* up to 4 km of the nearest wind turbines (refer to Section 3.4). Therefore, landscape mitigation should be extended to residents within 4 km of the wind farm.

*Figure 1-1 Comparative views of Approved turbine (above), Amended turbine (below)*

# 2 INTRODUCTION

The approved Ryan Corner Wind Farm (RCWF) is located in the South West Victoria approximately 12 km north of Port Fairy and 250 km west of Melbourne.

## 2.1 Planning background

A planning permit was issued on 21 August 2008 for the use and development of a wind energy facility at Ryan Corner comprising of 68 wind turbines and associated facilities.

ERM prepared the following reports pertaining to landscape and visual impacts as part of the assessment of the planning permit application.

- Preliminary Landscape and Visual Impact Assessment dated 2005 as part of the Notification to the Minister of Planning.
- Final Landscape and Visual Impact Assessment dated 2006 (Final LVIA) as part of the Environment Effects Statement (EES).
- Presentation of expert evidence at Panel hearing in 2006.

### 2.1.1 Secondary Consent

Subsequently, a Secondary Consent was granted in August 2010 for an increase of the overall wind turbine height from 121.5 m to 126.3 m. This Secondary Consent was in part supported by the landscape and visual impact advice provided by ERM in January 2010.

RDPL reduced the number of wind turbines from 68 (approved) to 67 for the endorsement process in late 2011.

### 2.1.2 On-site landscape works and Environmental Management Plan

ERM has prepared:

- Landscape Plan for on-site landscaping works (dated February 2012); and
- Environmental Management Plan (dated February 2012).

## 2.2 Planning Amendment

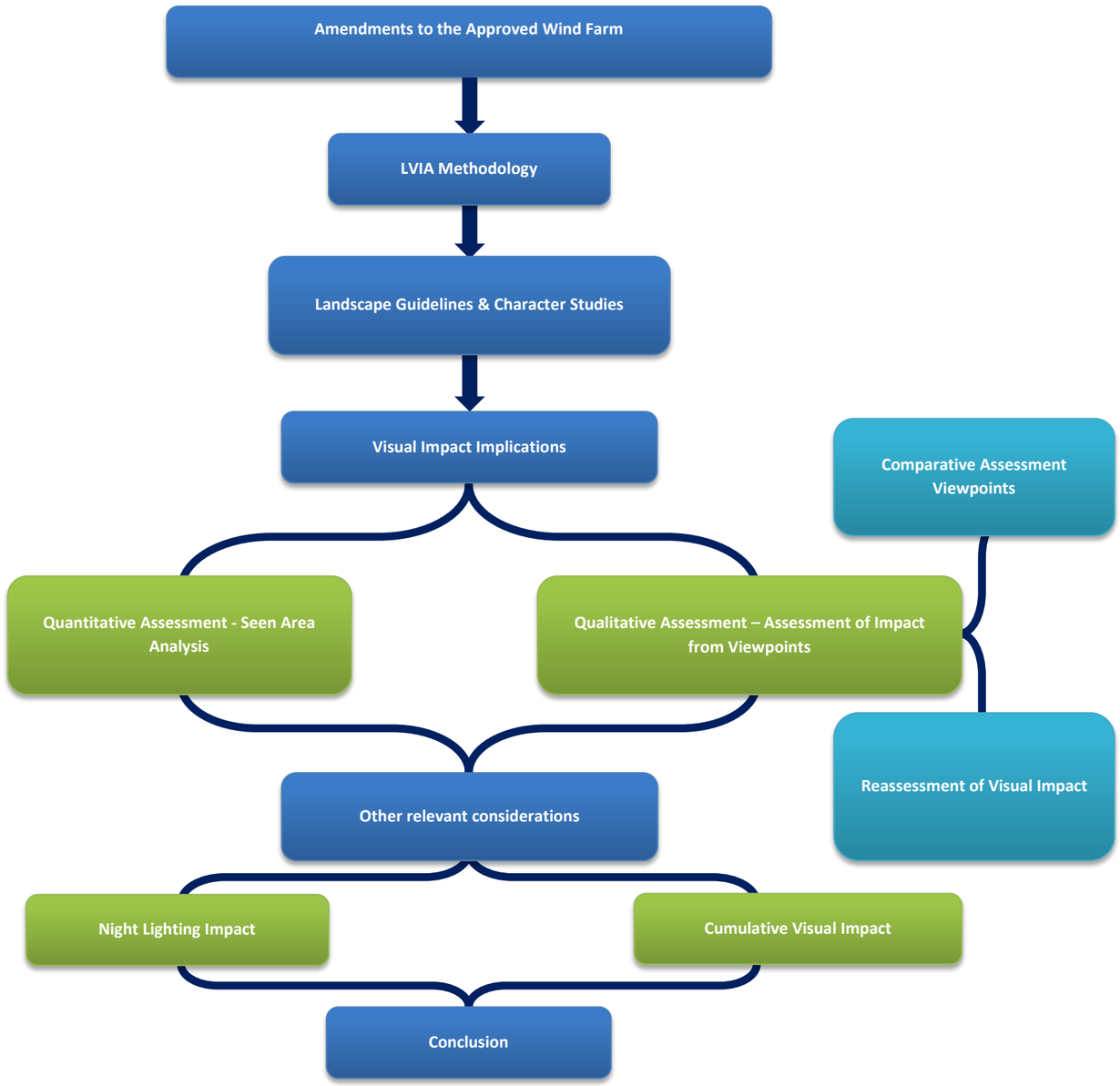
Ryan Corner Development Pty Ltd (RDPL) now seeks to amend the permit to allow an increase to the overall height of the wind turbines from 126.3 m to 180 m and a further reduction in wind turbine numbers from 67 to 56 wind turbines.

The following report will review and assess the change to the landscape and visual impacts resulting from the amendment to the proposed numbers and heights of the wind turbines.

## 2.3 Assessment Structure

This report will discuss the change to the landscape and visual impacts of the proposed amendment to Ryan Corner Wind Farm. The assessment structure is set out in Figure 2-1. Details of the methodology are set out later in this report.

*Figure 2-1 Visual Impact Assessment Structure*




Assessment Structure

# 3 AMENDMENTS TO THE APPROVED WIND FARM

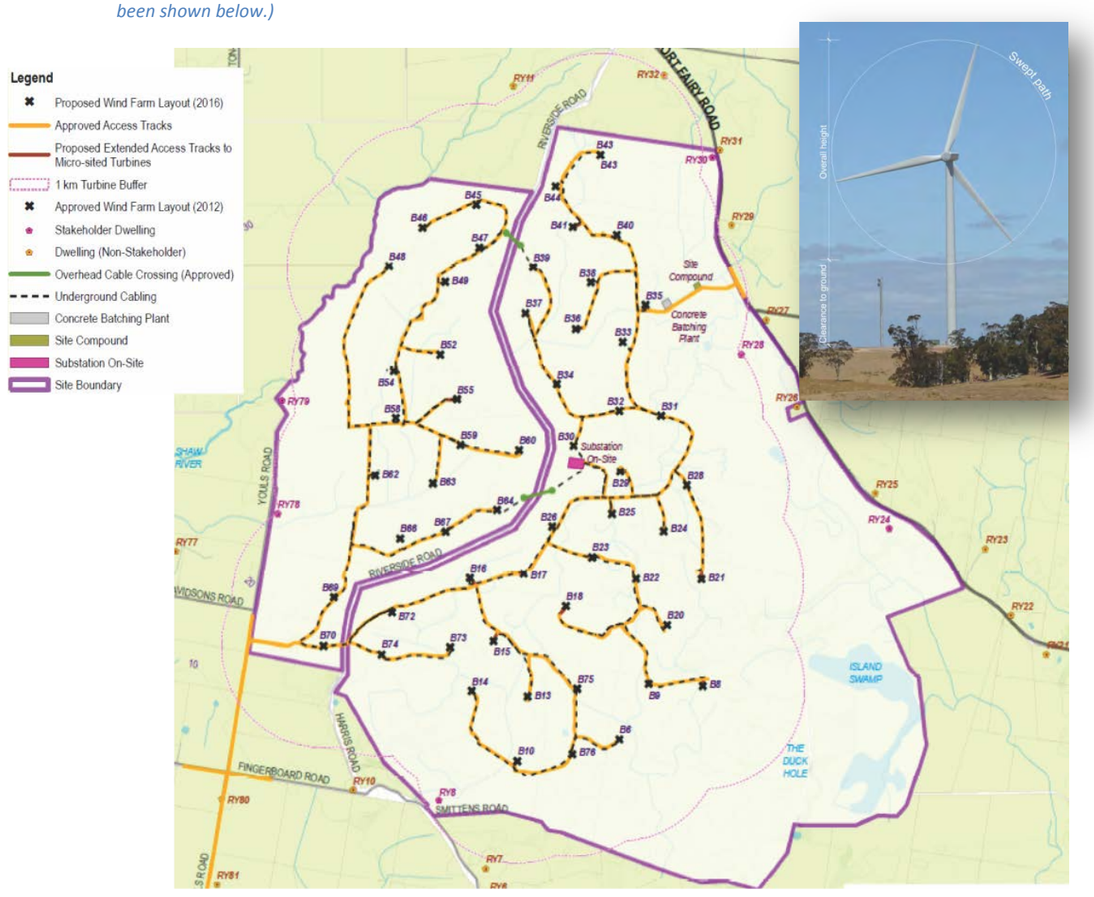
The approved wind farm layout of 68 wind turbines (Approved Layout) is proposed to be amended. This amendment will:

- reduce the number of wind turbines to 56 (Amended Layout). The Amended Layout sits within the approved development envelope and the amended wind turbines are sited within the approved 100 m micro-siting envelope of the previously approved wind farm.
- increase the overall wind turbine height to 180 m for 55 wind turbines and to 160 m for wind turbine B35.
- realign some of the access tracks due to reduction in the number of wind turbines.

## 3.1 Changes to the approved layout

Figure 3-1 illustrates the proposed wind farm layout.

*Figure 3-1 Amended wind farm layout (note wind turbine B27 while approved is not included in the endorsed layout and has not been shown below.)*




## 3.2 Change to the dimensions of the proposed wind turbines

The approved and amended wind turbine heights and dimensions are listed in Table 3-1.

*Table 3-1 Wind turbine height change*

| | Min blade clearance to ground level | Overall height (m) | No of turbines |
|---|---|---|---|
| ***Approved Layout*** | 36.3 | 126.3 | 67 (68 Approved) |
| ***Amended Layout*** | | | 56 |
| Turbine B35 | 30 | 160 | |
| All other turbines | 40 | 180 | |

* Maximum hub height will be 117 m. In order to make a conservative assessment, that is based on the maximum rotor diameter; a 115 m hub height has been used in this assessment

## 3.3 Transmission Line

At the time the LVIA was written, several options were considered for the connection to existing electricity grid.

Of these, Option 2: Joint Connection with the Macarthur Wind Farm project, to one of the 500 kV Moorabool-Heywood HV Transmission line has become the preferred option.

> *"Option 2 comprises the construction of a 33kV/132 kV substation on the Ryan Corner site, the development of an easement and installation of a 132 kV overhead transmission line between the Ryan Corner site and the proposed substation for the Macarthur project, and connection to the 500 kV transmission line as part of the 132kV/500 kV substation to be constructed alongside the transmission line for the Macarthur Project."*

As this option was considered in the previous assessment the landscape and visual impacts of this transmission line route are not assessed again within this review.

## 3.4 Change to the Viewshed and Zones of Visual Influence

The region of the landscape that can potentially be visually affected is called the viewshed. The LVIA describes the viewshed as follows:

> *"The region of the landscape that can potentially be visually affected is called the viewshed or sometimes the zone of visual influence (ZVI). This report will use the term "viewshed"…"*
>
> *"The viewshed can be determined by measuring the extent to which an object fills an observer's static field of view. These calculations are based upon the parameters of human vision…"*

These definitions are adopted as a basis for this assessment of the Amended Layout.

Given the change to the height of the overall wind turbines, the extent of the viewshed has increased. The viewshed of the Approved Layout and the Zones of Visual Influence will extend further, to a distance of 20 kilometres.

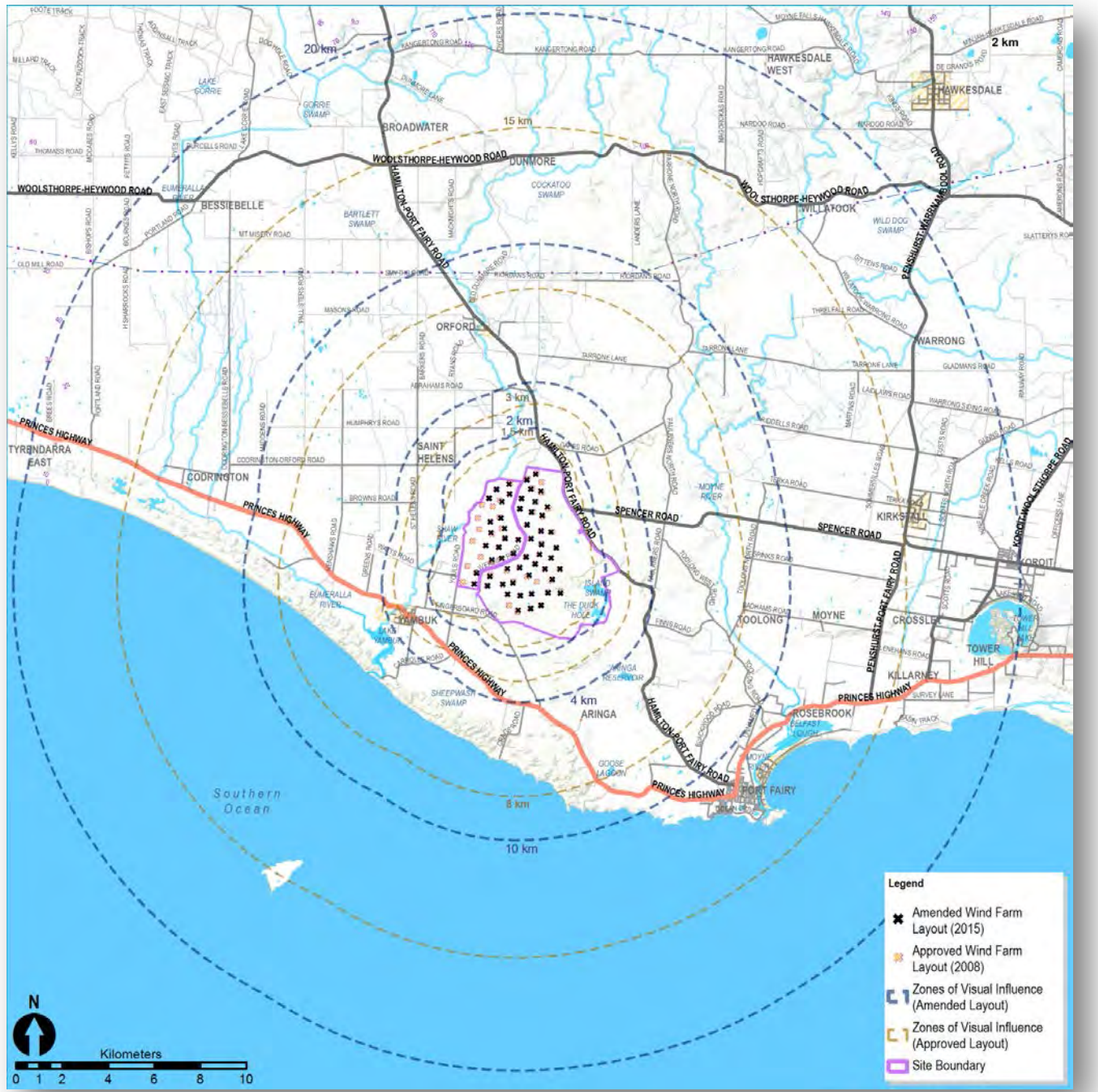
The increased height of the wind turbines has also changed the resultant visual impact bands or Zones of Visual Influence. Table 3-2 describes the changes in the ZVI between the approved and amended layouts.

*Table 3-2 Zones of Visual Influence*

| Distance to nearest turbine | | Zones of visual influence |
|---|---|---|
| **Approved Layout** | **Amended Layout** | |
| > 15 km | **>20 km** | **Visually insignificant**<br>A very small element in the viewshed, which is difficult to discern and will be invisible in some lighting or weather circumstances. |
| 8 - 15 km | **10 - 20 km** | **Potentially noticeable, but will not dominate the landscape**<br>The degree of visual intrusion will depend on the landscape sensitivity and the sensitivity of the viewer; however, the wind turbines do not dominate the landscape. |
| 3 - 8 km | **4 - 10 km** | **Potentially noticeable and can dominate the landscape**<br>The degree of visual intrusion will depend on the landscape sensitivity and the sensitivity of the viewer |
| 1.5 - 3 km | **2 - 4 km** | **Highly visible and will usually dominate the landscape**<br>The degree of visual intrusion will depend on the wind turbines' placement within the landscape and factors such as foreground screening. |
| < 1.5 km | **< 2 km** | **Will always be visually dominant in the landscape**<br>Dominates the landscape in which they are sited. |

These distances are shown graphically in Figure 3-2.

*Figure 3-2 Comparative viewshed and ZVI of Approved and Amended Layout*



# 4 LVIA METHODOLOGY

The explanation of the LVIA methodology has been clarified in response to Panel queries on past projects and to the issues raised within Guidelines since the initial LVIA was prepared in 2006. The methodology used within this assessment is set out in the following section.

## 4.1 Assessment Criteria of Visual Impact

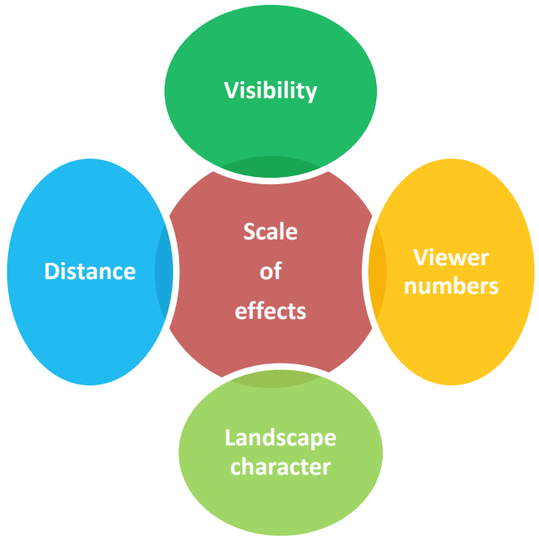
The assessment criteria used for publicly accessible viewpoints and those from the private domain differ. These are elaborated below.

### 4.1.1 Public viewpoints

For public viewpoints the associated scale of effects are primarily based on the assessment of the following four criteria:

- **Visibility**: The visibility of a development which can be affected by intervening topography, vegetation and buildings.
- **Distance**: The distance of the viewer from the wind turbines. The level of visual impact decreases as distance increases.
- **Landscape character**: The character of the surrounding landscape, both around the site and adjacent to the viewing location, must be considered. Generally, a man-modified landscape is considered of low sensitivity and a pristine landscape is considered highly sensitive.
- **Number of viewers:** The level of visual impact decreases where there are fewer people able to view the development. Alternatively, the level of visual impact increases where views are from a recognised vantage point.

*Figure 4-1 Scale of effects for LVIA*




These four criteria need to be considered in the assessment of each viewpoint. However the ratings of each criteria are not numerically based and cannot be simply added together to arrive at an overall rating.

For example:

- If the distances to the wind turbines are great then even if the viewer numbers and the landscape sensitivity were high, the overall visual impact would be minor because the wind turbines are only just visible in the landscape.
- If viewer numbers were low (i.e. few people can see the wind turbines from the publicly accessible viewpoint), then even if the wind turbines were near the nominated viewpoint and the landscape sensitivity was high, the overall visual impact would be minor because the change to the landscape is not visible to many viewers.
- If landscape sensitivity was low (i.e. within a highly man-modified landscape) then even if the wind turbines were near the viewpoint and were visible to a large number of viewers, the overall visual impact would be low because the viewpoint is not in a landscape of such sensitivity that further change would be unacceptable.

Therefore, the assessment of the overall visual impact needs to be informed by these criteria and a balanced judgement made as to the overall visual impact.

### 4.1.2 Residential viewpoints

The assessment of visual impact from residential properties is slightly different to one undertaken from publicly accessible viewpoints.

An assessment of viewer numbers is not applicable and the landscape sensitivity is always rated as "high", as it must be recognised that people feel most strongly about the view from their house and from their outdoor living spaces.

Therefore, the visibility of a development and the distance between the residential location and the development are the two criteria that are used to assess a visual impact from a residential property.

*Mitigation Measures for Residential Viewpoints*

Mitigation measures may also include landscape treatments, both on the subject site and specifically targeted at residential dwellings.

## 4.2 Scale of Effects

The scale of effects for assessing the overall visual impact of the wind turbines from a publicly accessible viewpoint ranges from negligible to high visual impact.

***Negligible visual impact***

**Negligible** – minute level of effect that is barely discernible over ordinary day-to-day effects. The assessment of a "negligible" level of visual impact is usually based on distance. That is, the wind turbines are at such a distance that, when visible in good weather, it would be a minute element in the view within a man-modified landscape or will be predominantly screened by intervening topography and vegetation.

***Low visual impact***

**Low** – visual impacts that are noticeable but that will not cause any significant adverse impacts. The assessment of a "low" level of visual impact can be derived if the rating of any one of four criteria, that is visibility, distance, viewer numbers and landscape sensitivity, is assessed as low. Therefore, an additional piece of infrastructure in a landscape which is man-modified and which already contains many examples of existing infrastructure may be rated as a low level of visual impact.

***Medium visual impact***

**Medium** – visual impact occurs when significant effects may be able to be mitigated / remedied. The assessment of a "**medium**" visual impact will depend upon all four-assessment criteria being assessed as higher than "low."

***High visual impact***

**High** or unacceptable adverse effect – extensive adverse effects that cannot be avoided, remedied or mitigated. The assessment of a "**high or unacceptable adverse effect**" from a publicly accessible viewpoint requires the assessment of all these elements to be high. For example, a highly sensitive landscape, viewed by many people, with the wind turbines in close proximity and largely visible would lead to an assessment of an unacceptable adverse effect.



Assessment Structure

## 4.3 Comparative photomontages

Photomontages have been used to assist the visual assessment and to illustrate the level of visual change due to the proposed amendment to wind turbine specifications, particularly the proposed heights of wind turbines. Examples include:

- Bald Hills Wind Farm - overall height increased from 110 m to 135 m. Approved by Minister of Planning on December 16, 2009 and development plans approved by VCAT in its decision dated 3 August 2012.
- Taralga Wind Farm, NSW. Height of the wind turbines increased from 110 m to 131.5 m was approved on August 21 2008 (see RES Southern Cross v Minister for Planning and Taralga Landscape Guardians Inc. [2008] NSWLEC 1333).

Photomontages have been prepared from three locations to assist in this re-assessment. These photomontages are discussed as part of the overall assessment later in this report.

## 4.4 Guidelines

Some of the planning policies guidelines have been changed since the issue of permit and therefore may be relevant to this amendment application.

### 4.4.1 The Victorian Guidelines

*The Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria* (the Victorian Guidelines) by the Victorian Department of Environment, Land, Water and Planning (DELWP) was revised in April 2015 and in June 2015 and is a referral document in the Victorian Planning Scheme.

The recent changes to the Victorian Guidelines relate to

- Statements of consent from non-involved landowners within 1 km of a wind turbine;
- Changes to the definition of "wind energy facility" to include related transmission and distributions systems of power lines allowing a single integrated planning permit application.

The Victorian Guidelines have now stipulated that a Statement of Consent may be required as stated below:

> *"Clause 52.32 Wind Energy Facilities was amended in April 2015. This amendment enables proponents to amend the wind farm without "a need for a dwelling owner consent where turbines are within one kilometre of a dwelling" provided the following conditions are met:*
>
> - *it does not increase the number of proposed turbines, or*
> - *the movement of a turbine does not result in it being located closer to a dwelling (within one kilometre of a turbine) than the closest permitted turbine to that dwelling. "*

In the Amended Layout there is a net reduction in the number of wind turbines. Further, there is no wind turbine proposed to be located closer to a dwelling within 1 km of the wind farm (refer to Figure 2-1).

### 4.4.2 Draft National Guidelines

*The Draft National Wind Farm Development Guidelines* (The Draft National Guidelines) by EPHC Environment Protection and Heritage Council was released in July 2010. The Draft National Guidelines have not been finalised nor adopted. While the Draft National Guidelines are mentioned as further guidance in the Victorian Guidelines they are not a referral document.

The Draft National Guidelines do not provide a framework for the assessment of impacts when seeking to modify an existing permit. There is no specific guidance on the planning amendment process within the Draft National Guidelines.



Assessment Structure

# 5 LANDSCAPE GUIDELINES & CHARACTER STUDIES

Since the preparation of the LVIA, the following studies have been released:

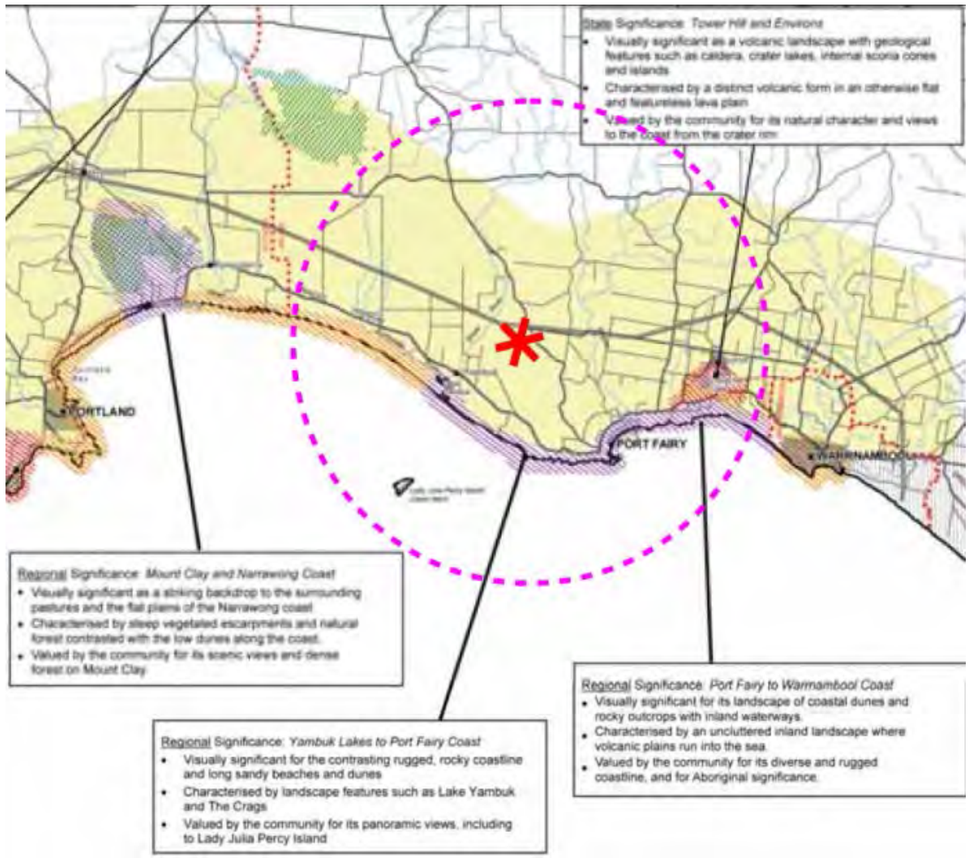
- *The Coastal Spaces Landscape Assessment Study – Protection and Management of Victoria's Coastal Landscapes* (DSE, VCC and Planisphere, September 2006) (CSLAS).
- *The South West Victoria Landscape Assessment Study – Landscape Character of South West Victoria* (DPCD & Planisphere, June 2013), (SWVLAS); and
- Kanawinka Geopark.

The implications of these studies are discussed in the following section.

## 5.1 Coastal Spaces Landscape Assessment Study

The southern section of the viewshed of RCWF is within the purview of the Coastal Spaces Landscape Assessment Study (CSLAS).

*Figure 5-1 Significant Coastal Landscapes South West Victoria*




Three Character Areas occur within the RCWF viewshed. These are:

**Landscape Character Area 5.1: Eumarella Coast and Hinterland**

> *"... dominated by flat coastal plains west of Port Fairy and east of Portland, and extending for several kilometres inland. Long distance views across open plains are available throughout the area, terminating at coastal dunes which are the only notable topographic feature. The Codrington wind farm dominates the skyline for part of the coastal length of this Character Area."*

**Landscape Character Area 5.2: Port Fairy Stony Rises**

> *"... a region of more varied topography, characterised by small-scale hillocks with exposed basalt bedrock. Pastoral land use has led to the clearing of most remnant native vegetation, however ferny groundcover can be found at stony outcrops and mature coniferous shelterbelts are visible throughout the landscape."*

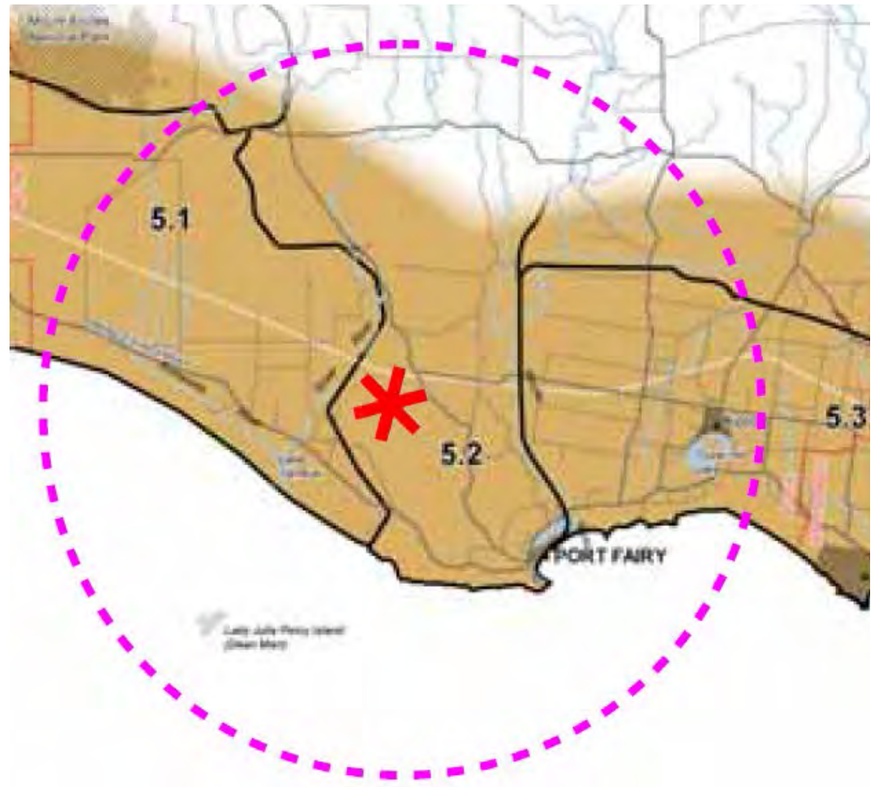
**Landscape Character Area 5.3: Pastoral Plains**

> ***"This open pastoral hinterland Character Area is part of the extensive volcanic plains that extend west of Geelong. Landform is consistently flat** to gently undulating, with the unique and dramatic topographic feature of Tower Hill a product of the area's volcanic origins. Flat topography provides long-range views across rural pastures bounded by shelterbelts and native vegetation towards the east of the Character Area."*

Figure 5-1 shows the location of significant landscapes of South West Victoria identified in the CSLAS.

The foreshore areas along the coast and the associated dunes are identified as landscapes of regional significance. Features include Lake Yambuk, The Crags, the Lady Julia Percy Island and the Port Fairy to Warrnambool Coast. The Tower Hill Environs is identified as an area of State significance.

*Figure 5-2 Landscape character types and areas South West Victoria with viewshed of RCWF*






Assessment Structure

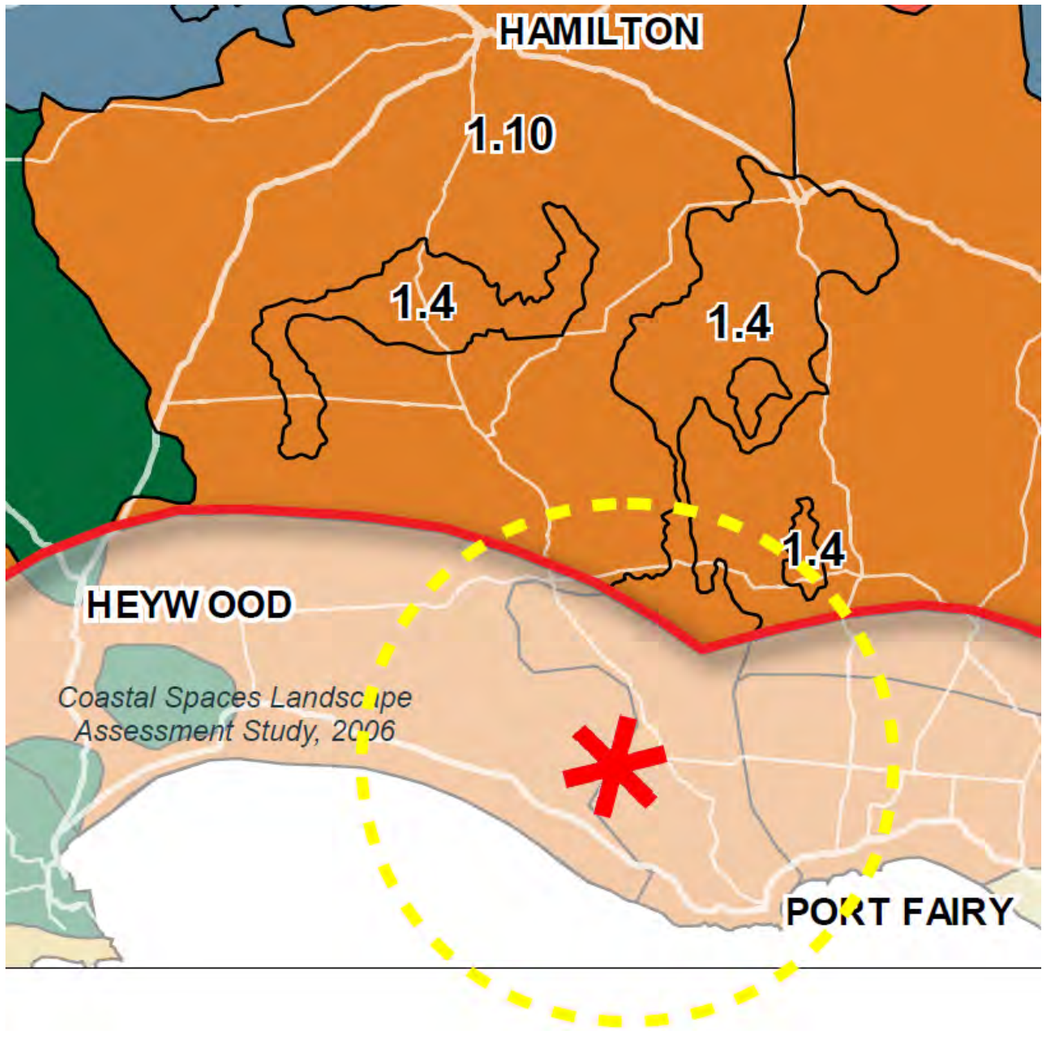
## 5.2 South West Victoria Landscape Assessment Study

The northern section of the RCWF viewshed is within the Western Volcanic Plains region (Character Type 1) as identified within the SWVLAS. The location of the character types within the indicative viewshed of the Amended RCWF is shown on Figure 5-3.

The viewshed of the proposed wind farm is located within the Western Volcanic Plains Landscape Character Type which is described as follows:

> *"The fertility and cleared nature of the Western Volcanic Plains were ideal for grazing. The region became very wealthy and was dominated by large pastoral properties. These large properties often had extensive exotic gardens as the new settlers aimed to recreate their familiar British landscapes."*
>
> *"The landscape that we see today represents a hybrid of generally undisturbed underlying topography with patchwork remnants of the natural landscape, which are protected by national, and state parks. Intertwined with this lies the heavily modified landscape of exotic shelterbelts, dry stone walls, farming, infrastructure, rural development and wind farms."*

*Figure 5-3 Character types and areas (Figure 1 - The Western Volcanic Plain Location)*




The sensitivity of Western Volcanic Plains to change is described as below:

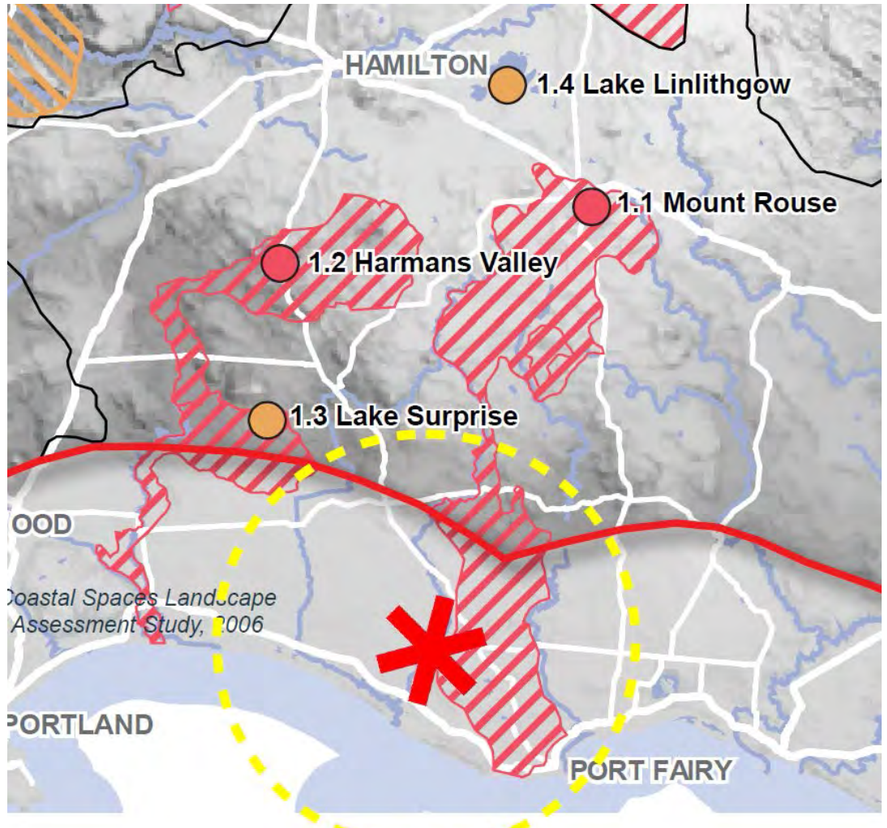
> *"The volcanic plain is highly sensitive to change, the flat nature of the plain offers long range views and thus creates a landscape on which there is 'nowhere to hide'. There is limited capacity for this character type to absorb development without is becoming prominent in the viewed landscape."*
>
> *"However, balanced against this is the degree to which this landscape has been modified, shaped by man over generations."*

The above narrative within the SWVLAS suggests that the volcanic plain has a reduced landscape sensitivity given its extensive modification following European settlement. There are remanet pockets of vegetation that support the original character of the area such as within national parks.

The SWVLAS also anticipates landscape changes such as:

- The Volcanic Plain forms Australia's First UNESCO Global Geopark and as such, it is anticipated that there will be an increase in tourism within this character type.
- There is an increasing awareness from farmers as to the value of biodiversity, setting aside existing vegetation or native revegetation to create linked habitat corridors may change the aesthetics of this vast cleared plain.
- This area is subject to a number of wind farm developments and proposals.
- The State Governments planning zones review may lead to an increase in tourism, retail and accommodation uses in rural areas, a potential increase in rural living density and a potential increase in smaller lots and dwellings in the farming zone. (SWVLAS, The Western Volcanic Plain, p8).

*Figure 5-4 View locations of State & Regional Significance as well as areas of Significant Landscapes (SWVLAS page 61) and the indicative viewsheds of the Project*






Assessment Structure

While there is greater consideration to the geological significance of the Volcanic Plains region, there is an acknowledgement of the change that the region is undergoing including developments such as wind farms.

The three character areas that fall within the viewshed are:

**Character area 1.3 - Volcanic agricultural.** Key features identified are:

> *"Open pastoral landscape with long distance views; Exotic shelterbelts and Stands of remnant vegetation."*

**Character type 1.4 - Stony rises and lava flows**. Key features identified are

> *"Geology and geological features, Starkness and rough texture of the landscape, Exposed rocky outcrops and sinkholes and Textural contrast with adjacent paddocks."*

**Character type 1.10 – Partially Wooded Agricultural.** Key features identified are

> *"Geology and geological features, Starkness and rough texture of the landscape, Exposed rocky outcrops and sinkholes and Textural contrast with adjacent paddocks."*

### 5.2.1 Significant Landscapes and Views

Identified views and significant landscapes within the indicative viewshed of the wind farm are shown in Figure 5-5.

***SWVLAS significant landscapes***

Within the Volcanic Plains, the Mount Rouse Lava Flows (1.7) are located in the western portion of the viewshed and are identified as a State level significant landscape. Mount Rouse Lava flows are described as:

> *"The lava flow from Mount Rouse is one of the most intact and visually prominent flows found on the Victorian Volcanic Plain. It is composed of large, hummocky stony rises that churn across the open paddocks. Some of these are quite prominent, rising to up to 10 metres, while in other areas the texture is more subtle."*

***SWVLAS significant views***

The SWVLAS does not identify any views of state or regional significance located within the viewshed of the Ryan Corner Wind Farm.

### 5.2.2 Implications of SWVLAS

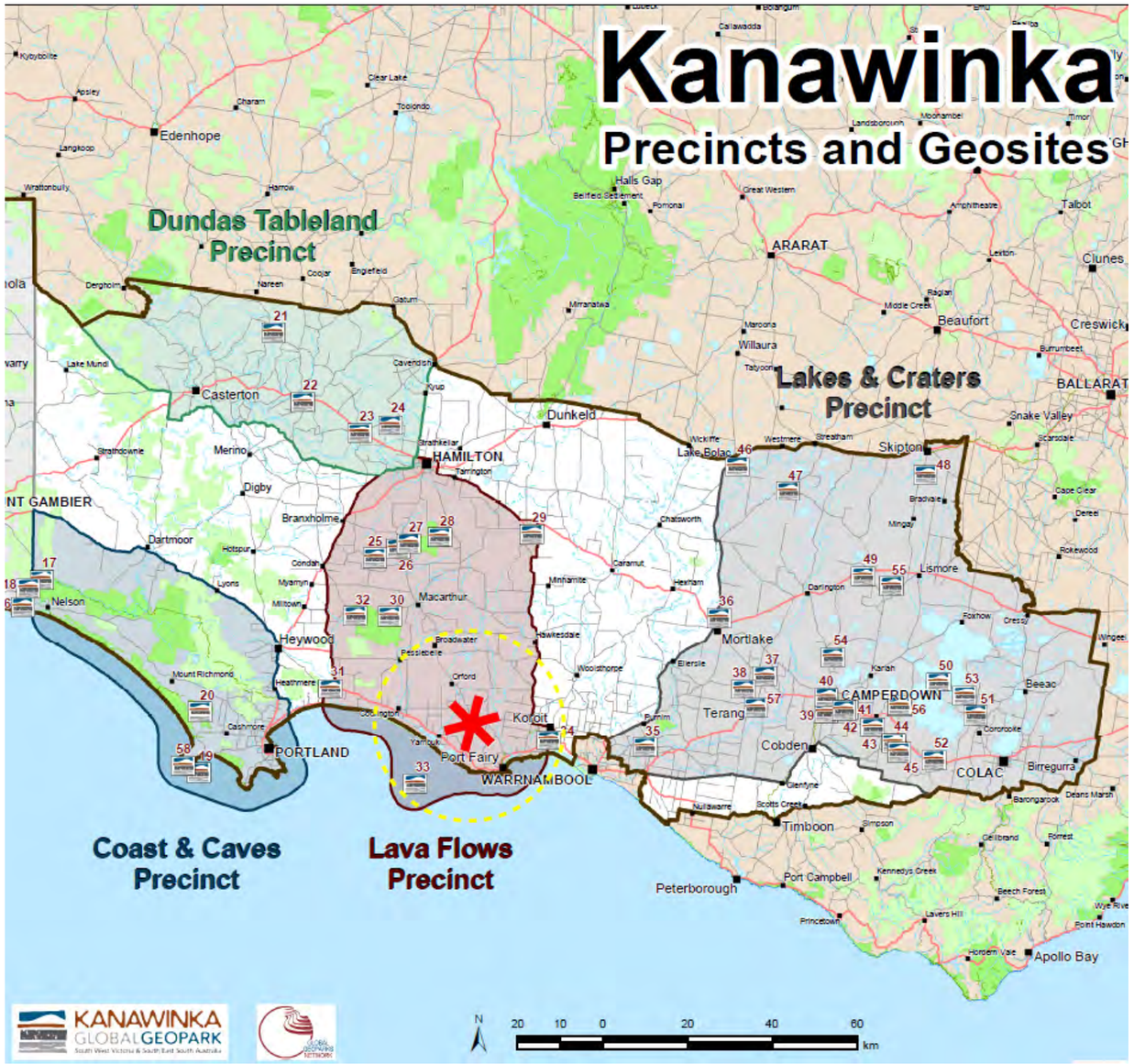
The SWVLAS is not a referral document. The SWVLAS recognises and values the geological formations that occur within the landscape of the Western Volcanic Plains and therefore increasing the landscape sensitivity. The SWVLAS recognises the change that this landscape has undergone since European settlement and the anticipated increased level of development suggesting lower landscape sensitivity.

Most significant features within the Western Volcanic Plain are geological formations that remain intact even after extensive modifications such as farming and development of infrastructure such as power lines, wind farms and the built environment. As well, the SWVLAS does not identify any views of state or regional significance located within the viewshed of the Ryan Corner Wind Farm. Overall, any evaluation of the change in landscape or visual impact between the approved turbines at 126.3 m and the proposed wind turbines at 180 m will not change because of the SWVLAS.

## 5.3 Kanawinka Global Geopark

The wind farm viewshed is located within the Kanawinka Global Geopark listed by UNESCO. An enlarged map is shown in Figure 5-5. Part of the wind farm and its viewshed is located within the "Lava Flows Precinct". The Tower Hill Reserve (34) and Lady Julia Percy Island (33) can be identified at the edge of the viewshed of Ryan Corner Wind Farm.

*Figure 5-5 Kanawinka Geopark and the location on the Ryan Corner Wind farm*




### 5.3.1 Discussion

Tower Hill at its nearest is located approximately 18.6 km east of the wind farm. Similarly, Lady Julia Percy Island is located approximately 14 km south west of the wind farm. Given this distance, there will be no landscape impact bought about by the increased height of the wind turbines to the Geopark.

## 5.4 Implications to Landscape Units and Sensitivity Identified within the LVIA

Within the LVIA, three landscape units were identified within the viewshed of the wind farm. These were

- Unit 1 - Rural Plains;
- Unit 2 - Rural Communities and Townships; and
- Unit 3 - Coastal Dunes and Reserves

The above landscape units closely correspond with the landscape character types identified within the CSLAS and SWVLAS.

### 5.4.1 Unit 1 Rural Plains

The LVIA described the Rural Plains Landscape Unit as:

> *"This landscape unit is characterised by gently sloping farmland that is largely cleared and is the most common landscape unit within the viewshed.*
>
> *There are slight variations in the landscape character of this unit where stony rises are more frequent or where there are differences in the underlying geology, however generally the rural plains landscape unit has little variation in topography and is largely cleared."*

The Stony Rises, while discussed within the LVIA, were not classified as a separate landscape unit. The CSLAS and SWVLAS, as well as more recent studies undertaken by ERM, have further analysed this landscape unit.

This assessment has retained the Unit1 – Rural Plains Landscape Character Type and separated the Plains Landscape from the Stony Rises as sub-character types. This is appropriate as the Stony Rises are not typically dramatic changes in the Rural Plains with clear boundaries, but merge with and are contiguous with the surrounding plain. These two sub-units are:

- *Landscape Unit 1 – Rural Plains, Sub-unit 1a –Plains*
  This landscape sub-unit is characterised by gently sloping farmland that is largely cleared.
- *Landscape Unit 1 – Rural Plains, Sub-unit 1b -Stony Rises.*
  This landscape sub-unit is characterised by gently sloping farmland that is largely cleared where exposed rocky outcrops and sinkholes are visible and these are in contrast with adjacent paddocks.

This assessment will be based on an assessment that gives the Stony Rises a greater sensitivity than that identified in the LVIA. The sensitivity rating of Sub-unit 1a – Plains, will remain as low and the sensitivity rating for Sub-unit 1b – Stony Rises will be increased to low – medium. The reason for the rating sometimes being low is that the stony rises can sometimes be indistinguishable from the surrounding Plains Sub-unit. A visual assessment rating is based on perception, not geological testing and where the Stony Rises appear to be part of the Plains landscape, then their sensitivity is assessed as low. Where they are a visually different element, they have a sensitivity of medium.

### 5.4.2 Unit 2 - Rural Communities and Townships

The sensitivity of the Rural Communities and Townships is rated as medium. This is the same rating that was used within the LVIA.

### 5.4.3 Unit 3 -Coastal Dunes and Reserves

The sensitivity of the Coastal Dunes and Reserves is rated as medium. This is the same rating that was used within the LVIA.



Assessment Structure

## 5.5 Community input into landscape values

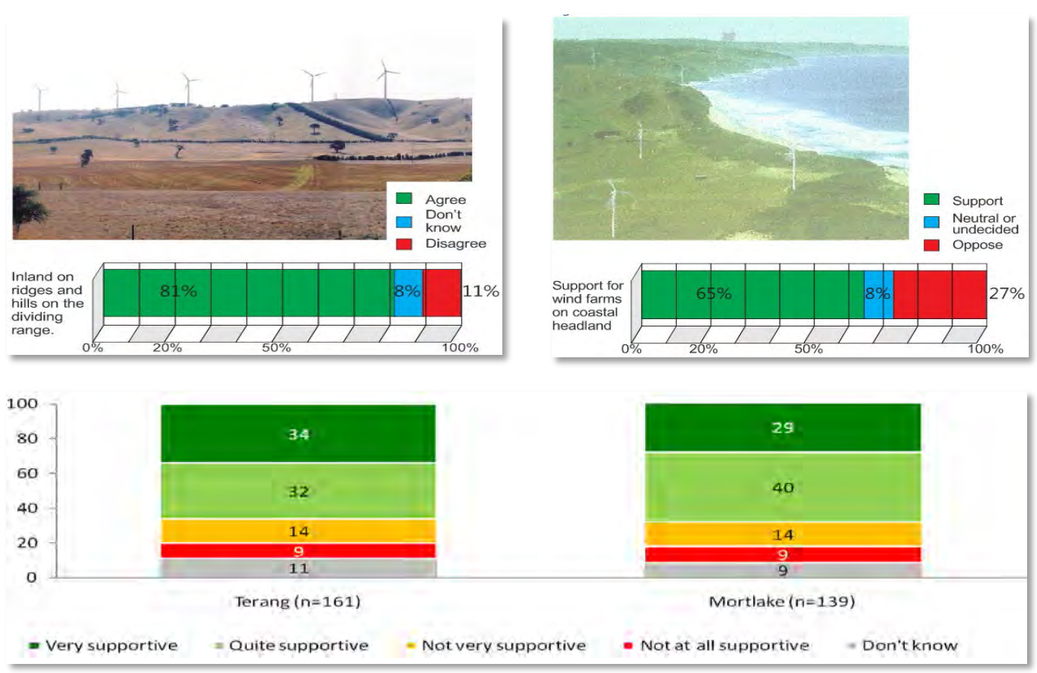
The Draft National Guidelines recommend community input into landscape values.

### 5.5.1 Landscape values in the public domain

Community perception studies can provide supporting evidence for the landscape values within the viewshed from the public domain.

Perception studies continually show that the majority of respondents find the appearance of WTGs in a rural landscape acceptable. These studies have also shown that the majority of those surveyed supported the presence of wind turbines in scenic landscapes (refer to Figure 5-6). Studies undertaken from early 2000 by the Department of Natural Resources and Environment (Kanos & Quint, 2000) showed support for wind farms of 65-68% on coastal headlands adjacent to the Great Ocean Road one of Victoria's most scenic landscapes (bottom image Figure 5-6).

*Figure 5-6 Wind farm acceptance in the landscape*




Later studies conducted in less scenic landscapes, continue to show that the level of acceptance of wind turbines increases over time. In some studies, this has increased from 65% to approximately 80% (top image of Figure 5-6). However, acceptance levels for wind turbines within one kilometre of a residence remained at the 65% level.

Overall, the visual impact of wind turbines in a landscape is acceptable to the majority of respondents in scenic landscapes and in landscapes that are considered less attractive (Andrew Lothian, 2000 & 2005).

The CSIRO study entitled "*Acceptance of rural wind farms in Australia*' (2012) found, in part, that

> *"There is strong community support for the development of wind farms, including support from rural residents who do not seek media attention or political engagement to express their views. This finding contrasts with the level of opposition that may be assumed from the typically 'conflict-orientated' portrayal of wind farm proposals in the popular media. This media coverage frequently gives significant attention to legal challenges, political protests and vocal opponents including 'Landscape Guardian' and high profile individuals, but fails to balance this with coverage of middle ground views, or with equivalent attention to the potential benefits of wind farms." (Summary: Acceptance of rural wind farms in Australia, Nina Hall, Peta Ashworth and Hayden Shaw, CSIRO Science into Society Group, 2012, p67).*

This study has not been relied upon as a basis for the visual assessment, but their findings are similar to the community perception studies and provide independent validation to those presented within the LVIA.

It is recognised that this is a complex issue and the degree of visual impact depends on how the viewer perceives renewable energy, the wind turbines and the landscape. The presence of wind turbines will change the existing landscape character of this locality, however to assume that these will cause damage to the landscape values and negatively impact the amenity of the area as perceived by visitors and residents is not substantiated on the basis of perception studies undertaken in Australia and overseas.

For these reasons, the sensitivity ratings that have been used provide a reasonable basis for the assessment.

### 5.5.2 Landscape values in the private domain

It is noted that the LVIA supports the view that views from residential properties have a high level of sensitivity. Studies for residential viewing locations for the Ararat Wind Farm (ERM & Reark Pty Ltd, 2007) and Lal Lal Wind Farm (ERM & Reark Pty Ltd, 2006) as well as other studies in Victoria (Offer Sharp and Associates 2000 & 2002) have shown that between 68-71% of viewers are supportive of WTGs within 1 km of their dwelling. These acceptance levels are confirmed by similar studies for wind farms in New South Wales (Reark Pty Ltd 2008) and New Zealand (Charmain A Watts 2008) which showed similar levels of support.

The above studies indicate that acceptability of wind farms increases when the residence is further away. Acceptance levels of between 77-79% were rerecorded for wind turbines at distances greater than 3.0 km from a dwelling.

Apart from the acceptance aspect, when assessing a residential viewpoint it is necessary to examine issues such as direction of view, screening, topographic intervention etc. Once all these issues are understood, an assessment of the potential impact can be derived and sometimes this can be mitigated through landscape treatments.

### 5.5.3 Stakeholder consultation for the Project

The following Stakeholder consultation for the Project has been undertaken as part of the current permit amendment process:

- September 7th 2015 – Briefing of DELWP for permit amendment;
- September 8th 2015 – Presentation for permit amendment to the Moyne Shire Council;
- September 8th 2015 – Meeting with host landowners to explain permit amendment details and process;
- September 9th 2015 – Moyne Shire Community Engagement Committee Meeting to explain permit amendment details and process;
- October 6th 2015 – Phone enquiry from neighbouring resident (House ID 10) on 518 Fingerboard Road about permit amendment;
- December 2015 – Permit amendment summary would be provided to Moyne Shire Council to be included in newsletter distribution.

No significant landscape and visual Impact concerns were raised over and above the scope discussed within this LVIA assessment review.

# 6 VISUAL IMPACT IMPLICATIONS

The visual impact implications of the proposed amendment are undertaken using comparative quantitative and qualitative assessments.

## 6.1 Quantitative Assessment - Seen Area Analysis

The visual impact implications of the proposed amendment can be quantified using GIS based Seen Area Analysis (SAA). A Seen Area Analysis shows those areas within the viewshed from which wind turbines, or sections of wind turbines, may be visible. The SAA is mapped using Geographical Information Systems (GIS) software. The GIS mapping is based solely on topography and does not take into account screening by minor topographic changes and buildings.

### 6.1.1 Areas of potential visibility of the proposed layout

Figure 6-1 shows the SAA of the Amended Layout.

*Figure 6-1 SAA of Amended Layout*

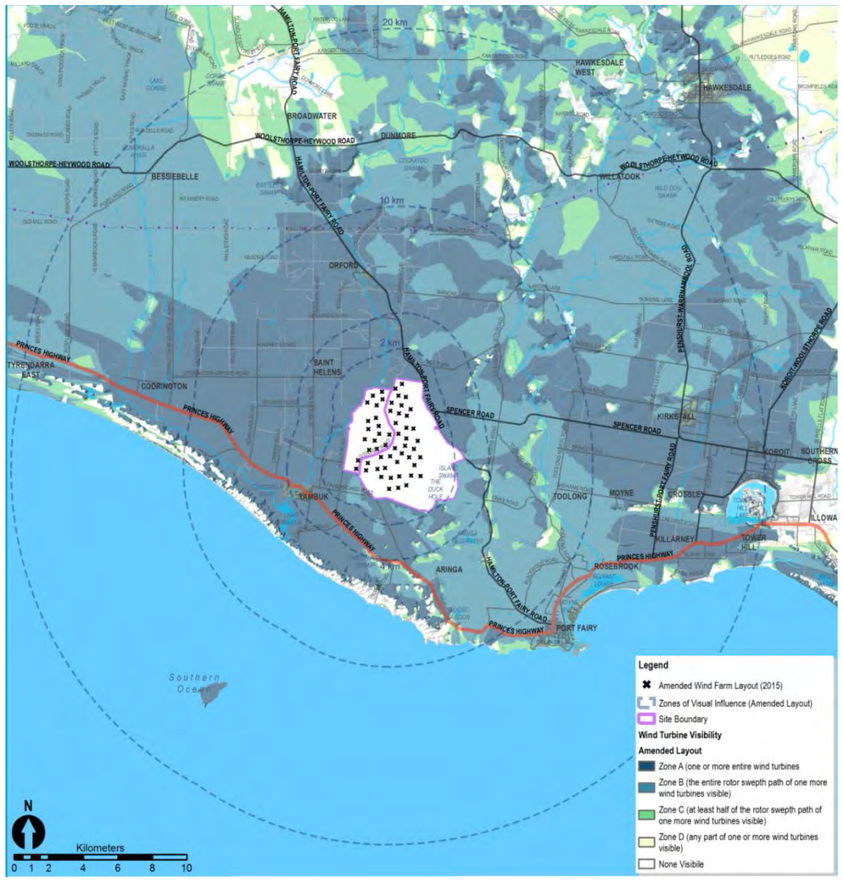
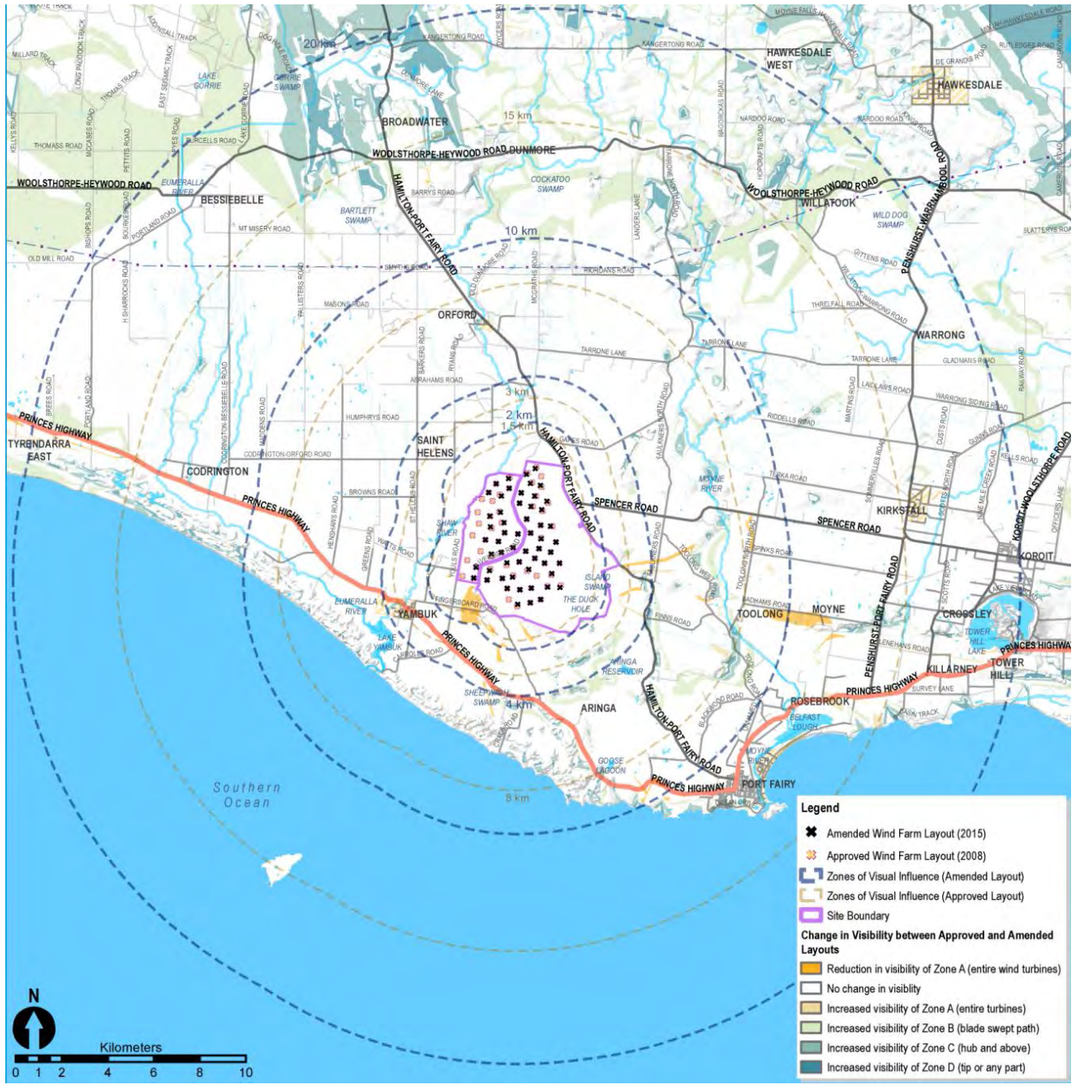



Figure 6-1 illustrates that across this relatively flat landscape, the wind turbines will be little screened by topography. However this was the case with the approved layout.

### 6.1.2 Comparative SAA

In order to demonstrate the change in visibility of wind turbines between the "Approved Layout" to "Amended Layout", a revised SAA has been undertaken to compare the change. There is a marginal increase in the visibility of some parts of the wind turbines at the edge of the viewshed.

*Figure 6-2 Net change to the visibility of wind turbines between Approved and Amended Layouts*




This change in the visibility of the wind turbines is of such a minute magnitude that the change brought about by the increased turbine height will not be discernible. Overall change in visibility is not of an order that would substantially decrease or increase the level of visual impact of the Ryan Corner Wind Farm.



Assessment Structure

## 6.2 Qualitative Assessment – Assessment of Impact from Viewpoints

The Model Conditions within the Victorian Guidelines states that

> *"The responsible authority will not consent to an alteration or modification of the use and development as shown on the endorsed plans under condition 3 unless the responsible authority is satisfied that the alteration or modification will not give rise to an adverse change to assessed landscape, vegetation, cultural heritage, visual amenity, shadow flicker, noise, fire risk or aviation impacts."*

In order to assess the change in the visual impact of the Amended Layout in comparison to the Approved layout, a comparative assessment of the visual impact can be undertaken by:

- preparing comparative photomontages of Approved and Amended Layouts to illustrate the change and discuss the associated impacts; and
- reviewing public and residential viewpoints discussed within the LVIA based on assessment criteria and scale of effects and

Within the LVIA indicative viewpoints were selected from the surrounding road network at locations where views towards the Ryan Corner Wind Farm are uninterrupted by roadside vegetation/road cuttings etc.

### 6.2.1 Comparative Assessment Viewpoints

In order to undertake comparative assessment of the Approved layout as against the Amended Layout a site visit was undertaken to rephotograph existing conditions from three indicative locations within the viewshed. These locations are representative of the range of views available and provide a reasonable level of understanding of the effects of increased wind turbine heights for a viewer. The locations are

- Viewpoint RC01 – Monck Street, Yambuk
- Viewpoint RC02 - Codrington-Orford Road, St Helens
- Viewpoint RC03 - Hamilton-Port Fairy Rd, Spencer Rd intersection

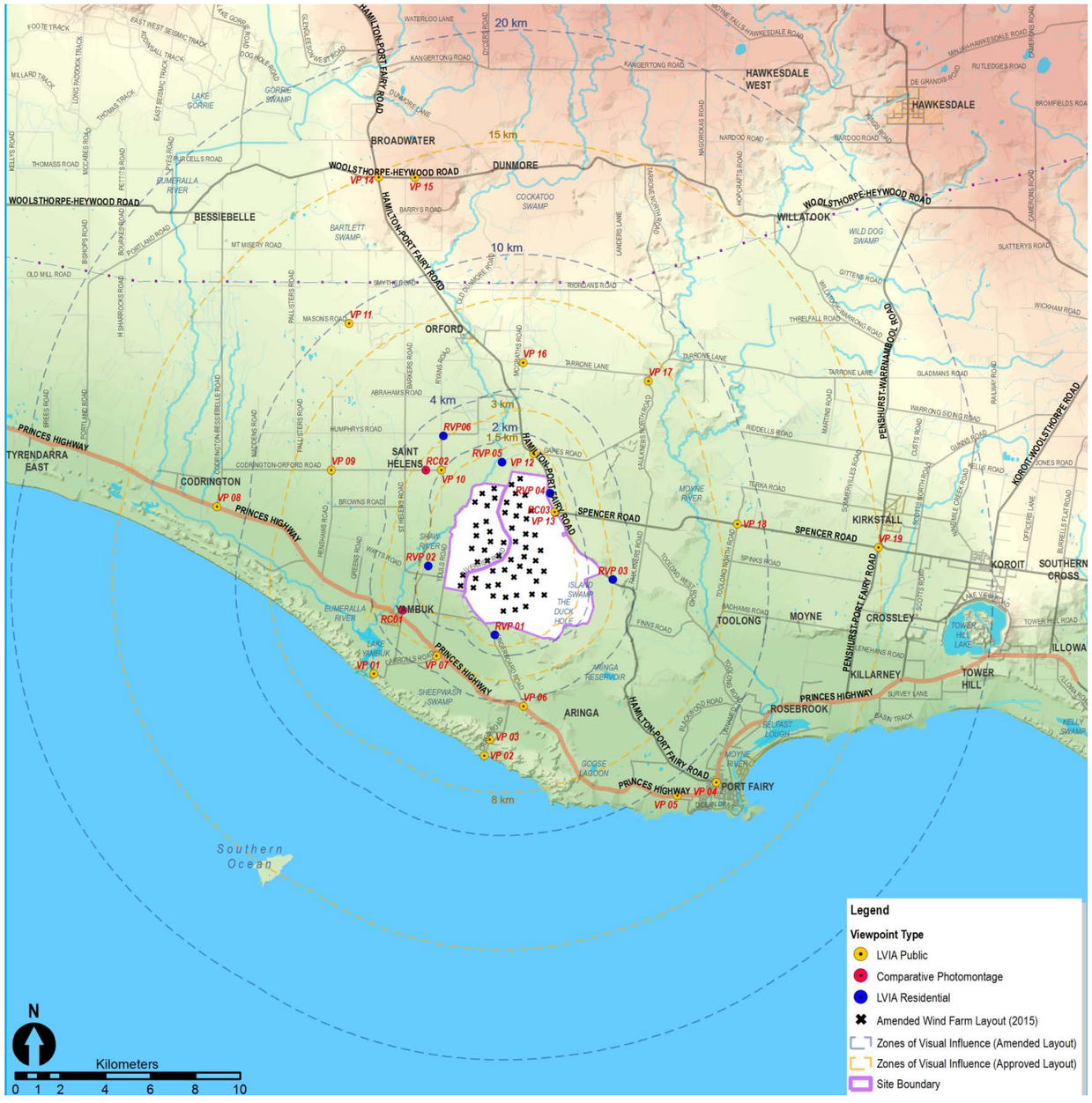
Comparative photomontages have been prepared from these selected viewpoints. A3 versions of the comparative photomontages prepared from three viewpoint locations (RC01, RC02 and RC03) are included in Annex A.

While, the previously approved overall height of wind turbines is 126.3 m, for simplicity of 3d modelling, all photomontages of approved layout within this report are slightly overstated to an overall height 126.5 m. As such this difference in overall height will have no discernible change to the levels of impact assessed within this report.

Summary assessment from each viewpoint discussed within the LVIA is provided in Section 6.2.2.

The visual impact implications of the wind farm amendment from these locations are discussed in the following section.

*Figure 6-3 Viewpoint Locations*






Assessment Structure

*Viewpoint RC01 – Monck Street, Yambuk*

Viewpoint RC01 is located at Monck Street at the outskirts of Yambuk. The nearest approved wind turbine (B71) will be located approximately 2.3 km north east while the nearest amended wind turbine (B70) will be located approximately 2.7 km to the north east.

The rural plains landscape unit is evident at this location. Cypress hedgerows and other vegetation along property boundaries limit views towards the wind turbines as seen in the photomontages of approved and amended layouts in Figure 6-4. The Yambuk and Codrington Wind Farms will also be visible to the south in the background. Given the landscape sensitivity and the low viewer numbers, the overall visual impact of the wind farm is assessed as low.

On balance, while there is a net reduction in the number of wind turbines in the amended layout that consequently also increases the distance to the nearest amended wind turbine from this location, the net change to the level of visual impact due to the amendments is negligible.

*Figure 6-4 Viewpoint RC01 - Photomontages showing the Approved Layout (above) and the Amended Layout (below)*

*Viewpoint RC02 - Codrington-Orford Road, St Helens*

Viewpoint RC02 is located at Codrington-Orford Road near St Helens. The nearest approved wind turbine (B50) will be located approximately 2.5 km east while the nearest amended wind turbine (B48) will be located approximately 2.6 km to the east.

Cypress hedgerows and other vegetation along property boundaries filter views towards the wind turbines as seen in the photomontages of approved and amended layouts in Figure 6-5. Given the landscape sensitivity and the low viewer numbers, the overall visual impact of the wind farm is assessed as low.

While the amended wind turbines are larger, the level of visual impact remains low given the low landscape sensitivity of the rural plains as well as low viewer numbers. On balance, the net change to the level of visual impact due to the amendments is negligible.

*Figure 6-5 Viewpoint RC02 - Photomontages showing the Approved Layout (above) and the Amended Layout (below)*

*Viewpoint RC03 - Hamilton-Port Fairy Rd, Spencer Rd intersection*

Viewpoint RC03 is located at Hamilton-Port Fairy Road near Spencer Road intersection. This viewpoint is also near Viewpoint 13 assessed within the LVIA. The nearest approved wind turbine (B35) will be located approximately 0.9 km north east while the nearest amended wind turbine (B35) will be located approximately 1.0 km to the north east. Turbine B35 is also smaller in height compared to other turbines in the Amended Layout. However, such a difference is not immediately perceivable to most viewers as seen in the photomontages.

The view is to cleared farmland with stony rises. The stony rises, particularly in relation to the approved wind turbines, remain minor topographical variations within the rural plains landscape. However, it is acknowledged that the CSLAS and the SWVLAS recognise the stony rises as a significant landscape area. The current assessment recognises this change to the landscape value to a low to medium level of landscape sensitivity. Therefore, given the distance, medium level of viewer numbers and the landscape sensitivity of the stony rises, the overall visual impact of the Approved Layout and Amended Layout is assessed as Medium.

The comparative photomontages shown in Figure 6-6 illustrate that although the amended wind turbines are larger, the net change in the impact level of visual impact will be negligible. For most viewers the level of change in the overall height of wind turbines will be imperceptible as will be the net reduction in the number of wind turbines.

*Figure 6-6 Viewpoint RC03 - Photomontages showing the Approved Layout (above) and the Amended Layout (below)*

### 6.2.2 Reassessment of Visual Impact

A summary reassessment of visual impact of viewpoints discussed within the LVIA as well as within this report is listed in Table 6-1. Those viewpoints that have had an alteration to the level of visual impact are highlighted in yellow in Table 6-1.

***Reduction in turbine numbers***

Of the 28 viewpoints assessed, in 18 viewpoints the distance to the nearest wind turbines have increased due to the net reduction in the number of wind turbines.

The decrease in the level of visual impact due to increased distance to the nearest wind turbines in the Amended Layout is not significant. The level of visual impact remains unchanged.

***Increase in height***

In the viewpoints that were reassessed, the change in height has not made any difference to the overall visual impact assessed in the original LVIA and considered by the panel in granting the approval.

This conclusion is supported by the comparative photomontages prepared from the three viewpoint locations (RC01, RC02 and RC03) included in Annex A of this report. For most viewers the increase in the height of the wind turbines will be imperceptible.

***Change in sensitivity ratings***

The Stony Rises have been given an increased sensitivity from low in the LVIA to medium in this assessment. Based on this medium level of sensitivity, for the viewpoint locations VP06, VP12 and VP13, the level of overall visual impact has increased to **Medium to Low** level.

It is noted that change in the visual impact is not due to the increase in the wind turbine heights but rather the increased sensitivity attributed to the Stony Rises.

### 6.2.3 Mitigation Measures

Given the low level of visual impact from publicly accessible locations of the Amended Layout that is comparable to that of Approved Layout, there is no additional mitigation required.

The LVIA suggested the following mitigation measure for residential locations

> *"Planting may be undertaken on dwellings within 3 km of the wind farm, after consultation and agreement with affected landowners. Any such offer should remain in place for a period of 1 year after construction, to allow people time to either adjust or to decide that landscape filtering or screening is warranted."*

Given the increased height of the wind turbines, it is acknowledged that the amended wind turbines may be *"Highly visible and will usually dominate the landscape"* up to 4 km of the nearest wind turbines. Therefore, landscape mitigation should be extended to residents within 4 km of the wind farm.

*Table 6-1 Comparison summary assessment of publicly accessible viewpoints, the change in the assessment of overall visual impact is highlighted in yellow*

| Viewpoint (VP) | Visibility of proposed wind farm | Viewers | Landscape sensitivity | Dist./Dir to nearest approved turbine (approx.) | OVI Approved Layout | Updated landscape sensitivity | Dist./Dir to nearest amended turbine (approx.) | OVI Amended Layout |
|---|---|---|---|---|---|---|---|---|
| **PUBLIC VIEWPOINTS** | | | | | | | | |
| **1 - Yambuk Lake Lookout** | Not visible from most locations due to intervening topography. Existing Yambuk and Codrington Wind Farms visible. | High | Unit 3, High - Medium | 5.2 km SW ( B71) | Low | No change | 5.5 km SW (B70) | **Low** |
| **2 – Crags lookout** | Not visible due to intervening topography. | Low | Unit 3, High - Medium | 6.4 km S (B10) | Nil | No change | 6.5 km S (B10) | **Nil** |
| **3 – Crags Rd near Mt Hotspur** | Wind Farm will be visible from the ridgeline across cleared farmland. | Low | Unit 3, Medium | 5.6 km S (B10) | Medium – Low | No change | 5.7 km S (B10) | **Medium to Low** |
| **4 – Port Fairy** | Wind turbines will be screened by intervening vegetation, buildings and topography from most locations within the township. | Low | Unit 2, Low | 11.3 km SE (B8) | Low | No change | 11.3 km SE (B8) | **Low** |
| **5 – Princes Hwy outskirts of Port Fairy** | Wind Farm will be visible across cleared farmland in the distance. | High | Unit 1, Low | 10.7 km SE (B8) | Low | No change | 10.7 km SE (B8) | **Low** |
| **6* - Princes Hwy near Fingerboard Rd intersection** | Wind Farm will be visible across cleared farmland with stony rises in the distance. | High | Unit 1, Low | 4.2 km S (B10) | Low | Unit 1a and 1b, Low - Medium | 4.3 km S (B76) | **Medium to Low** |
| **7* Carrolls Rd near Princes Hwy intersection** | Wind Farm will be partially visible between vegetation over the rural plains. | Medium | Unit 1, Low | 3.2 km SW (B71) | Low | No change | 3.3 km SW (B70) | **Low** |
| **8* - Princes Hwy- near Codrington-Bessiebelle Rd intersection** | Wind Farm will be visible across cleared farmland in the distance. | High | Unit 1, Low | 10.8 km W (B71) | Low | No change | 11.3 km W (B69) | **Low** |
| **9* - Codrington-Orford Rd near Henshaws Rd intersection** | Wind Farm will be partially visible between vegetation over the rural plains. | Low | Unit 1, Low | 6.3 km NW (B50) | Low | No change | 6.5 km NW (B48) | **Low** |

| Viewpoint (VP) | Visibility of proposed wind farm | Viewers | Landscape sensitivity | Dist./Dir to nearest approved turbine (approx.) | OVI Approved Layout | Updated landscape sensitivity | Dist./Dir to nearest amended turbine (approx.) | OVI Amended Layout |
|---|---|---|---|---|---|---|---|---|
| **10* - Codrington-Orford Rd near Robertsons Rd intersection** | Wind Farm will be partially visible between vegetation over the rural plains. | Low | Unit 1, Low | 2.0 km NW ( 48) | Low | No change | 2.0 km NW (B48) | **Low** |
| **11 - Pallisters Reserve** | Wind Farm will be partially visible over plantations in the rural plains. | Low | Unit 1, Low | 9.6 km NW ( 46) | Low | No change | 9.6 km NW (B46) | **Low** |
| **12* - Hamilton Port-Fairy Rd near Gapes Rd intersection and Pretty Hills Reserve** | Wind Farm will be partially screened by topography and visible across cleared farmland with stony rises. | Medium | Unit 1, Low | 1.2 km N (B43) | Low | Unit 1a and 1b, Low - Medium | 1.2 km N (B43) | **Medium to Low** |
| **13* - Hamilton Port-Fairy Rd near Spencer Rd intersection** | Wind Farm will be visible across cleared farmland with stony rises in the distance. | Medium | Unit 1, Low | 0.9 km NE (B35) | Low | Unit 1a and 1b, Low - Medium | 1.0 km NE (B35) | **Medium to Low** |
| **14 - Hamilton Port-Fairy Rd near Woolsthorpe-Heywood Rd intersection** | Wind Farm will be partially visible between vegetation over the rural plains. | Low | Unit 1, Low | 14.7 km NW (B45) | Low | No change | 14.8 km NW (B45) | **Low** |
| **15 - Woolsthorpe-Heywood Rd** | Wind Farm will be partially visible between vegetation over the rural plains. | Low | Unit 1, Low | 14.1m NW (B43) | Low | No change | 14.2 km NW (B43) | **Low** |
| **16* - Tarrone Ln near McGrath's Rd intersection** | Wind Farm will be partially visible between vegetation over the rural plains. | Low | Unit 1, Low | 5.1 km N (B43) | Low | No change | 5.1 km N (B43) | **Low** |
| **17 – Faulkners Rd near Tarrone Ln intersection** | Wind Farm will be visible across cleared farmland with stony rises in the distance. | Low | Unit 1, Low | 7.1 km NE (B43) | Low | Unit 1a and 1b, Low - Medium | 7.1 km NE (B43) | **Low** |
| **18 - Spencer Rd near Toolong North Rd intersection** | Wind Farm will be partially visible between vegetation over the rural plains. | Low | Unit 1, Low | 8.8 km E (B28) | Low | No change | 8.8 km E (B28) | **Low** |
| **19 – Spencer Rd near Penshurst-Warrnambool Rd intersection** | Wind Farm will be partially visible between vegetation over the rural plains. | Low | Unit 1, Low | 14.9 km E (B21) | Low | No change | 14.9 km E (B21) | **Low** |
| **COMPARATIVE VIEWPOINTS** | | | | | | | | |
| **RC01 - Monck Street, Yambuk** | | Low | Not Assessed | 2.3 km NE (B71) | Not Assessed | Unit 1, Low | 2.7 km NE (B70) | **Low** |
| **RC02 - Codrington-Orford Road, St Helens** | | | Not Assessed | 2.5 km E (B50) | Not Assessed | Unit 1, Low | 2.6 km E (B48) | **Low** |
| **RC03 - Hamilton Port-Fairy Rd near Spencer Rd intersection** | Wind Farm will be visible across cleared farmland with stony rises in the distance. | Low | Not Assessed | 0.9 km W (B35) | Not Assessed | Unit 1a and 1b, Low - Medium | 1.0 km W (B35) | **Medium to Low** |
| **RESIDENTIAL VIEWPOINTS** | | | | | | | | |
| **RVP01 – House RY07** | Nearest wind turbines are screened from view due to intervening vegetation. | NA | High | 1.0 km NE (B10) | High – without screening<br>Low – within living areas | No change | 1.1 km NE (B10) | **High – without screening**<br>**Low – within living areas** |
| **RVP02 – House RY77** | Nearest approved wind turbines have been removed in the amended layout. | NA | High | 1.1 km E (B68) | Medium – without screening<br>Low – within living areas | No change | 1.6 km E (B69) | **Medium – without screening**<br>**Low – within living areas** |
| **RVP03– House RY22** | Some wind turbines are screened from view due to intervening vegetation. | NA | High | 3.0 km W (B8) | Medium – without screening<br>Low – within living areas | No change | 3.1 km W (B21) | **Medium – without screening**<br>**Low – within living areas** |
| **RVP04 – House RY29** | Living areas look away from the wind farm. | NA | High | 1.0 m W (B40) | Medium – without screening | No change | 1.1 km W (B40) | **Medium – without** |

| Viewpoint (VP) | Visibility of proposed wind farm | Viewers | Landscape sensitivity | Dist./Dir to nearest approved turbine (approx.) | OVI Approved Layout | Updated landscape sensitivity | Dist./Dir to nearest amended turbine (approx.) | OVI Amended Layout |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | screening |
| **RVP05 – House RY11** | Existing vegetation screen views from living areas | NA | High | 1.0 km SE (B44) | Low – dependent on existing screening | No change | 1.0 km SE (B44) | **Low – dependent on existing screening** |
| **RVP06 - House RY64** | Existing vegetation screen views from living areas | NA | High | 3.0 km SE (B46) | Low | No change | 3.1 km SE (B46) | **Low** |

# 7 OTHER RELEVANT CONSIDERATIONS

Other relevant considerations are discussed below.

## 7.1 Night Lighting Impact

In accordance with Condition 9 of the approved planning permit, night lighting may be required. Given the changes to the Amended Layout, the *Aeronautical Impact Assessment for Ryan Corner Wind Farm* prepared by Aviation Projects dated December 2015 have concluded that

> *"If obstacle lighting is required (for example, as a requirement of CASA), obstacle lighting should be installed on the following 23 turbines (without the 'B' as the identification prefix): 6, 8, 10, 14, 18, 21, 28, 30, 31, 35, 37, 40, 43, 44, 45, 48, 54, 62, 64, 66, 69, 70 and 74."*

From a visual impact perspective, if night lighting is required, the increase in wind turbine heights will have imperceptible change to night-time visual impacts.

## 7.2 Cumulative Visual Impact

The nearest existing wind farms to the RCWF Farm are the Codrington and Yambuk Wind Farms, which read as a single wind farm in the landscape and were present during the intimal application.

Several wind farms in the area have become operational as shown in Figure 7-1 and listed in Table 7-1. Further wind farms are proposed in this region.

*Table 7-1 Wind Farms in the vicinity of the Project*

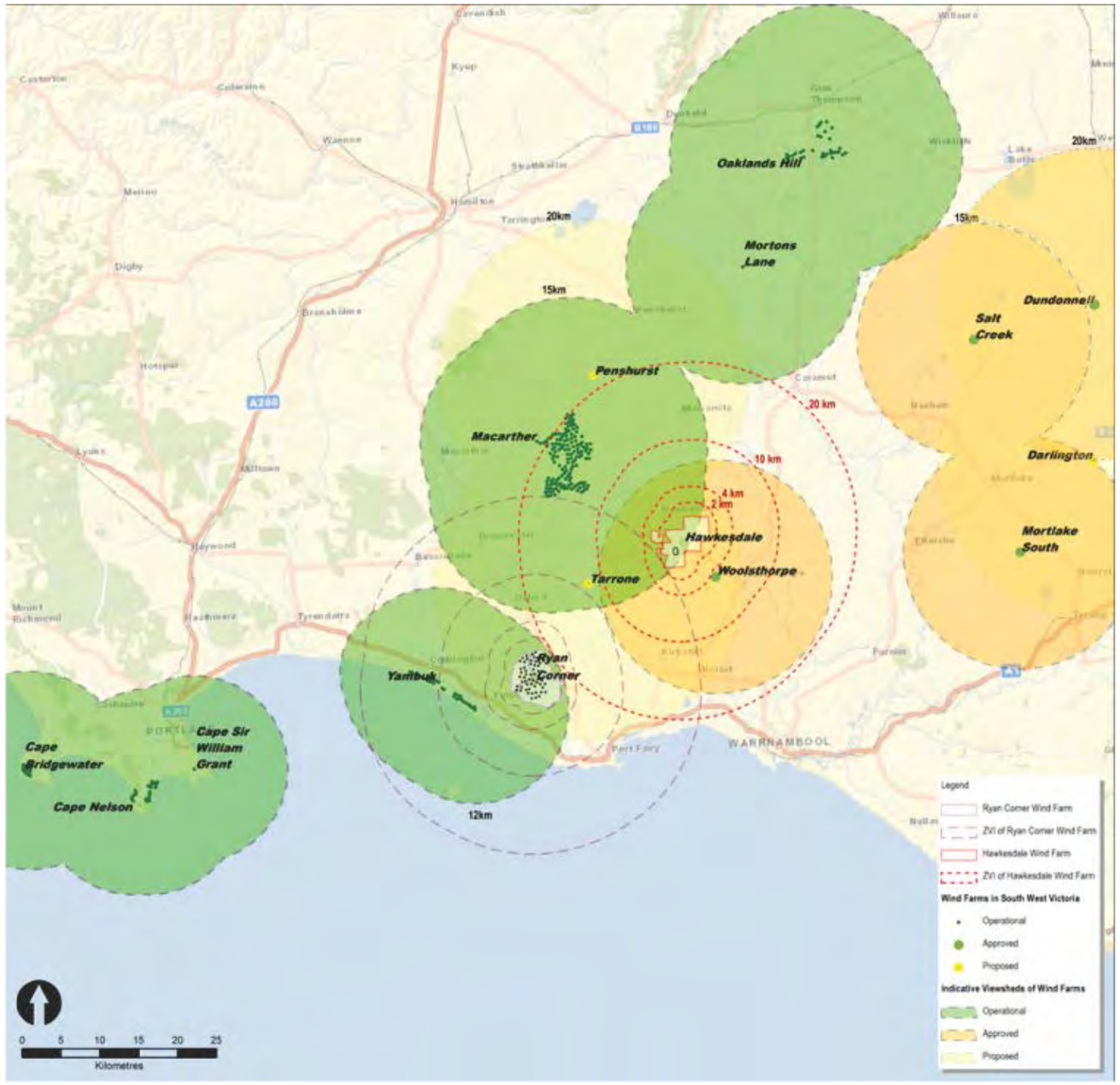
| Location | No. of Turbines | Distance and Direction (approx.) | Status |
|---|---|---|---|
| Codrington | 14 | 9 km south west | Operating |
| Yambuk | 20 | 7 km south | Operating |
| Macarthur | 140 | 18 km north east | Operating |
| Portland Wind Energy project (Cape Bridgewater, Cape Nelson and Cape Sir William Grant) | 52 | >50 km west | Operating |
| Mortons Lane | 13 | 60 km north | Operating |
| Oaklands Hill | 32 | 70 km north | Operating |
| Hawkesdale (Amendment Application) | 31 (26) | 20 km north east | Approved / Amending |
| Woolsthorpe | 20 | 22 km north east | Approved |
| Salt Creek | 15 | 65 km north east | Approved |
| Mortlake South | 51 | 61 km east | Approved |
| Tarrone | 17 | 11 km north east | Proposed |
| Penshurst | 223 | 33 km north | Proposed |
| Dundonnell | 104 | 83 km north east | Approved |
| Darlington | 80 | 73 km north east | Proposed |

There are now several operating wind farms in the region. This change has created a rural landscape with wind turbines.

Ryan Corner Wind Farm has been approved. The Amended Layout will extend the viewshed of the RCWF further. However, an increase in wind turbine heights will not create any appreciable increase in the cumulative visual impact over and above that of the approved wind farm.

The net change in the cumulative visual impact due to the Amended layout is summarised in Table 7-2.

*Figure 7-1 Wind Farms in South West Victoria*






Assessment Structure

*Table 7-2 Summary of Cumulative Visual Impact*

| Comments | Cumulative visual impact Approved Layout | Cumulative visual impact Amended Layout |
|---|---|---|
| Simultaneous views | | |
| Some with Yambuk/Codrington<br>Unlikely with | Low - Negligible | Low – Negligible<br>No change to existing and approved wind farms along Princes Highway. |
| Hawkesdale/ Macarthur/ Woolsthorpe | - | Negligible<br>Macarthur wind farm is now operating while Hawkesdale and Woolsthorpe are approved. There are very few locations where all will be visible simultaneously. |
| Tarrone<br>Penshurst | - | Low<br>(overlapping viewsheds along Hamilton Port-Fairy Road, Spencer Rd and other local roads) |
| None with PWEP | Nil | Nil<br>Cape Nelson and Cape Sir William grant Wind Farms are visually separated from RCWF. |
| None with Drysdale/ Mortons Lane<br>Salt Creek and Oaklands Hill | Nil | Nil<br>Drysdale Wind Farm has not progressed. Mortons Lane and Oaklands Hill are now operating but visually separated. Salt Creek Wind Farm is also visually separated from RCWF. |
| Mortlake South, Dundonnell and Darlington | - | Nil<br>There is no overlap in the viewsheds. |
| Sequential views | | |
| With Yambuk/ Codrington within 2 km | Low | Low<br>There will remain some sequential views from Princes Highway and nearby Local road network as identified with the Approved Layout. |
| With Hawkesdale/ Woolsthorpe/ Macarthur at 12 km | Negligible | Low<br>The viewsheds of Macarthur, Hawkesdale and Woolsthorpe overlap along local roads. |
| Tarrone and Penshurst | - | Negligible<br>Along difference view corridors. |
| None with PWEP | Nil | Nil<br>Cape Nelson and Cape Sir William grant Wind Farms are visually separated from RCWF. |
| With Drysdale at 25km | Negligible | -<br>Wind Farm has not progressed. |
| Mortons Lane, Oaklands Hill and<br>Salt Creek | Negligible | Negligible<br>Mortons Lane, Oaklands Hill and Salt Creek are over 50 km from the site and on different viewing routes to the Ryan Corner Wind Farm. |
| Character change - regional | | |
| None<br>inter wind farm distances not changed | None | Minor<br>Inter-wind farm distances have reduced with respect to Macarthur, Hawkesdale, Woolsthorpe, Tarrone and Hawkesdale Wind Farms. There will be minor change to the overall regional character of this region to a rural landscape with wind farms. |
| Character change - local | | |
| Minor<br>with the addition of Ryan Corner to the Yambuk/Codrington Wind farm | Minor | Minor |

# 8 CONCLUSION

The methodology within the LVIA is consistent with those within this Review. The overall assessment of the visual impacts will remain consistent with those discussed in the LVIA.

## 8.1 Changes to the wind turbine numbers

Even though there is a reduction in wind turbines proposed within the Amended Layout, the change in visual impact would be negligible.

## 8.2 Changes to the wind turbine heights

Similarly even though the heights of the wind turbines have increased the additional visual impact is minimal. Photomontages from three locations show that the change to the visual impact based on 126.5 m wind turbines (approved) and 180 m high wind turbines (amended) will appear similar and the overall change to the visual impact will be negligible.

Increased heights may also have an impact on those areas in which wind turbines can potentially be seen. However the comparative SAA shows that overall the visibility of the Amended Layout is similar to that of the Approved Layout.

There is a minor change to the visibility of the turbines at the edge of the viewshed, however at such a distance where the wind turbines will not be dominant in the landscape.

## 8.3 Policy changes and guidelines

Recent studies and more recent assessments by ERM have identified the Stony Rises as a Sub-unit within the Rural Plains Landscape Unit. Consequently the landscape sensitivity rating for this landscape Sub-unit has been increased from **low to medium**.

Given this increased sensitivity of the Stony Rises in the volcanic plains, there will be some viewing locations, such as along Hamilton-Port Fairy Road, from which the level of impact will be marginally greater. However, this is not because of the Amended Layout but rather because of the increased sensitivity attached to the Stony Rises Landscape Sub-unit.

## 8.4 Mitigation measures

Given the increased height of the wind turbines, it is acknowledged that the amended wind turbines may be *"Highly visible and will usually dominate the landscape"* up to 4 km of the nearest wind turbines. Therefore, landscape mitigation should be extended to residents within 4 km of the wind farm.

In summary, the landscape and visual impact assessment supports the planning amendment proposed for RCWF.



Assessment Structure

# *ANNEX A COMPARATIVE PHOTOMONTAGES*

ERM

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