Murra Warra Wind Farm

Landscape & Visual Assessment

For: RES Australia Pty Ltd

June 2016  |  Final
Murra Warra Wind Farm

Landscape & Visual Assessment

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**Annexures**

Annexure A – Photomontages (refer Volume 3 of the Planning Report)
Executive summary

The Murra Warra Wind Farm is situated in a landscape that has a low sensitivity to change. It is a broad-acre rural landscape that has been cleared to create huge areas for farming. The Landscape Assessment Study refers to this landscape character type as ‘Big Plains’ and this is illustrative of its character. The flat topography and the extensive clearing has created a large landscape, a landscape which can accommodate the 220 m high wind turbines that are proposed.

The Planning Schemes also reflect the very limited significance given to landscapes within the viewed. Sensitive landscapes such as the Little Desert National Park, lie just outside the viewed, whilst the Grampians and Arapiles are approximately 50 km distant. There would be no visual impact on these landscapes.

Areas of greater sensitivity including all the urban areas, are all situated at some distance from the nearest wind turbines. This separation between urban areas and wind turbines is never less than 13 km, with most of the townships within the viewed lying in the band between 12.5 km and 25 km from the nearest wind turbine.

At those distances, vegetation in the middle distance can easily screen the wind turbines. Intervening vegetation is very effective in screening wind turbines, when the wind turbines are some distance from a viewer. And in this landscape urban areas are typically well vegetated. Foreground vegetation and buildings will screen the wind farm from view.

The overall visual impact from urban areas has been assessed as nil – negligible.

The greatest overall visual impact from publically accessible locations, whether highways, local roads or from recreation reserves, has been assessed as low. Low was defined in the Visual Impact Methodology (Chapter 3) as a “visual impacts that are noticeable but that will not cause any significant adverse impacts.” This describes the impact of wind turbines in this Wimmera landscape.

RES staff have visited and spoken to everyone living within 3km of the development and given them information about the location of turbines and dimensions of the project and no specific concerns were raised about visual impact during those conversations.

The owner of one residential property (House #161) has not expressed concerns regarding the visual impact of wind turbines, however because of the unique location of this house a visual assessment was undertaken. Although the view to the north is relatively constrained by existing vegetation, nonetheless the impact is assessed as medium, which recognises the impact on the occupier’s mental map of the area surrounding their home and the potential cumulative impact of visible wind turbines to the south and west from this property.

However, the proposal is also subject to landscape mitigation measures, which will be offered to affected residential properties within 5 km. This offer can assist in further screening wind turbines if such is the desire of the owner.

The cumulative impact bought about by the presence of other wind farms is also negligible. The nearest wind farm is at Kiata approximately 45 km to the west.

The following landscape and visual assessment sets out how these conclusions were derived and shows that this is an appropriate location for a wind farm that is entirely consistent with the ‘Planning and policy guidelines for Wind Farms in Victoria’.
1. Introduction

RES Australia Pty Ltd is seeking a planning permit for the proposed Murra Warra Wind Farm which is to be located to the north of Horsham in the Wimmera district of north west Victoria.

A preliminary landscape and visual assessment of the proposed Murra Warra Wind Farm was prepared for RES Australia Pty Ltd by Green Bean Design - Landscape Architects and concluded that:

“This Preliminary LVIA has determined that the landscape surrounding the wind farm, as well as landscape in the broader viewshed, has a low sensitivity to change and represents a highly modified and productive agricultural landscape which is common to the Wimmera landscape region.

This Preliminary LVIA has determined that the visual impact of the Murra Warra Wind Farm is likely to be low from publicly accessible viewpoints and that the proposed Murra Warra Wind Farm:

- Will have a negligible visual impact of the principal rural townships of Horsham, Dimboola and Warracknabeal;
- Will result in no significant impact of views from Highways (including the Henty and Borung Highways);
- Will result in no significant impact on views from local roads; and
- Will result in no significant visual impact from scenic areas, public reserves and recreational areas, including any long distant views from Mount Arapiles and the Grampians National Park”.

(Preliminary Landscape & Visual Assessment, Green Bean Design. P7)

This Preliminary LVIA was included with the EES referral for the Murra Warra Wind Farm submitted to the Minister of Planning. A final decision of whether an EES is required is yet to be made.

XURBAN has been engaged by RES Australia Pty Ltd to undertake this landscape and visual assessment of the proposed Murra Warra Wind Farm. This Landscape and Visual Assessment will be included within the Planning Permit Application (PPA).
Report approach

The following report seeks to discuss the landscape and visual impact implications of this Planning Permit Application (PPA) and ascertain the visual and landscape impact of the proposed Murra Warra Wind Farm within this Wimmera landscape.

This report will firstly describe the visual components of the proposed Murra Warra Wind Farm as it is the size, scale and spread of the wind farm that determines its viewshed.

After determining the appropriate viewshed and the various zones of visual influence, this report will then examine the Planning Controls and Guidelines which apply to the land within the viewshed and also describe the landscape units within the viewshed. These assessments of Planning controls and Landscape Units run hand in hand with Planning Guidelines (for example Significant Landscape Overlays (SLO’s)) informing the selection of landscape character types.

After ascertaining the landscape character types and their sensitivity to change, indicative viewpoints within the viewshed are selected to assess the on-ground visual and landscape impacts.

The Statutory Controls also require an assessment of the cumulative landscape and visual impact of the Murra Warra Wind Farm to this area in the Wimmera.

This assessment approach is graphically illustrated in Figure 1.

---

**Figure 1**  
Approach and report outline
2. Project description

The proposed Murra Warra Wind Farm will consist of wind turbines, internal powerlines and access tracks as well as a quarry and terminal station.

Wind turbines

The Murra Warra Wind Farm project comprises of 116 wind turbines which could be to a maximum tip height of 220 m. Figure 2 shows the location of the 116 proposed wind turbines.

Figure 2  Wind turbine locations (Source: Spatial Vision, South West Victoria)

The wind turbines will be three bladed wind turbines similar in profile to the wind turbine depicted in Figure 3.

Figure 3  Wind turbine profile
The wind turbine heights and dimensions are listed in Table 1.

<table>
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<th>Hub height</th>
<th>Rotor diameter</th>
<th>Overall height</th>
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<td>116</td>
<td>Up to 152 m</td>
<td>Up to 136 m</td>
<td>Up to 220 m</td>
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The wind turbines are proposed to be finished in a light grey colour which is non-reflective.

It is the impact of the 116 wind turbines with an overall height of 220 m that will be assessed within this report.

The quarry, utility area and terminal station

A quarry and a terminal station is proposed to the east of Barrat Quarry Road adjacent to a disused Council quarry.

Figure 4 shows the location of the potential quarry, the terminal station and construction compounds. There will also be an access track from the Alisa Wheat Road to the east to the Barrat Quarry Road to the west.
The highest elements in the terminal station are generally less than 26 m in height. These are about half the height of the existing transmission line towers which run north – south adjacent to the proposed terminal station.

It is proposed that a communications tower also be constructed as part of the substation. This will be up to 45 m in height, which is similar to the height of the existing transmission lines.

Operations building

The operations building will be sited within the Construction compound and will be a rectangular building approximately 20 x 30 m.

In appearance these structures will not be dissimilar to farm sheds in this area.
Access tracks

The proposed wind turbines and the terminal station will be constructed and serviced by a network of tracks. Many of these follow the alignment of existing farm tracks, others will be constructed. Figure 7 shows the location of the wind turbines, the terminal station, construction compounds as well as the proposed access tracks which are delineated by the blue lines in Figure 7.

Figure 7 Access tracks (source RES)

The access tracks will be up to six metres wide and un-sealed. In appearance they will be similar to other farm tracks which run through this landscape.
3. Visual impact methodology

The methodology used within this Landscape and Visual Assessment is set out below. The criteria for assessing visual impact are different for publicly accessible and private residential viewpoints.

Assessment criteria – publicly accessible viewpoints

In assessing the visual impact of a wind farm from the public domain the assessment of visual impact is based on four criteria, namely visibility, distance, landscape character & viewer sensitivity and the number of viewers.

- Visibility: The visibility of a wind farm can be affected by intervening topography, vegetation and buildings.
- Distance: The distance of the viewer from the proposed nearest wind turbine. The level of visual impact decreases as distance increases. The Zones of Visual Impact (ZVI) give an indication of the impact based solely on distance.
- Landscape character and viewer sensitivity: 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. A residential townscape would be given a higher sensitivity than an industrial landscape.
- Number of viewers: The level of visual impact decreases where there are fewer people able to view the wind farm. Alternatively, the level of visual impact increases where views are from a recognised vantage point. Viewer numbers from a recognised vantage point would be rated as high.

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

The scale of effects, for rating the overall visual impact of the proposed wind farm from publicly accessible viewpoints, could range from no impact (nil) to a potentially positive visual impact. Negative visual impacts are graded from negligible to high.

Nil – there is no perceptible visual change.

Positive – is a visual change that improves the outlook or view.

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 proposed wind farm would be at such a distance that, when visible in good weather, the wind turbines 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 impacts that are noticeable but 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, a wind farm in a landscape which is man-modified and which already contains many buildings or other vertical elements may be rated as a low level of visual impact. Similarly, if the distance from which it is viewed means that its scale is similar to other elements in the landscape it would also be assessed as a low level of 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 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 three elements to be high. For example, a highly sensitive landscape, viewed by many people, with the proposed wind farm in close proximity and largely visible would lead to an assessment of an unacceptable adverse effect.

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 relevant 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.

The visibility of a wind farm and the distance between the residential location and the development are the two criteria that vary within an assessment of the visual impact from a residential property. Viewer sensitivity is always rated as “high”.

Photomontages

Photomontages can assist in the assessment by illustrating the scale and location of the proposed wind turbines.

This assessment is in part based on photomontages which typically show the changes in a 60° horizontal field of view. This horizontal field of view represents the central cone of view in which symbol recognition and colour discrimination can occur (refer Figure 10). For a wind farm visual assessment, the correct horizontal field of view is important if the photomontage images are to perceptually represent the change in the landscape.
One of the sheets within the photomontage set shows a wireframe view of the computer model to illustrate how the photomontages were derived. Vertical ‘poles’ or ‘cylinders’ within this wireframe are merely points on the landscape such as a group of trees, a corner of a planted hedgerow etc., which allow the computer model and the photograph to be accurately aligned. This ensures that the proposed wind turbines are accurately located within the photograph and then the rest of the model is removed and the visible portions of the wind turbines are then rendered into the image.

Seven photomontages have been prepared to assist in the assessment of the visual impact of the proposed Murra Warra Wind Farm. These viewpoints are discussed later in this report and are appended to this report (Refer Annex A for A3 size photomontages).

It is recognised that the small photographs and the A3 photomontages included within this assessment whilst technically accurate, are not perceptually accurate. The A3 images, which are annexed to this report (Annex A), are clearer than the smaller images in the text, as these are larger. A0 photomontages will be prepared, if required by the planning authorities, and these provide a clear indication of the actual visual impact – these are perceptually accurate.

Camera data


The camera is held at eye level, approximately 1.65 m above ground level. Four photographs overlapped 1/3 to create an image approximately the same as the central cone of view of human vision, i.e. 50-70° horizontal and 15° vertical. Figure 9 demonstrates the overlap of the photographs which are used to create the panorama in the photomontage.
Computer modelling and the wireframe model

Cadastral data as well as the proposed development are modelled within a computer program (3D Max). A virtual camera is set up in the model at the GPS coordinates for each of the photographs that are being used within the panorama.

The digital model or wireframe view is then overlaid on the photographic panorama. Known points within survey information such as topography, building locations or other infrastructure are registered into the base photographs (or other predetermined points). For technical accuracy, these points must align. This verifies the location and apparent height and scale of the proposed development.

After the background reference points have been aligned, the wireframe is removed, leaving only the wind turbines, which are rendered, either to match the lighting conditions at the time the photographs were taken or, more typically, to maximise the wind turbine’s visibility by increasing the contrast against the background sky.

Wider panoramas are used to provide a greater number of reference points for the computer model. These wide angle views are shown in the wire frame views where reference points were aligned outside of the final 60° view. If the panorama includes a significant number of additional wind turbines, these are also included in the analysis. However, wide angle views, whilst technically correct, do not represent a perceptually accurate representation of the change to a landscape.

GPS Coordinates

The Nikon D3 camera also records the GPS coordinates as part of the photographic metadata. GPS coordinates are also taken based on a separate hand held GPS and the locations from which the photographs were taken are marked on a digital map within Google Earth Pro.

Seen area analysis

Typically, a Seen Area Analysis is provided as part of a wind farm visual assessment. A Seen Area Analysis maps those areas from which some or all the wind turbines are screened from view by topography. This analysis does not take into account the screening afforded by vegetation and buildings.

For this project in the Wimmera, the surrounding landscape is exceedingly flat and therefore there is little opportunity for topography to afford screening of the proposed wind turbines.

Consequently, a seen area analysis has not been undertaken as it is assumed that the wind farm is potentially visible over such a flat landscape throughout the viewshed and within most of the areas within the zones of visual influence.
4. Viewshed and Zones of Visual Influence

The viewshed is the area that may potentially be visually affected by the wind farm. The viewshed is the study area for visual impact. The viewshed is not the same as the extent of visibility as it may be possible to see the wind turbines from areas outside the viewshed. The viewshed is rather, the area within which the proposed development could create a recognisable impact.

Viewshed calculations

The parameters of human vision include the vertical and horizontal fields of views as shown in Figure 10 and Figure 11. These figures are based on data from ‘Human Dimension and Interior Space’, Julius Panero & Martin Zellnik, Witney Library of Design, 1979. Similar data can be found in the more recent publication entitled ‘The Measure of Man and Woman, Revised Edition’, Henry Dreyfuss Associates, John Wiley & Sons, 2012.

This anthropometric data will form the basis for determining the viewshed for the Murra Warra Wind Farm.

Figure 10  Horizontal field of view

The central field of vision is an angle of between 50° to 60°. Basing the extent of the viewshed on a distance where the 136 m rotor swept path will take up less than 5°, gives a viewshed of approximately 1,500 m. This calculation does not recognise the multiple number of wind turbines in a wind farm, nor the vertical scale of the proposed wind turbines.

The vertical field of view provides an alternative basis for calculating the extent of the viewshed.

Figure 11  Vertical field of view
The height of the proposed wind turbines is up to 220 m. The viewshed can be considered to extend to a distance at which a 220 m high wind turbine will take up less than 5% of the full vertical field of view. Typically, the field of view of a person is $10^\circ$; therefore $0.5^\circ$ is 5% of the vertical field of view.

A wind turbine, 220 m high, viewed from a distance of 25 km will take up 5% of the vertical field of view. This assessment therefore uses 25 km as the extent of the viewshed.

### Zones of Visual Influence

Similar calculations can also form the basis for determining the Zones of Visual Influence (ZVI) for the proposed wind turbines.

The visual impact of a wind turbine is not equal across the entire viewshed. When a viewer is closer to a wind turbine, the visual impact is greater as the wind turbine takes up a greater percentage of the vertical field of view. The vertical field of view is $10^\circ$ and Figure 12 shows how the various zones of visual influence are derived from the proportion that a wind turbine, fully visible, will occupy in the vertical field of view.

When a vertical object takes up half the vertical field of view ($5^\circ$) an object is visually dominant. For a 220 m high wind turbine this occurs at approximately 2.5 km.

This dominant zone and intervening zones of visual impact that will be used within this assessment are set out in Table 2.

### Table 2. Zones of visual impact

<table>
<thead>
<tr>
<th>Visual Impact</th>
<th>Vertical view angle</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visually insignificant</td>
<td>$&lt; 0.5^\circ$</td>
<td>$&gt; 25$ km</td>
</tr>
<tr>
<td>Potentially noticeable, but will not dominate the landscape</td>
<td>$0.5^\circ – 1^\circ$</td>
<td>12.5 - 25 km</td>
</tr>
<tr>
<td>Potentially noticeable and can dominate the landscape</td>
<td>$1^\circ – 2.5^\circ$</td>
<td>5 – 12.5 km</td>
</tr>
<tr>
<td>Highly visible and will usually dominate the landscape</td>
<td>$2.5^\circ – 5^\circ$</td>
<td>2.5 -5 km</td>
</tr>
<tr>
<td>Will be visually dominant in the landscape from most viewing locations</td>
<td>$&gt; 5^\circ$</td>
<td>$&lt;2.5$ km</td>
</tr>
</tbody>
</table>
The extent of viewshed and the various zones of visual influence are graphically illustrated in Figure 13.

Figure 13 shows the viewshed out to 25 km and the zones of visual influence based on a wind turbine height of 220 m. This viewshed and the zones of visual influence, mapped in Figure 13 will be used as the study area for this landscape and visual assessment.
5. **Planning policy**

The following Planning Policies and Guidelines were considered as part of this assessment.

- The State Planning Policy Framework;
- Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (January 2016);
- The Horsham Planning Scheme, the Hindmarsh Planning Scheme and the Yarriambiack Planning Scheme which cover the land within the viewshed;
- The Western Victoria Landscape Assessment Study (WVLAS); and
- Kanawinka Geopark.

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

### State Planning Policy Framework

Clause 15.14 of the State Planning Policy Framework sets out the planning policies for Renewable Energy. The objective of the policy is to promote the provision of renewable energy, including wind energy facilities, in a manner that ensures appropriate siting and design considerations are met.

The policy states that the Government is committed to achieving a more sustainable energy future for all Victorians. Planning should contribute to the provision of renewable energy by facilitating wind energy development in appropriate locations.

In planning for wind energy facilities, planning and responsible authorities must take into account the revised *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria, January 2016* (referred to as the Victorian Guidelines). These are discussed below.

*Section 2.2* outlines the key objectives in identifying locations for wind energy development.

Wind energy facilities should not lead to unacceptable impacts on critical environmental, cultural or landscape values. Critical values are those protected under Commonwealth or Victorian legislation and assets of state or regional significance, mapped and recognised through planning schemes, including the State Planning Policy Framework (SPPF).

The assessment of landscape and visual amenity of a wind farm proposal, as in the Victorian Guidelines, are based upon the following.

The features of the landscape include:

- the topography of the land
- the amount and type of vegetation
- natural features such as waterways, cliffs, escarpments, hills, gullies and valleys
- visual boundaries between major landscape types
- the type, pattern, built form, scale and character of development, including roads and walking tracks
- flora and fauna habitat
- cultural heritage sites
- the skyline.

The degree of visual impact of a wind energy facility depends on the extent of the change to the landscape caused by the development, taking into account:

- 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 (including in an overlay, a relevant strategic study or landscape features referenced in the planning scheme)
- landscape values associated with nearby parks described in a schedule to the National Parks Act 1975 or Ramsar wetlands
• landscape values associated with nearby land included in the schedule to Clause 52.32-2 of the planning scheme, such as specified areas of landscape and environmental significance, specified coastal locations and areas identified to accommodate future population growth of regional cities and centres
• the sensitivity of the landscape features to change.

The visual impact of the development relates to:
• the number, height, scale, spacing, colour and surface reflectivity of the wind turbines
• the quantity and characteristics of lighting, including aviation obstacle lighting (subject to CASA requirements and advice)
• avoidance of visual clutter caused by turbine layout and ability to view through a cluster or array (visually well ordered series) of turbines in an orderly manner
• the removal or planting of vegetation
• the location and scale of other buildings and works including transmission lines and associated access roads
• proximity to sensitive areas
• proximity to an existing or proposed wind energy facility, having regard to cumulative visual effects.

Suggested impact reduction measures
• siting and design to minimise impacts on views from areas used for recreation and from dwellings
• locating arrays of turbines to reflect dominant topographical and/or cultural features, such as ridgelines, the coastline, watercourses, windbreaks or transmission lines
• using turbine colour to reduce visual impacts from key public view points
• limiting night lighting to that required for safe operation of a wind energy facility and for aviation safety
• reducing the number of wind turbines with obstacle lights while not compromising aviation safety
• mitigating light glare from obstacle lighting through measures such as baffling
• selecting turbines that are consistent in height, appearance and rotate the same way
• spacing turbines to respond to landscape characteristics
• undergrounding electricity lines wherever practicable
• minimising earthworks and providing measures to protect drainage lines and waterways
• minimising removal of vegetation
• avoiding additional clutter on turbines, such as unrelated advertising and telecommunications apparatus.

One of the issues that the guidelines address are the provisions of the Planning Schemes and especially any provisions that relate to landscape significance or community values that have been identified within the Planning Schemes that apply to areas within the viewshed.

Planning Schemes
The subject site of the wind farm and much of the viewshed falls within the Horsham Planning Scheme, the Yarriambiack Planning Scheme and the Hindmarsh Planning Scheme.
These planning scheme zones the land upon which the wind turbines are to be installed and much of the surrounding area within the viewshed, as a Farm Zone (FZ). There is a strip of land along the Yarriambiack Creek and at the Barrat Conservation Reserve that is zoned Public Park and Recreation (PPRZ) and Public Conservation and Resource Zone (PCRZ). Barret Reserve, on the north of the wind farm. There are no schedules to the PPRZ and the PCRZ within the Yarriambiack or Horsham Planning Schemes.

There are no Significant Landscape Overlays within the 12.5 km band in any of the planning schemes. This is significant as typically visual impact on SLO areas are caused by development in close proximity to the SLO. Beyond 12.5 km the wind turbines are a small component in the vertical field of view (refer viewpoints H9 and H12 later in this report to see the scale of wind turbines when viewed from 9.4km and 10.4 km). Therefore, the impact on landscape values when the wind turbines are viewed from even greater distances, is likely to be insignificant.

This is even more apparent when the significant landscapes are well outside the viewshed. The northern edge of the Grampians is approximately 45 km to the south east and Mt Arapiles is approximately 50 km to the south west. Neither of these landscapes will be impacted by the proposed wind farm.

There is an Environmental Significance Overlay (Schedule 2) within the Yarriambiack Planning Scheme.
Schedule 2 to the Environmental Significance Overlay (ESO2)

The Highways Environ Protection overlay applies to a section of the Borung Highway and the Horsham Kalkee Road in the south west of the viewshed.

The environmental objectives include:

- To maintain and enhance the safety and amenity of main roads.
- To preserve and enhance the tree lined character of the roadsides along the approaches to the urban townships and along main roads.
- To preserve and improve scenic views from Road Zones and to preserve and enhance the visual character of the areas adjacent to the Road Zones approaching and within the townships.
- To discourage the intensification of development in undesirable locations.

The amenity and safety of these roads will not be impacted by the proposed Murra Warra Wind Farm. There are no identified scenic views along either road corridor and the presence of wind turbines would not be a disconcerting element in this landscape. The visual impacts are assessed in greater detail later in this report.

Schedule 3 to the Environmental Significance Overlay (ESO2)

There are overlays applicable to areas around Dimboola which is in the Hindmarsh Planning Scheme. Designated areas include the Wimmera River (which flows through Dimboola) and the Little Desert National Park. The Wimmera River is within Schedule 3 to the Environmental Significance Overlay (ESO3).

The environmental objectives are:

- To maintain and enhance the quality and supply of irrigation and domestic water throughout the Wimmera region.
- To protect water reservoirs and channels from potential sources of pollution.
- To control the development of land in the vicinity of water supply reservoirs and supply channels.
- To prevent the unauthorised diversion of water into or from water channels.

The Wimmera River is at the edge of the viewshed. There will be no impact on the environmental qualities protected by this overlay as a result of the proposed Murra Warra Wind Farm.

Areas apart from the Farm Zone (FZ) other small areas within the viewshed include ‘Public Conservation and recreation Zones’ (PCRZ). The potential visual impact on the PCRZ land will be assessed later in this report.

It is noted that both the Grampians and the Arapiles are outside the viewshed.

The Western Victoria Landscape Assessment Study

A draft of the Western Victoria Landscape Assessment Study (WVLAS) has been released. It is not a referral document as it is not referenced in either the Horsham Planning Scheme, the Hindmarsh Planning Scheme nor the Yarriambiack Planning Scheme.

The Draft WVLAS identifies the area of the Murra Warra Wind Farm as within the Big Plains Landscape Character Type which is described as:

*The Big Plains (BP) is a highly productive landscape with a flat landform. There is limited remnant vegetation and boundless views are available across the plains to broad horizons that meet an even bigger sky.*

The location of the Murra Warra Wind Farm (designated with a yellow star) and the surrounding character types are shown in Figure 15.
The WVLAS (Draft) also identifies significant views and significant landscapes. These are shown in Figure 16.

The location of the Murra Warra Wind Farm is designated by a red star in Figure 16. There is a “Significant Landscape – State” identified along the Wimmera River running north from Dimboola where a small section lies within the viewshed. A ‘Significant View from Significant Landscape’ is also identified.
The WVLAS does not identify any significant view in the areas within 12.5 km of the wind farm. The “Significant View within Significant Landscape” identified are:

- to the south west near Dimboola; and
- Mount Jeffcot and Mount Wycheproof which lie more than 50 km to the east of the wind farm.

The Murra Warra Wind Farm would have no impact on these significant landscapes or significant views identified within the WVLAS.

Kanawinka Geopark

The Murra Warra Wind Farm is outside the area that was included within the Kanawinka Geopark.

Therefore, the Kanawinka Geopark has no impact on the landscape and visual assessment for the Murra Warra Wind Farm.
Landscape units

Landscape units are areas with similar visual characteristics in terms of topography, geological features, soils, vegetation and land use.

The areas surrounding the Murra Warra Wind Farm are predominately cleared flat farmland, with existing infrastructure including roads, transmission lines, telecommunications towers, power lines as well as typical agricultural infrastructure including silos, farm sheds and houses.

Topography

The Murra Warra Wind Farm is located within the Wimmera district north of Horsham.

The area within the viewshed is very flat. Dooen, on the southern side of the viewshed is at approximately 133 AHD. At Dimboola to the west, near the junction of the Borung Highway and the Western Highway the land is at approximately 132 AHD. Warracknabeal to the north is at 120 AHD and Minyip to the east is at approximately 132.

Given that the viewshed spans more than 50 km, the overall fall across this landscape is approximately 13 metres in 50 km, a resultant fall of less than 1:3000. The land however does not fall evenly and there are areas in which the fall is greater, for example the entry into Dimboola.

The disjointed drainage pattern visible within the viewshed (see Figure 12) and the presence of an extensive channel system underline just how flat are the areas within the viewshed.

Vegetation

The majority of the area within the viewshed is broad acre rural farmland with little remnant vegetation.

There is some vegetation along road reserves and drainage lines such as the Yarriambiack Creek, which runs parallel to and on the east side of the Henty Highway.

The Barrat Fauna and Fauna Reserve (Barrat FFR) is a Nature Conservation Reservation (2.2 km²) on the north west corner of the wind farm. It is not a tourism destination, although there are 4WD tracks in an area of bushland between the reserve and Barrat Road to the north.
Land use

The dominant land use throughout the viewshed is farming. The land is predominately cleared for agricultural uses.

Horsham lies beyond the southern edge of the viewshed. There are small townships within the viewshed, they include:

- Warracknabeal
- Dimboola
- Minyip
- Murtoa
- Pimpinio
- Wail

Landscape Units

Based on this analysis, three landscape units have been identified within the viewshed of the Murra Warra Wind Farm. These are:

- Townships
- Agricultural land
- Reserves, recreation & conservation areas

Landscape Unit 1 – Townships

‘Landscape Unit 1 – Townships’ describe the urban areas within the viewshed. These range from the large country town of Warracknabeal to the small village of Wail in which the dominant visual elements are the large grain silos along the railway line.
Landscape Unit 2 - Agricultural land

‘Landscape Unit 2 - Agricultural land’ describes the farmland areas within the viewshed. This may include some vegetation along road sides and within drainage lines such as the Warracknabeal Creek. These areas of vegetation are typical, although infrequent, within this farming landscape in the Wimmera.

Landscape Unit 3 – Reserves, recreation & conservation areas

‘Landscape Unit 3 – Reserves, recreation & conservation areas’ describes those areas that are set aside for conservation or tourism. They will include the Barrat FFR as well as areas within the Little Desert National Park. They also include the recreation reserves. Given that the Sailors Road Public Cemetery may have a tourism focus, this has also been included within this Landscape Unit.

Landscape & viewer sensitivity

Landscape sensitivity is defined as the ability of a landscape to absorb change and the visual impact such a change may have on a viewer.

The table below summarises the sensitivity of each of the landscape units.

<table>
<thead>
<tr>
<th>Landscape unit</th>
<th>Sensitivity</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1 - Townships</td>
<td>Medium</td>
<td>Townships afford views over the surrounding landscape for a larger group of people. These views from urban areas are appreciated and changes are of a concern to residents.</td>
</tr>
<tr>
<td>Unit 2 – Agricultural land</td>
<td>Low</td>
<td>Agricultural land undergoes regular seasonal change (cropping, ploughing etc) and contains other large scale vertical elements such as grain silos and transmission lines.</td>
</tr>
<tr>
<td>Unit 3 – Reserves, recreation &amp; conservation areas</td>
<td>High</td>
<td>Reserves, especially when they are valued for their scenic qualities, are sensitive to nearby changes which may impact on these qualities and values.</td>
</tr>
</tbody>
</table>

These sensitivity ratings will form part of the assessment in the following chapters of this report.
7. **Landscape & visual impact assessment**

In order to undertake a landscape and visual assessment of the proposed Murra Warra Wind Farm, viewpoints were selected that were representative of the range of views available to provide a basis to assess the overall visual effects of the proposed wind farm. The selected viewpoint locations are shown in Figure 19.

*Figure 19  Viewpoint locations (Map source: Google Earth Pro)*

Figure 19 shows the viewpoint locations. Viewpoints for which a photomontage has been prepared are shown as a pink pin, whilst other viewpoints are shown as a yellow pin. The locations of the proposed wind turbines are also shown in Figure 19.

Table 4 show the location of each viewpoint and the distance and bearing to the nearest wind turbine.
<table>
<thead>
<tr>
<th>Viewpoint number</th>
<th>Location</th>
<th>Distance to nearest wind turbine</th>
<th>Bearing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>URBAN AREA VIEWPOINTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP T1</td>
<td>Dooen</td>
<td>20.8 km (T145)</td>
<td></td>
</tr>
<tr>
<td>VP T2</td>
<td>Murtoa, northern edge on Wimmera Highway and at Lake Marma</td>
<td>17.7 km (T262)</td>
<td>283°</td>
</tr>
<tr>
<td>VP T3</td>
<td>Minyip, corner Stawell Warracknabeal Rd &amp; Minyip Dimboola Rd</td>
<td>15.3 km (T257)</td>
<td>195°</td>
</tr>
<tr>
<td>VP T4</td>
<td>Warracknabeal, on Henty Highway</td>
<td>18 km (T220)</td>
<td>306°</td>
</tr>
<tr>
<td>VP T6</td>
<td>Dimboola</td>
<td>20 km (T220)</td>
<td>92°</td>
</tr>
<tr>
<td>VP T7</td>
<td>Wail</td>
<td>15 km (T220)</td>
<td>62°</td>
</tr>
<tr>
<td><strong>HIGHWAY VIEWPOINTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP H1</td>
<td>Henty Highway #1, 3km NE of Horsham</td>
<td>25.8 km (T220)</td>
<td>5°</td>
</tr>
<tr>
<td>VP H2</td>
<td>Henty Highway #2, 5km NE of Horsham</td>
<td>23.8 km (T220)</td>
<td>3°</td>
</tr>
<tr>
<td>VP H3</td>
<td>Henty Highway #3, at Dooen</td>
<td>21.5 km (T220)</td>
<td>359°</td>
</tr>
<tr>
<td>VP H4</td>
<td>Henty Highway #4, intersection of Wimmera Highway</td>
<td>19.5 km (T220)</td>
<td>357°</td>
</tr>
<tr>
<td>VP H5</td>
<td>Henty Highway #5, corner of Horsham Minyip Rd</td>
<td>4.8 km (T145)</td>
<td>341°</td>
</tr>
<tr>
<td>VP H6</td>
<td>Henty Highway #6, corner of Old Minyip Rd</td>
<td>3.6 km (T145)</td>
<td>285°</td>
</tr>
<tr>
<td>VP H7</td>
<td>Henty Highway #7, corner of Dimboola Minyip Rd</td>
<td>3.4 km (T265)</td>
<td>326°</td>
</tr>
<tr>
<td>VP H8</td>
<td>Henty Highway #8, corner of Barrat Rd</td>
<td>2.3 km (T243)</td>
<td>217°</td>
</tr>
<tr>
<td>VP H9</td>
<td>Henty Highway #9, entry to Warracknabeal Airport</td>
<td>9.4 km (T257)</td>
<td>210°</td>
</tr>
<tr>
<td>VP H10</td>
<td>Borung Highway #1 – intersection of Western Highway at Dimboola</td>
<td>18.2 km (T219)</td>
<td>93°</td>
</tr>
<tr>
<td>VP H11</td>
<td>Borung Highway #2, corner Katyil-Wail Rd</td>
<td>13.0 km (T102)</td>
<td>108°</td>
</tr>
<tr>
<td>VP H12</td>
<td>Borung Highway #3, corner of Blue Ribbon Rd</td>
<td>10.4 km (T85)</td>
<td>151°</td>
</tr>
<tr>
<td>VP H13</td>
<td>Borung Highway #4, under 220kVa transmission line</td>
<td>12.5 km (T258)</td>
<td>171°</td>
</tr>
<tr>
<td>VP H14</td>
<td>Western Highway, outside of Wail on bridge</td>
<td>14.2 km (T220)</td>
<td>69°</td>
</tr>
<tr>
<td>VP H15</td>
<td>Wimmera Highway, 5 km east of VP4</td>
<td>18.9 km (T145)</td>
<td>3°</td>
</tr>
<tr>
<td><strong>LOCAL ROAD VIEWPOINTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP L1</td>
<td>Corner Donald Murtoa Rd &amp; Bayena Pimpinio Rd</td>
<td>16.2 km (T145)</td>
<td>308°</td>
</tr>
<tr>
<td>VP L2</td>
<td>Corner of Donald Murtoa Rd &amp; Horsham Minyip Rd</td>
<td>13.3 km (T145)</td>
<td>289°</td>
</tr>
<tr>
<td>VP L3</td>
<td>Blue Ribbon Rd #2, corner of Dimboola Minyip Five Chain Rd (at Murra Warra)</td>
<td>2.8 km (T214)</td>
<td>103°</td>
</tr>
<tr>
<td>VP L4</td>
<td>Barrat Quarry Rd, looking at site of proposed substation</td>
<td>2.3 km (T107)</td>
<td>61°</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3 km (T155)</td>
<td>353°</td>
</tr>
<tr>
<td>VP L5</td>
<td>Dimboola Minyip Rd</td>
<td>2.1 km (T120)</td>
<td>325°</td>
</tr>
</tbody>
</table>
The viewpoints that are bolded are those viewpoints for which a photomontage has been prepared.

The Photomontages taken from publicly accessible viewpoints were selected at distances ranging from 2.8 km (VP R3) to 16.2 km (L1). This gives a range of distances from which the visual impact of the proposed Murra Warra Wind Farm can be assessed. As well as different distances, the photomontages have also been prepared at different bearings.

Each of these representative viewpoints is discussed and evaluated in the following sections which will examine the visual impact of the proposed wind farm on views from:

- Townships and urban areas;
- Highways and main roads;
- Local roads; and
- Reserves, conservation and recreation areas.

Residential impact

A separate evaluation has been undertaken to assess the likely impact on a residential property. A photomontage has also been prepared to show the potential impact on a residential property at 2224 Dimboola Minyip Road (House #161).
8. **Townships and urban areas**

*Figure 20 maps the urban areas within the viewshed.*

The viewshed mapping in *Figure 20* makes it clear that all the townships surrounding the wind farm are beyond the 12.5 km band. That is, a wind turbine at this distance, will at most be "Potentially noticeable, but will not dominate the landscape" (Refer Table 2).

**Urban areas**

Warracknabeal, Dimboola, Minyip, Murtoa, Pimpinio and Wail all lie between 12.5 km to 25 km from the nearest wind turbine. Horsham, the largest town in the Wimmera, is entirely outside the 25 km viewshed boundary.

The following sections will examine each of these urban areas.
Viewpoint T1 – Dooen
Dooen lies approximately 22 km to the south of the wind farm. Viewpoint T1 is approximately 22 km from the nearest wind turbine (T220) towards the edge of the viewshed.

Figure 21
Silos and the ABC telecommunications tower at Dooen

Figure 21 shows some of the infrastructure within the area around Dooen. This includes silos and the ABC telecommunications facility.

Given the distance from the proposed wind farm, the overall visual impact from the township of Dooen is assessed as negligible to nil.

Viewpoint T2 – Murtoa
Murtoa lies approximately 21 km to the south east of the wind farm. Viewpoint T2 is approximately 21 km from the nearest wind turbine (T145) towards the edge of the viewshed.

Figure 22
Murtoa township

From the township, the existing buildings and vegetation would screen all views to the wind farm except for those properties at the northern and western edge of the town.

The viewpoint below is taken from a location on the western edge of Murtoa. This viewpoint is approximately 20.8 m from the nearest wind turbine (T145).
From this distance the proposed wind farm would be a minor element in the landscape.

In the centre of town there is a view from the war memorial across Lake Marma towards the wind farm.

The wind farm would be to the right of Figure 24. At this distance and given the foreground vegetation, the wind farm would not be visible.

Given the distance and the foreground interruptions to potential views to the wind farm, the overall visual impact from the township of Murtoa is assessed as negligible to nil.

Viewpoint T3 – Minyip
Minyip lies approximately 22 km to the east of the wind farm. Viewpoint T3 is approximately 22 km from the nearest wind turbine (T120) towards the edge of the viewshed.

From the township, the existing buildings and vegetation would screen all views to the wind farm except for those properties at the western edge of the town.

The viewpoint below is taken from the western entry to Minyip.
These views from the northern and western entries into the township are across the broad
Wimmera Landscape. Wind turbines, if visible at all, would be a minor element in this
landscape.

Given the distance from the proposed wind farm, the overall visual impact from the township
of Minyip is assessed as negligible to nil.

Viewpoint T4 – Warracknabeal

Warracknabeal lies approximately 15 km to the north of the wind farm. Viewpoint T4 is
approximately 15 km from the nearest wind turbine (T257).

From the Warracknabeal township, the existing buildings and vegetation would screen all
views to the wind farm except for those properties at the southern edge of the town.
A viewpoint has been taken from the southern edge of town on the Henty Highway.

**Figure 29**  Looking south from the Henty Highway

Given the extent of intervening vegetation and the distance from the wind farm, the wind turbines will not be visible from this location at the outskirts of Warracknabeal.

The overall visual impact from Warracknabeal is assessed as **negligible to nil**.

**Viewpoint T5 – Pimpinio**

Pimpinio lies approximately 18 km to the south west of the wind farm. Viewpoint T5 is approximately 18 km from the nearest wind turbine (T220).

**Figure 30**  Pimpinio township

From the Pimpinio township, the existing buildings and vegetation would screen all views to the wind farm except for those properties at the southern edge of the town.

Given the distance from the proposed wind farm, the overall visual impact from the township of Pimpinio is assessed as **negligible to nil**.
Viewpoint T6 – Dimboola

Dimboola lies approximately 20 km to the west of the wind farm. Viewpoint T6 is approximately 20 km from the nearest wind turbine (T219).

**Figure 31** Dimboola township

It is not apparent in Figure 31, but Dimboola is situated in a slight valley. The land falls along the entry road from the Western Highway and this slight rise would screen views from the Dimboola township. As well, the existing buildings and vegetation would also screen views to the wind farm.

Given the distance from the proposed wind farm, the overall visual impact from the township of Dimboola is assessed as negligible to nil.

Viewpoint T7 – Wail

Wail lies approximately 14 km to the south west of the wind farm. Viewpoint T7 is approximately 14 km from the nearest wind turbine (T220).

**Figure 32** Wail township to the western highway

Figure 32 shows a view looking east from the township of Wail to the Western Highway where it is elevated over the rail line. This embankment would screen all views to the proposed wind farm from Wail.

Figure 33 shows a view looking west (away from the proposed wind farm) towards the residential areas and the existing grain silos in Wail.
As well, the existing vegetation would also screen views to the wind farm from residential areas further to the west.

Given the distance from the proposed wind farm, the presence of the railway embankment and the existing vegetation the overall visual impact from the township of Wail is assessed as nil.

**Overall visual impact from townships**

As a result of distance and the flat landscape in which the wind turbines are located, the wind turbines will not be a dominant visual element and that intervening vegetation (and in the case of Dimboola, slight topographical changes) will screen views to the proposed wind farm.

For these reasons, the overall visual impact of the proposed Murra Warra Wind Farm on the townships within the viewshed would be **negligible** to nil.
9. Highways & main roads

This section of the visual assessment will examine the visual impacts perceived by viewers traversing the region on Highways or main roads. This section will examine viewpoints along:

- Henty Highway;
- Wimmera Highway;
- Borung Highway; and
- Western Highway

Henty Highway viewpoints

Henty Highway runs along the eastern edge of the wind farm and connects Horsham in the south to Warracknabeal in the north.

Viewpoint H1 – Henty Highway#1

Viewpoint H1 is approximately 25.8 km from the nearest wind turbine (T220) just at the edge of the viewshed.

At this distance the wind turbines will be a small element in the landscape, only discernible in good lighting conditions.

The overall visual impact is assessed as negligible to nil.

Viewpoint H2 – Henty Highway#2

Viewpoint H2 is approximately 23.8 km from the nearest wind turbine (T220) only two kilometres closer than Viewpoint H1.

At this distance the wind turbines will still be a small element in the landscape, only discernible in good lighting conditions.

The overall visual impact is assessed as negligible to nil.
Viewpoint H3 – Henty Highway#3
Viewpoint H3 is approximately 21.6 km from the nearest wind turbine (T225) still at the edge of the viewshed. The CFA Fire Station is visible on the left of Figure 36.

Viewpoint H3

At this distance the wind turbines will be a small element in the landscape, only discernible in good lighting conditions and only visible through gaps in the foreground vegetation.

The overall visual impact is assessed as negligible to nil.

Viewpoint H4 – Henty Highway#4
Viewpoint H4 is approximately 19.5 km from the nearest wind turbine (T220) still at the edge of the viewshed. The ABC telecommunications facility is visible on the left of Figure 37.

Viewpoint H4

At this distance the wind turbines will be a small element in the landscape, discernible in most lighting conditions.

The overall visual impact is assessed as negligible.
Viewpoint H5 – Henty Highway#5

Viewpoint H5 is approximately 4.8 km from the nearest wind turbine (TT145) at the intersection of Horsham Minyip Road. The Horsham Minyip Road is not visible in Figure 38 as it is behind this viewpoint. The gravel road visible in Figure 38 is Byrneville Road, which is an un-made road heading westwards from the Henty Highway.

Figure 38  Viewpoint H5

At this distance the wind turbines will be a noticeable element in the landscape, discernible in most lighting conditions.

Given that there is a broad span of wind turbines that are visible in the photomontage and will be visible for people travelling along the Henty Highway, the major reason in determining that this creates a low level of visual impact is the existing rural landscape which has a low sensitivity to change.

Viewpoint H6 – Henty Highway#6

Viewpoint H6 is approximately 3.7 km from the nearest wind turbine (T145) at the intersection of Old Minyip Road (heading west) and Davey’s Road (heading east). The Old Minyip Road is an un-made road visible in the centre of Figure 40.

Figure 40  Viewpoint H6

At this distance the wind turbines will be a visible element in the landscape, discernible in most lighting conditions. Vegetation will screen parts of the wind farm from views on the north of Old Minyip Road. The overall visual impact is assessed as low.
Viewpoint H7 – Henty Highway#7

Viewpoint H7 is approximately 4.2 km east south east of the nearest wind turbine (T120) at the intersection of Dimboola Minyip Road. The proposed wind turbines will also sweep to the south where the nearest wind turbine is T145, approximately 4.8 km to the west south west. The Dimboola Minyip Road is visible in the centre of Figure 41. This road bisects the wind farm in an east west direction.

Figure 41 Viewpoint H7

At this distance the wind turbines will be a visible element in the landscape, discernible in most lighting conditions although screened by existing vegetation. This vegetation will prevent the entire wind park being visible as a panorama from this location.

The overall visual impact is assessed as low.

Viewpoint H8 – Henty Highway#8

Viewpoint H8 is located at the northern edge of the wind farm at the intersection of Barrat Road. Viewpoint H8 is approximately 2.7 km north east of the nearest wind turbine (T249). Barrat Road is visible to the right of Figure 42.

Figure 42 Viewpoint H8

At this distance the wind turbines will be a visible element in the landscape, discernible in most lighting conditions although views will be filtered by existing vegetation. This is illustrated in the photomontage below.

Figure 43 Photomontage

Whilst a dominant element in the view, this is an expansive, open landscape, which for viewers travelling along the Henty Highway, the wind farm will create a point of interest and this is illustrated in the photomontage in Figure 43. For some viewers this may be positive. However this landscape has a low sensitivity to change and for these reasons the overall visual impact is assessed as low.
Viewpoint H9 – Henty Highway#9

Viewpoint H9 is located at the northern edge of the wind farm outside the Warracknabeal Airport. At this section of the Henty Highway the Yarriambiack Creek is on the west of the Highway and vegetation along the creek screens views to the wind farm. Viewpoint H9 is approximately 9.3 km north of the nearest wind turbine (T257).

At this distance the wind turbines largely screened by existing vegetation along the Yarriambiack Creek in the middle distance. The tips of the wind turbines will just be visible. This is illustrated in the photomontage in Figure 45.

The wind turbines are largely screened by vegetation as they are behind intervening vegetation and some 9.5 km from this viewpoint. For these reasons the overall visual impact is assessed as negligible.

The visual impact of the wind farm on viewers on the Henty Highway

The Henty Highway is a major connector road running along the eastern edge of the wind farm. Currently the main attraction for viewers using this road is provided by the vegetation within the Yarriambiack Creek corridor. Apart from this vegetation, the landscape is largely cleared, although occasional vegetation has been retained in the road reserve and some planting occasionally breaks up the broad acre farmland.

The Wimmera is an expansive, open landscape of vast proportions, in which the wind farm can sit comfortably and there still remains many thousands of square kilometres of this landscape, unaffected by the presence of wind turbines. This can be seen in the range of viewpoints along the Henty Highway.
For these reasons the overall visual impact upon users of the Henty Highway is assessed as low.

Borung Highway viewpoints

The Borung Highway is a major road connecting Dimboola in the south west to Warracknabeal in the north east.

Viewpoint H10 – Borung Highway#1

Viewpoint H10 is on the outskirts of Dimboola at the intersection of the Borung Highway and the Western Highway. Viewpoint H10 is approximately 18.1 km west of the nearest wind turbine (T220).

At this distance the wind turbines would be a small element in the landscape, discernible in good lighting conditions although at this location they would be screened by existing vegetation and the low rise on the Borung Highway leaving Dimboola.

The overall visual impact is assessed as negligible – nil.

Viewpoint H11 – Borung Highway#2

Viewpoint H11 is 9 km north east of Dimboola on the Borung Highway at the intersection of Katyil Wail Road. Viewpoint H11 is approximately 13.1 km west of the nearest wind turbine (T102).

At this distance the wind turbines would be a small element in the landscape, although at this location they may be partially or fully screened by existing vegetation and the low rise.

The overall visual impact is assessed as negligible to nil.
Viewpoint H12 – Borung Highway#3

Viewpoint H12 is on the Borung Highway at the intersection of Blue Ribbon Road. Viewpoint H12 is approximately 10.5 km north west of the nearest wind turbine (T85).

Figure 48  Viewpoint H12

At this distance the wind turbines would be a small element in the landscape, although at this location they would be partially screened by existing vegetation.

The overall visual impact is assessed as negligible.

Viewpoint H13 – Borung Highway#4

Viewpoint H13 is on the Borung Highway under an existing 220kVA transmission line. Viewpoint H13 is approximately 12.5 km north west of the nearest wind turbine (T258).

Figure 49  Viewpoint H13

At this distance the wind turbines would be a small element in the landscape, although at this location they would be partially screened by existing vegetation.

The overall visual impact is assessed as negligible.

The visual impact of the wind farm on viewers on the Borung Highway

The Borung Highway is a major connector road running along the western edge of the wind farm between Dimboola and Warracknabeal. The existing landscape along the Highway is largely cleared, although occasional vegetation has been retained in the road reserve or some trees are within paddock and farming areas. The Borung Highway, similar to the Henty Highway, runs through the open, expansive farmland common in the Wimmera.

In this landscape, there will be locations where the wind farm will be visible, sometimes across a broad panorama. However, the overall visual impact from the Borung Highway is assessed as low. The reasons for this conclusion include the low sensitivity of the existing landscape including the presence of high voltage transmission lines crossing this Wimmera landscape. The wind farm will not appear as a dominant element. It is the broad sweep of the existing plain which remains dominant.
Western Highway viewpoints

The Western Highway is a major road connecting Horsham to Dimboola and continuing westwards into South Australia.

Viewpoint H14 – Western Highway#1

Viewpoint H14 is on the Western Highway at Wail, where the Western Highway rises above the rail line. This affords a view back towards the wind farm.

Viewpoint H14 is approximately 14.1 km north west of the nearest wind turbine (T220).

Figure 50  
Viewpoint H14

At this distance the wind turbines would be a small element in the landscape, although at this location they would be partially screened by existing vegetation.

The overall visual impact is assessed as negligible.

The visual impact of the wind farm on viewers on the Western Highway

The Western Highway is a major connector road running along the southern edge of the wind farm between Horsham and Dimboola. The existing landscape along the Highway is largely cleared, although occasional vegetation has been retained in the road reserve or some trees are within paddock and farming areas.

In this landscape, when viewed from the Western Highway, there will be locations where the wind farm will be visible, sometimes across a broad panorama. However, the overall visual impact from the Western Highway is assessed as low. The reasons include the low sensitivity of the existing landscape and the extent of this Wimmera landscape, in which the wind farm will not appear as a dominant element. It is the broad sweep of the existing plain which remains dominant.
Wimmera Highway viewpoints

The Wimmera Highway heads east from the Henty Highway near Horsham to Murtoa.

Viewpoint H15 – Wimmera Highway#1

Viewpoint H15 is on the Wimmera Highway 13 km west of Murtoa where the overhead transmission line crosses the Wimmera Highway. Viewpoint H15 is approximately 18.9 km south of the nearest wind turbine (T145).

Figure 51  Viewpoint H15

At this distance the wind turbines would be a small element in the landscape and this impact would further reduce as a viewer travelled eastward on the Wimmera Highway.

The overall visual impact is assessed as negligible.
10. Local roads

Apart from the main roads and Highways, local roads also service the local communities. A range of viewpoints have been considered from these smaller un-made and made roads.

Viewpoint L1 – Donald Murtoa Rd & Bayena Pimpinio Rd
Viewpoint L1 is approximately 16.1 km from the nearest wind turbine (T145) looking across the Bayena Pimpinio Road towards the wind farm.

Figure 52  Viewpoint L1

The photomontage makes it clear that distance and even a low band of existing vegetation is sufficient to screen the majority of the wind turbines. Looking carefully at the wire frame, wind turbines are just visible over the intervening trees.

Figure 53  Photomontage

Figure 54  Wireframe enlargement

This enlargement of the wireframe with numbered turbines shows that the majority of the wind turbines are screened by the intervening vegetation.
The visual impact from this and similar distances on the local road network is assessed as **negligible**.

**Viewpoint L2 – Donald Murtoa Rd & Horsham Minyip Rd**

Viewpoint L2 is approximately 13.3 km from the nearest wind turbine (T145). Viewpoint L2 is at the intersection of Donald Murtoa Road and Horsham Minyip Road.

Vegetation in the background may, similarly to viewpoint L1, screen the majority of the wind turbines.

The visual impact from this location is assessed as **negligible**.

**Viewpoint L3 – Blue Ribbon Rd & Dimboola Minyip Five Chain Rd**

Viewpoint L3 is approximately 2.8 km from the nearest wind turbine (T102). Viewpoint L3 is at the intersection of Blue Ribbon Road and Dimboola Minyip Five Chain Road.

Vegetation in the background is that along the Yarriambiack Creek. The wind turbines would be a dominant element in this view, however it is at the intersection of roads with low vehicle numbers and across the open Wimmera Landscape.

Consequently the visual impact from this location is assessed as **low**.
Viewpoint L4 – Barrat Quarry Rd

Viewpoint L4 is approximately 2.6 km from the nearest wind turbine (T120). Viewpoint L4 is Barrat Quarry Road where a quarry is proposed as part of this wind farm application.

Figure 57  Viewpoint L4

A high voltage transmission line is just visible to the right of Figure 57. Vegetation in the background is that along the West Karkaroo Channel and surrounding the existing disused council quarry.

The overall visual impact of the wind turbines is assessed as low.

Proposed quarry, utility area & terminal station

Figure 57 is also orientated towards the site of the proposed terminal station and quarry. The existing transmission towers are visible in the distance; however these would be taller than the substation. The location of the proposed quarry, terminal station and utility areas is shown on Figure 58 in relationship to Viewpoint L4.

Figure 58  Location plan of the disused quarry, proposed quarry, terminal station & utility areas

The dis-used Council Quarry is in the middle of the trees visible in Figure 58. The disused Council quarry and existing vegetation is shown in Figure 59.
Earthworks, if visible at all, would appear similar to the agricultural practices common to this rural farmland. The distance and the low contrast to existing farm practices would mean that the overall visual impact of the quarry and the terminal station is assessed as negligible.

Viewpoint L5 – Dimboola Minyip Rd
Viewpoint L5 is approximately 2.1 km from the nearest wind turbine (T120). Viewpoint L5 is on the Dimboola Minyip Road on a curve in the road as it passes between the southern and northern sections of the wind farm.

Although the Dimboola Minyip Road passes through the wind farm at this location, it is a road with only local traffic and in a landscape which can accommodate change.

The overall visual impact would be assessed as low.
The visual impact of the wind farm on viewers on local roads

Local roads run through and around the proposed wind farm and will afford clear views to the proposed wind farm. However, these local roads have few users and cross a broad landscape. Therefore, the overall visual impact from local roads is assessed as low. The reasons include the low user numbers, the low sensitivity of the existing landscape and the extent of this Wimmera landscape, in which the wind farm will not appear as a dominant element. It is the broad sweep of the existing plain which remains dominant.
Reserves, conservation & recreation areas

There are a number of recreation reserves within the viewshed. The Grampians and Mt Arapiles are well outside the 25 km viewshed boundary. Views from these landscapes will look out over the broad plains and the wind farm may only be discernible in excellent lighting conditions.

A section of the Little Desert National Park to the west of Wail, is within the 12.5 – 25 km band.

**Viewpoint R1 – Wallup community hall**

Viewpoint R1 is at the Wallup Community Hall on Wallup Hall Road. Viewpoint R1 is approximately 6.5 km south of the nearest wind turbine (T85).

The Wallup Community Hall is surrounded by established vegetation which would screen views from this location.

The overall visual impact would be assessed as **low**.

**Viewpoint R2 – Barrat FFR**

Viewpoint R2 is on Barrat Road at the intersection with Blue Ribbon Road looking towards the Barrat Fauna & Flora Reserve. Viewpoint R2 is approximately 5.8 km north west of the nearest wind turbine (T85) which would be to the right of Barrat Road and the Barrat FFR in Figure 63.
The Barrat FFR would screen views to the northern section of the windfarm, which is behind the Barrat FFR. The nearest turbine in this direction is T258 which is 10.5 km from this location.

There are no publically accessible viewpoints within the Barrat FFR that would have views to the wind farm.

The overall visual impact would be assessed as **low**.

**Viewpoint R3 – Sailors Home Hall**

Viewpoint R3 is on the intersection with Blue Ribbon Road and Old Minyip Road at the location of the Sailors Home Hall (referred to as Sailors Home Community Hall on the title).

![Sailors Home Hall](image)

*Figure 64 Sailors Home Hall*

Viewpoint R3 is approximately 2.8 km south west of the nearest wind turbine (T220) looking north west from Sailors Home Hall towards the wind farm. The Barrat FFR is just visible in the distance.

![Viewpoint R3](image)

*Figure 65 Viewpoint R3*

The southern wind turbines would be located between this viewpoint and the Barrat FFR. However, this is not a view that the Sailors Home Hall has been designed to view and given the internal focus of this building and the low viewer numbers as well as the landscape setting, the overall visual impact would be assessed as **low**.
Viewpoint R4 – Sailors Home Public Cemetery

Viewpoint R4 is on Old Minyip Road immediately outside the Sailors Home Public Cemetery. Viewpoint R4 is 800 m from the nearest wind turbine (T198).

Figure 66  Sailors Home Public Cemetery

The wind turbines would be located behind this viewpoint and would be a dominant element in the view. This cemetery may be of historical interest and the juxtaposition of the cemetery and the wind turbines some 800 m from the cemetery behind will create a different landscape setting for visitors to the cemetery.

This cemetery, which receives few visitors, is on a road with low numbers of users. Therefore, the visual change will be very noticeable, however given the low viewer numbers, the overall visual impact would be assessed as low.

Viewpoint R5 – Kalkee Recreation Reserve

Viewpoint R5 is at the Kalkee Recreation Reserve, and is 10.1 km from the nearest wind turbine (T220).

Figure 67  Kalkee Recreation Reserve

The wind turbines would be located behind the goal posts at the end of the oval in Figure 67. Light poles and other vertical infrastructure is present in the community reserve and at a distance of more than 10 km the wind turbines would also be partially screened by intervening vegetation.

The overall visual impact would be assessed as low.
Viewpoint R6 – Pimpinio Recreation Reserve

Viewpoint R6 is at the Pimpinio Recreation Reserve. Viewpoint R6 is 18.1 km from the nearest wind turbine (T220).

The wind turbines would be located behind the goal posts at the end of the oval in Figure 68. Light poles and other vertical infrastructure is present in the recreation reserve and at a distance of more than 15 km the wind turbines would be a minor element in this landscape.

The overall visual impact would be assessed as negligible.

The visual impact of the wind farm on viewers from reserves

Recreation reserves are located within the viewshed. Apart from the Sailors Home Cemetery and Hall, these reserves are at some distance from the proposed wind farm. The overall visual impact would be assessed as low from reserves where the presence of the wind farm would be one more element in the backdrop.

They would not be a dominant element in this landscape except for their presence adjacent to the Sailors Home Cemetery and Hall. However, the juxtaposition of the wind farm in views from these locations would create a low level of visual impact. That is “visual impacts that are noticeable but that will not cause any significant adverse impacts”. The wind farm is within a much changed landscape and one in which these recreation facilities have few viewer numbers.

The combination of the surrounding landscape character and the viewer numbers mean that the visual impact from these locations is assessed as low, even when the wind turbines are close to these viewpoints.
12. Residential impact

Residential properties in the area are generally set within a landscaped setting. Wind breaks, hedgerows and gardens surrounding the house are common. These will, in most instances, provide some screening or filtering of views to the proposed wind turbines.

There are a number of houses within the viewshed. The houses within the zones of greatest potential visual impact have been mapped by RES. This mapping is replicated in Figure 69.

Figure 69  Houses within 5 km

Figure 69 Shows that there are 42 houses within 5 km of a wind turbine. Of these 42 dwellings, 2 are derelict, former houses but in such a state of dilapidation that they would be unfit for habitation (H79 & H296)). One of these two houses is owned by a land owner associated with the project.

There are also three abandoned dwellings that are not currently inhabited and the owner has no plans to allow occupancy in foreseeable future (H35, H272 & H268) and there are a further twelve dwellings owned by associated land owners.

Any dwelling (inhabited or not inhabited) within 1km of a wind turbine (H#35 and H#37) RES has a legally binding agreement that these properties will cease to be dwellings prior to commencement of operation. The two derelict dwellings H#79 and H#296 have agreements in place that these structures will be demolished prior to commencement of operation to prevent any attempt at rehabilitation.

Therefore, there are 27 non-associated inhabited dwellings within 5 km of a wind turbine.
The Community Consultation Strategy has included newsletters and workshops/community engagement meetings. Every householder and adjoining landowner within 3 km of a wind turbine was visited by a member of the RES project team for a face to face meeting. The locations and dimensions of the project were discussed at these meetings.

An existing residential property (House #161) is located between the northern and southern sections of the proposed wind farm and whilst this owner did not express concern regarding potential visual impact it was decided to attempt to assess the potential visual impact because of this property’s unique location in relation to the project. The owner never responded to requests to conduct a full visual assessment from their property. Access was not granted to the property and so the assessment had to be undertaken from public land adjacent to this property. The following is an assessment of the potential visual impact on this particular property.

**House #161 - 2224 Dimboola Minyip Road**

House #161 is located at 2224 Dimboola Minyip Road (VP24). This house has wind turbines to the north, to the west and also to the south.

**Figure 70** The front yard

The front yard faces north and the driveway is orientated towards the northern section of the wind farm.

**Figure 71** The rear yard

The rear yard (refer Figure 71) is orientated towards the southern section of the Wind Farm. As access was not granted, there was no opportunity to take photographs adjacent to the
house looking to the south or to the west, however it appears that existing vegetation and out-buildings would screen or filter views to the eastern and southern section of the wind farm from the rear yard.

The front driveway is orientated towards the northern section of the wind farm. The existing view is shown in Figure 72. The road in the middle distance is the Dimboola Minyip Road and this is viewed down a narrow driveway which cuts through a hedgerow of tall, well-established pine trees that are growing along the edge of a water channel.

Figure 72  The view from the front gate

A photomontage has been prepared to show the view from this location.

Figure 73  Photomontage

Without the pine trees the owner would have a panoramic view of the wind far from the front gate. However existing vegetation screens the majority of the wind turbines in views to the north. However, the wind turbines would be part of an owner’s mental understanding of their environment and although only viewed down the driveway, the impact would be greater.

However, there are also views from the house and immediate environs to the west and to the south. Existing landscape may limit these views, however from selected locations there would be views to the proposed wind farm and the visual impact of these would be assessed as medium without any additional landscaping. This property does have scattered trees and landscaping around the house and additional landscaping could screen views to the south and west while still leaving the uninterrupted views to the east. If the he existing landscaping was enhanced and / or extended and the visual impact would be reduced.

The overall visual impact on this property from views at the front gate is assessed as Medium. From viewpoints at the house or from locations further south of the front gate the impact would be less.

Visual impact of the terminal station and compounds

The terminal station and construction compounds are proposed to be located to the north of the Dimboola Minyip Road and to the north of House #161. They will be approximately
750 m from the front fence to their southern boundaries. At this distance they will be an inconspicuous element in the landscape and their visual impact would be assessed as low. If required additional landscaping could be established to the south of the terminal station. The establishment of a shelter belt to the south of the substation would remove any visual impact when viewed from House #161 and other locations along the Dimboola Minyip Road. Landscaping is not proposed to the south of the construction compounds, as these are temporary and would be removed before landscaping was visible. With landscaping the residual visual impact of the terminal station would be nil.

**Visual impact of the proposed quarry**

There would be no visual impact created by the quarry on House #161. At this distance the minor earthworks would be indiscernible from agricultural practices. Ploughing the fields in the foreground would be of far greater visual impact than any minor mounding that would be visible above the Wimmera Plain, at a distance of 700m or more.
13. **Landscape mitigation**

This viewshed set out in Chapter 2, also has implications for the requirement to offer landscape mitigation. In past planning approvals the major visual impact for residential properties occurs where houses are located within the zones where wind turbines will be “Highly visible and will usually dominate the landscape” and “Will be visually dominant in the landscape from most viewing locations”.

It is within these zone that landscape mitigation for residential properties is typically offered by the proponent.

**The extent of landscape mitigation**

Existing permits for wind farms with wind turbines up to 110 m generally required proponents to offer landscape mitigation to the most affected landowners, which were those houses within 2.5 km of a wind turbine. When wind turbines reached 130 m, landscape mitigation was offered to land owners with houses within 3 km of the nearest wind turbine, where a wind turbine was visible. Recently when wind turbines have been around 160 m in height, landscape mitigation has been offered to residences able to view wind turbines that are within 4 km of the house.

In the case of the Murra Warra Wind Farm, utilising 220 m high wind turbines, these zones extend out to 5 km from the nearest wind turbine. Therefore, it is recommended that residential properties, which can view a wind turbine within 5 km, are offered landscape mitigation.

An example of a landscape mitigation that was offered for a landowner near a previous wind farm is shown in Figure 74. This is an extract of a drawing prepared by ERM and referenced in the Lal Lal Wind Farm LVIA, Figure 9.35, ERM 3 March 2008.
Figure 75 shows the sightlines calculated for a wind turbine at 130 m in height and a wind turbine 220 m in height to the edge of the zone where wind turbines are visually dominant, which, in the case of 220 m high wind turbines, occurs at approximately 2.5 km from a viewer.

Figure 75 demonstrates the angle of view to a wind turbine of 130 m compared to the angle of view for a turbine that is 220 m high. The viewing angle increases from 2.97° to 5.02°, an increase of approximately 2° in the vertical field of view.

This increase in viewing angle does not impact significantly on the effective height of vegetation that is required to screen or filter views to the proposed wind turbines.

Figure 76 shows planting some 20 m from a viewing location or house. A distance of 20 m was considered adequate for fire setback and to ensure that the house perimeter was uncluttered.

The height of the planting needs to reach 2.8 m in height to screen a 130 m high wind turbine for a viewer with an eye level approximately 1.7 m above the ground line. This vegetative height needs to be 3.4 m to screen a 220 m high wind turbine. This is not a large difference in height and would be less that the expected variability of plants within the shelter belt or screen planting area.

Planting would be more effective if planted closer to the house. If owners wished planting closer to the house, then this would be more effective and conversely if planting was located further away, then it would take longer to reach the greater height required to screen the view to wind turbines. The difference in height of the vegetation to achieve screening is not dissimilar, whether the vegetation is screening a 130 m high wind turbine or a 220 m high wind turbine.

Findings based on this analysis

The offer of landscape mitigation to residences up to 5 km from the nearest wind turbine is an effective solution to screening wind turbines, even when the wind turbines are 220 m high, if such is the desire of the owner of the affected property.
14. Aviation lighting

The Warracknabeal airport is located approximately 16.7 km (9 nautical miles) to the north.

Should it be necessary to provide aviation lighting then CASA’s current requirements for Aviation lighting are:

*CASA recommends that the wind farm is lit with steady red low intensity lighting at night as per Section 9.4 of the CASA Manual of Standards Part 139. Characteristics of low intensity lights are stated in subsection 9.4.7.*

This removes the earlier requirement for flashing lights, however from observations of past completed projects, there is also a strobing effect as the blades pass through the light. Although there is a slight benefit in having lights permanently on rather than flashing, this would not significantly change the level of visual impact. The lights would still be visible and some strobing will be apparent, especially from closer distances.

RES has advised that an aviation impact report has been produced (*Aviation Impact Statement, Qualitative Risk Assessment and Obstacle Lighting Review Murra Warra Wind Farm J0456 v1.0 dated 19th November 2015 produced for RES Australia by Ambidji Group Pty Ltd.*) and part of this report included an assessment of the need for aviation lighting. The report recommended that limited aviation lighting should be provided to the turbines in the north east of site, specifically turbines T250, T254, T255, T257, T256, and T258.

The current night lighting recommended for the Murra Warra Wind Farm is Aviation Lighting to be installed on five turbines in the north east corner of the wind farm site linked to the pilot activated lighting (PAL) system at the Warracknabeal Airport.

The aerodrome operator, Yarrambiack Shire Council, has advised that Warracknabeal Aerodrome PAL system is used 3 nights a week for aviation training. During training at night the PAL system could be activated over a 3-hour period.

Therefore, currently the aviation lighting proposed for the Murra Warra Wind Farm would be activated for approximately 9 hours per week.

The area around the Murra Warra Wind Farm does contain night lights from road users, silos and other agricultural lighting. The proposed aviation lighting will be a minor component in the landscape, similar to other lights in the area and as discussed previously will only be operational for a limited time.

Therefore, the overall visual impact of the aviation lighting on the landscape surrounding the Murra Warra Wind Farm is assessed as **negligible.**
15. **Cumulative impacts**

Cumulative visual impact can occur either by:

- Sequential views to multiple wind farms; and
- Simultaneous views to wind turbines from publicly accessible viewpoints or from private viewing locations; or

Either sequential or simultaneous views to multiple wind farms may change a community’s or visitor’s perception of a region.

There is one wind farm approved within 50 km of the Murra Warra Wind Farm, which is the Kiata Wind Farm.

The Kiata Wind Farm is a 13 wind turbine proposal approximately 5 km south of Kiata in western Victoria, to the west of Dimboola and south of Nhill and the Western Highway. It is approximately 45 km from this wind farm to the western edge of the Murra Warra Wind Farm.

The location of the Kiata Wind Farm is shown in Figure 77.

*Figure 77*  
Location plan of the Kiata Wind Farm
Sequential visual impact

The development of wind farms may lead to a change in people’s perception of a region and will be evident as they travel through the road network. Alteration to the perception of a landscape will occur when a visitor is able to view two or more wind farms.

Highways

The Western Highway is a major east west route through western Victoria. The Western Highway is located at the periphery of the viewshed to the south of the Murra Warra Wind Farm. It may be just visible from locations south of Dimboola and around Wail.

A visitor would then need to travel for some distance westwards before the Kiata Wind Farm became visible to the south of the Highway. At this distance the cumulative visual impact bought about by sequential views along the Western Highway is assessed as Negligible – Low.

It would not be possible to see the Kiata Wind Farm from the Henty Highway and the Wimmera Highway.

Some long distance views to the Kiata Wind Farm may be possible from the southern sections of this road outside Dimboola.

Local & regional roads

Sequential views to the Murra Warra Wind Farm and the Kiata Wind Farm may occur from a few locations within the local road network on the edge of the Murra Warra Wind Farm viewshed.

The cumulative visual impact brought about by sequential views to wind farms from these local roads is assessed as Negligible.

Simultaneous visual impact

Simultaneous visual impact occurs where the viewshed of two or more wind farms would overlap. This overlap may include a small section of the Western Highway, a small northern area on the Borung Highway and some short lengths of a limited number of local roads.

Therefore, the simultaneous visual impact would be assessed as Negligible.
16. Conclusion

The preceding analysis illustrates that the Murra Warra Wind Farm is situated in a landscape that has a low sensitivity to change. It is a broad-acre rural landscape that has been cleared to create huge areas for farming. The Landscape Assessment Study refers to this landscape character type as ‘Big Plains’ and this is illustrative of its character. The flat topography and the extensive clearing has created a large landscape, a landscape which can accommodate the 220 m high wind turbines that are proposed.

The Planning Schemes also reflect the very limited significance given to landscapes within the viewshed. Sensitive landscapes such as the Little Desert National Park, lie just outside the viewshed, whilst the Grampians and Arapiles are approximately 50 km distant. There would be no visual impact on these landscapes.

Areas of greater sensitivity and particularly urban areas, are all situated at some distance from the nearest wind turbines. This separation between urban areas and wind turbines is never less than 13 km, with most of the townships within the viewshed lying in the band between 12.5 km and 25 km from the nearest wind turbine.

At those distances, vegetation in the middle distance can easily screen the wind turbines (refer Figure 54). This demonstrates how effective intervening vegetation can be, when the wind turbines are some distance from a viewer. And in this landscape urban areas are typically well vegetated. Foreground vegetation and buildings will screen the wind farm from view. Therefore, the overall visual impact from urban areas has been assessed as nil – negligible.

The greatest overall visual impact from publically accessible locations, whether highways, local roads or from recreation reserves, has been assessed as low. Low was defined in the Visual Impact Methodology (Chapter 3) as a “visual impacts that are noticeable but that will not cause any significant adverse impacts.” This describes the impact of wind turbines in this Wimmera landscape.

Visual impacts, if they occur on residential properties, are also accepted by the community where there has been support for the creation of the Murra Warra Wind Farm. The owner of one residential property (House #161) has not expressed concerns regarding the visual impact of wind turbines, however given this property’s unique location an assessment was undertaken.

Although the view to the north is relatively constrained by existing vegetation, nonetheless the impact is assessed as medium, which recognises the impact on the occupier’s mental map of the area surrounding their home and the potential cumulative impact of visible wind turbines to the south and west from this property.

However, the proposal is also subject to landscape mitigation measures, which will be offered to affected residential properties within 5 km. This offer can assist in further screening wind turbines if such is the desire of the owner.

The cumulative impact bought about by the presence of other wind farms is also negligible. The nearest wind farm is at Kiata approximately 45 km to the west.
Annexure A

Photomontages
(Included in Volume 3 of the Planning Report)