

WILLATOOK WIND FARM



LANDSCAPE AND VISUAL IMPACT ASSESSMENT

Prepared for:

WILLATOOK WIND FARM Pty Ltd

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Glossary

This Landscape and Visual Impact Assessment has adopted and adapted the following definitions from Guidelines for Landscape and Visual Impact Assessment (2013).

Table 1 Glossary

Term	Definition
Cumulative effects	The summation of effects that result from changes caused by a development in conjunction with other past, present or reasonably foreseeable actions.
Magnitude	A combination of the scale, extent and duration of an effect.
Mitigation	Measures, including any processes, activity or design to avoid, reduce, remedy or compensate for adverse landscape and visual effects of a development project.
Photomontage (Visualisation)	Computer simulation or other technique to illustrate the appearance of a development.
Sensitivity	Susceptibility of a receiver to a specific type of change.
Visibility	A relative determination at which the proposal can be clearly discerned and described.
Visual amenity	The value of a particular area or view in terms of what is seen.
Visual effect	The changes in the character of the available views resulting from the development or the changes in visual amenity of the visual receivers.
Visual Impact Assessment	A process of applied professional and methodical techniques to assess and determine the extent and nature of change to the composition of existing views that may result from a development.
View location	A place or situation from which a proposed development may be visible.
Visual receiver	Individual and/or defined groups of people who have the potential to be affected by a proposal.
Visual significance	A measure of the importance or gravity of the visual effect culminating from the degree of magnitude and receiver sensitivity.

Executive Summary

Green Bean Design (GBD) was commissioned by Willatook Wind Farm Pty Ltd (the Proponent) to undertake a Landscape and Visual Impact Assessment (LVIA) for the proposed Willatook Wind Farm and associated development infrastructure.

This LVIA involved a desk top study and field inspections to collect and analyse information to describe and define landscape characteristics of the area in which the proposed Willatook Wind Farm would be constructed. This LVIA has determined that the landscape within and immediately surrounding the proposed Willatook Wind Farm project area has an overall medium sensitivity to accommodate change and represents a landscape that is reasonably typical of landscape character areas that are commonly found in the surrounding local area of the Moyne Shire. Some areas within the 20km viewshed have been determined to have higher levels of sensitivity and include the coastal landscape typically defined by the Moyne Planning Scheme Significant Landscape Overlays (around 15km from the proposed Willatook Wind Farm), as well as areas that exhibit characteristics and features of the landscapes past volcanic activity.

The overall visibility of the proposed Willatook Wind Farm turbines was determined within a 20km radius of the wind farm and illustrated by a series of panoramic photographs and 3 Zone of Visual Influence (ZVI) diagrams. The ZVI diagrams demonstrate the influence of topography on visibility and identify areas from which the wind farm would, and would not be visible.

This LVIA has determined that the landscape within and immediately surrounding the wind farm site, as well as portions of the landscape in the broader viewshed are generally robust and defined by visually strong forms and patterns. In general, the landscape is considered to exhibit attributes which tend to result in a low to moderate sensitivity to change. Whilst the wider regional landscape displays characteristics which are highly valued and have a high degree of visual amenity, the localised wind farm landscape is represented by a largely modified landscape (predominantly agricultural in nature including dairy production and cropping) which is commonly found within the regional landscape.

It is unlikely that works involved with the construction of the wind farm, including removal of existing vegetation, would have any significant impact on existing landscape values within, or beyond the wind farm site. The removal of vegetation would be relatively minor and largely restricted to the construction of access tracks across existing farmland. There would be no significant change to the extent or context of existing views.

A cumulative visual assessment identified a number of operational and approved wind farms within the locality of the proposed Willatook Wind Farm. This LVIA determined that there would be some intervisibility between the proposed Willatook Wind Farm, and other wind farm turbines within the proposed Willatook Wind Farm 20 km viewshed.

Whilst there are opportunities for 'direct' and 'indirect' views from residential dwellings, and 'sequential' views from some surrounding road corridors between the proposed Willatook Wind Farm and other wind farms, there

is unlikely to be a significant increase in visual impact arising from the development of the proposed Willatook Wind Farm. This is largely due to the screening influence of windbreak planting surrounding a number of the local residential dwellings as well as tree planting alongside surrounding roads. There is unlikely to be a significant cumulative impact from key viewing locations due to the distance between the view location and the proposed Willatook Wind Farm turbines.

This LVIA has determined that the visual impact of the Willatook Wind Farm is likely to be moderate low from the majority of publicly accessible locations surrounding the wind farm, and that the proposed Willatook Wind Farm:

- would have a low visual impact on surrounding townships and localities
- would result in low (albeit short term and transitory impacts) effects on views from highways
- would result in generally moderate impacts on views from the majority of local roads where fully or partially screened by roadside and/or field boundary tree planting and
- would not have a significant visual effect from public reserves and recreational areas, including any available views from state significant landscape areas and features.

The Willatook Wind Farm would have potential to result in a range of visual impacts on individual residential dwellings surrounding the wind farm site. The impacts would be dependent on a number of physical and environmental characteristics (e.g. landform and vegetation) surrounding residential dwellings which would determine overall visibility and prominence of wind turbines within specific views.

This LVIA has determined that the Willatook Wind Farm would be unlikely to result in any significant cumulative visual impacts arising from visibility between other proposed and operational wind farms.

Although some mitigation measures are considered appropriate to minimise the visual effects for a number of ancillary structures associated with the proposed Willatook Wind Farm, it is acknowledged that the degree to which the wind turbines may be visually mitigated is limited by their scale and position within the landscape relative to surrounding view locations.

Introduction

Section 1

1.1 Introduction

This LVIA has been prepared by GBD on behalf of the Proponent to accompany a Planning Permit Application for the proposed Willatook Wind Farm project. This LVIA informs the assessment of the Willatook Wind Farm project site for suitability for a wind farm development within the landscape surrounding the proposed wind farm, as well as considering the potential extent and degree of visual effects on people living in, and travelling through, the surrounding landscape.

This LVIA has been prepared with regard to the following documents and guidelines to identify and consider potential landscape and visual impacts:

- Ministerial guidelines for assessment of environmental effects under the Environmental Effects Act 1978
- Policy and planning guidelines for development of wind energy facilities in Victoria, November 2017
- Moyne Shire Council Planning Scheme
- Coastal Spaces Landscape Assessment Study, September 2006 and
- South West Landscape Assessment Study, June 2013.

In addition, this LVIA has also considered landscape and visual impact assessment guidance set out in:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition, Landscape Institute and Institute of Environmental Management & Assessment, 2013;
- Siting and Designing Wind Farms in the Landscape, Version 2, Scottish Natural Heritage, May 2014; and
- Visual Representation of Wind Farms, Version 2.1, Scottish Natural Heritage, December 2014.

Methodology and report structure

Section 2

2.1 Methodology

The methodology employed for this LVIA has been based on existing guidelines identified in the LVIA introduction. The methodology is also based on the assessment of multiple wind farm projects undertaken by GBD within Victoria, New South Wales, Queensland and Tasmania. The key tasks incorporated into the LVIA methodology are identified in **Table 2**.

2.2 Report structure

This LVIA report been structured into 14 parts as follows:

Table 2 – Report structure

Report section	Description
1 – Introduction	This section provides an introductory section that describes the intent and purpose of the LVIA
2 – Report structure and methodology	This section sets out the structure and methodology employed in the LVIA preparation
3 – Project location and description	This section describes the regional and local position of the wind farm development relative to existing landscape features and places and describes the key visible components of the Willatook Wind Farm.
4 – Legislative and planning frameworks	This section sets out the legislative and planning frameworks describe policies and provisions that apply to proposed wind farm areas within the viewshed.
5 – Panorama photographs	This section illustrates the LVIA with panorama photographs taken during the site inspection. The panorama photographs are provided to illustrate the general appearance of typical landscape characteristics that occur within and surrounding the wind farm site.
6 – Landscape Character Assessment	This section describes the physical characteristics of the landscape surrounding the Willatook Wind Farm

Table 2 – Report structure

Report section	Description
	site and determines the overall sensitivity of the landscape to the wind farm development.
7 – Zone of visual influence and visibility	This section identifies a theoretical area of the landscape from which wind turbines may be visible within the viewshed, and describes a range of factors which may influence the wind farm visibility within the viewshed.
8 – Key views	This section describes and determines the potential visual effect of the wind farm on key public viewpoints within the Willatook Wind Farm viewshed.
9 – Visual effects	This section describes and determines the potential visual effect of the wind farm on key public viewpoints within the Willatook Wind Farm viewshed.
10 – Cumulative assessment	This section describes the potential impact of alternate existing and/or known wind farm developments within proximity to the Willatook Wind Farm.
11 – Photomontages	This section presents photomontages to illustrate potential views toward the proposed wind farm from surrounding public view locations
12 – Pre-construction and construction	This section describes the activities associated with pre-construction and during construction which may create visual impacts.
13 – Mitigation measures	This section outlines potential mitigation measures to minimise visual impacts arising from the proposed wind farm development.

Table 2 – Report structure

Report section	Description
14– Conclusion	Conclusions are drawn on the overall visual impact of the proposed Willatook Wind Farm.

Project location and description

Section 3

3.1 Project location

The proposed Willatook Wind Farm is located in the south west of Victoria within the Moyne Shire Council local government area and is located on rural agricultural land approximately 45km south of Hamilton and 20km north of Port Fairy. The location of the proposed Willatook Wind Farm is illustrated in **Figure 1**.

Covering an area of approximately 5,478 km², the Shire of Moyne has a largely agricultural based economy including dairy, beef and sheep and vegetable production. Quarrying, timber production (blue gum forests) and tourism also provide income sources as do existing/operational and approved (but yet to be constructed) wind energy facilities.

A number of small townships and localities are situated within the landscape surrounding the proposed Willatook Wind Farm project area (within a 10km radius of the wind farm) and include:

- Macarthur (Population 522* including area surrounding the township)
- Orford (Population 105*)
- Bessiebelle and
- Hawkesdale (Population 322*, including area surrounding the township).

*Populations quoted from the Australian Bureau of Statistics 2016 Census Data.

A number of local roads extend alongside and beyond the proposed Willatook Wind Farm project area, including the Hamilton Port Fairy road (traversing north west to south east) 1.5km west of the project area and the Peshurst Warrnambool Road (traversing north south) 5km east of the project area. The Woolsthorpe Heywood Road (traversing east west) and Tarrone North Road bisect the project area, with the Kangertong Road and Tarrone Lane defining the north and south wind farm extents respectively.

3.2 Project description

The key visual components of the proposed Willatook Wind Farm may comprise:

- up to 83 wind turbines up to a maximum 220 metre tip height
- a substation and switch yard
- night time aviation obstacle lighting (to be confirmed)
- overhead power line connection between the wind turbines and substation
- operations and maintenance building with car parking
- wind monitoring masts
- crane hardstand areas
- on site access tracks for construction, operation and ongoing maintenance and

- signage.

Temporary works associated with the construction of the wind farm that may be visible during construction and operational phases include:

- temporary site office, parking and materials storage area; and
- mobile concrete batching plant and rock crushing facilities.

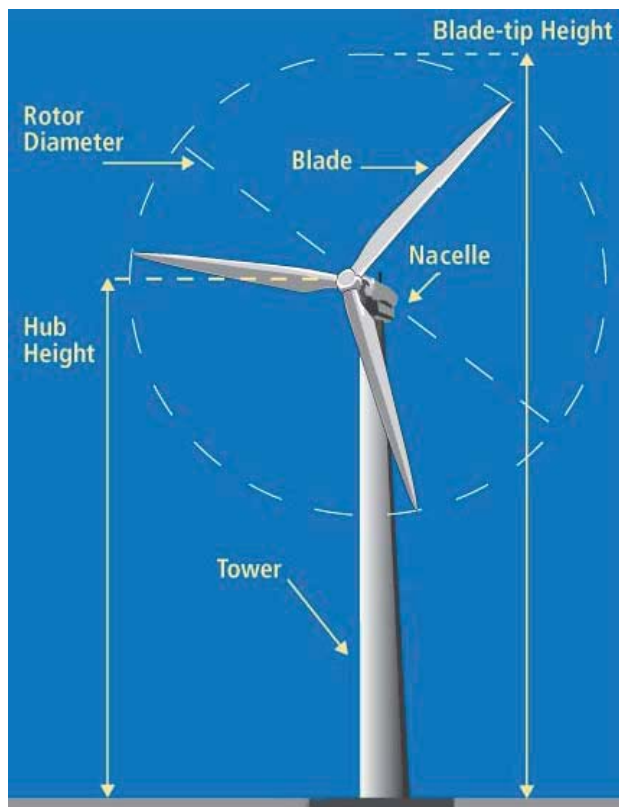
The proposed Willatook Wind Farm indicative wind turbine layout is illustrated in **Figures 1 and 2**.

3.3 Wind turbines

The specific elements of the wind turbines typically comprise:

- concrete foundations
- tubular tapering steel tower and/or concrete base
- nacelles at the top of the tower housing the gearbox and electrical generator
- rotors comprising a hub (attached to the nacelle) with three blades and
- three composite material blades attached to each hub.

The following diagram identifies the main components of a typical wind turbine:



Configuration and components of a typical wind turbine

3.4 Aviation obstacle lighting

The Proponent commissioned an aviation assessment which was undertaken by SGS Hart Aviation (August 2017). The aviation assessment included a detailed consideration with regard to obstacle lighting needs and requirements for the installation and operation of obstacle lighting. The aviation assessment noted that *'the overall risk to aviation operations in the vicinity, even during the night or in low visibility conditions, is sufficiently low not to warrant the imposition of obstacle lights on any of the wind turbines'*. Accordingly, this LVIA has not undertaken an assessment of potential visual effects associated with obstacle lighting.

3.5 Wind monitoring masts

Wind monitoring masts would be installed on-site, extending up to the wind turbine hub height. The permanent wind monitoring masts are expected to be of a guyed, narrow lattice or tubular steel design. The aviation assessment considered it advisable that all wind monitoring masts be marked with the top third painted in alternating and contrasting colour bands, with marker balls installed to all outer guy wires.

The permanent wind monitoring masts would not create a significant visual impact in the context of the overall wind farm development.

3.6 On-site access tracks

On-site access tracks would be constructed to around a 6m width and would provide access to turbine locations across the site during construction and operation. The final access track design would be developed on a number of environmental grounds, including minimising the potential for visual impact by considering:

- the overall length and extent;
- the use of existing farm track route and laneways;
- the need for clearing vegetation;
- the potential for erosion;
- the extent of cut and fill; and
- the potential to maximise rehabilitation at the completion of the construction phase.

3.7 On-site electrical works

The majority of cabling works, including the installation of control cables linking the turbines to the control building would be installed underground. For electrical reasons some cabling may be required to be installed on medium voltage (132kV) overhead powerlines supported by single low-profile tubular poles.

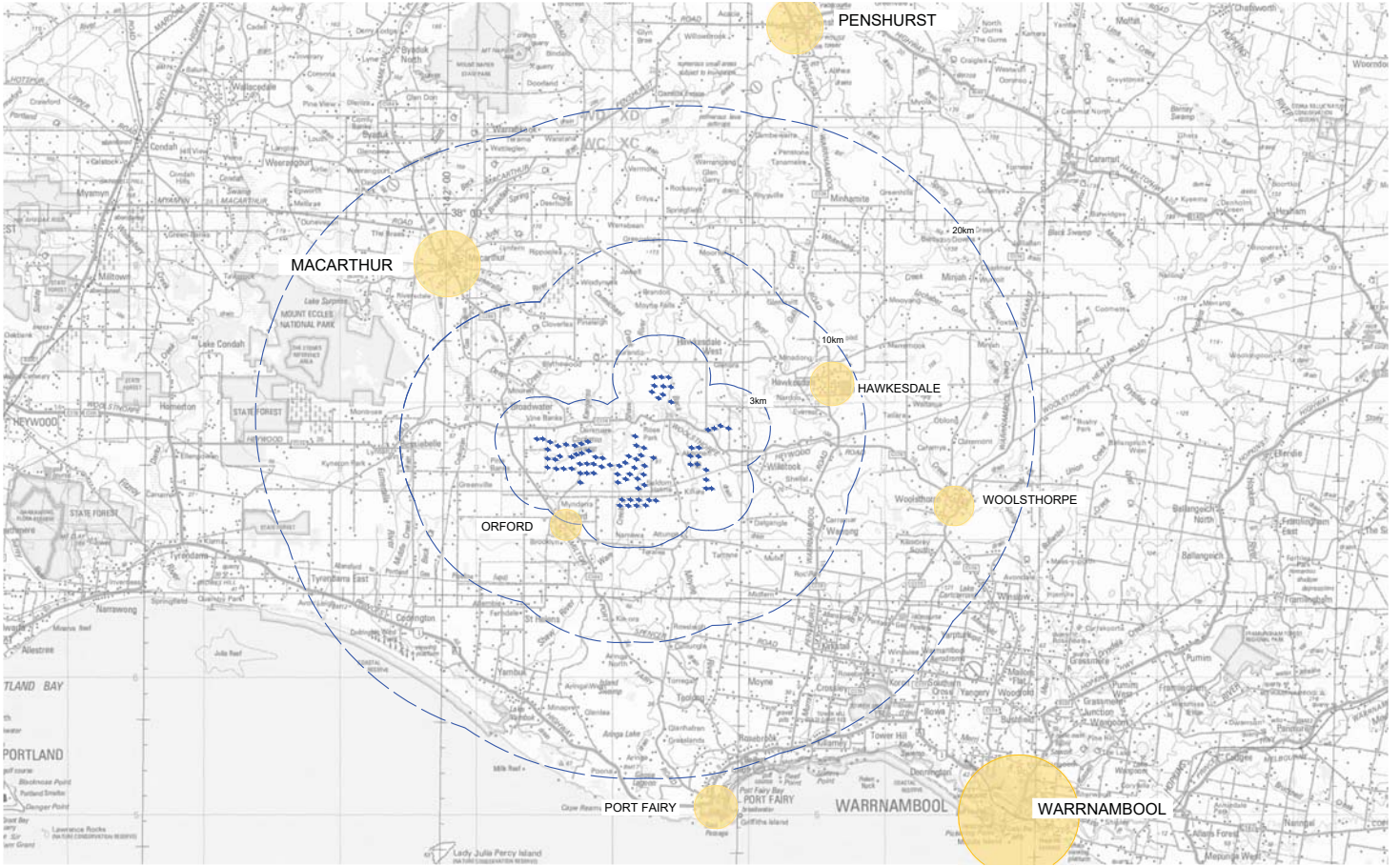
Grid connection would be achieved via a connection to the existing 500kV powerline which passes generally east to west through the southern portion of the wind farm site. The wind farm turbines would be connected to on-site substations, control room and facilities for the grid connection (refer **Figure 21** for substation location). The general locality of the on-site electrical works would not result in any significant visual effect, and views from sensitive visual locations (including residential dwellings) are likely to be screened where wind breaks and privacy planting filters and/or block views.

3.8 Construction

There are potential visual impacts that could occur during both pre-construction and construction phases of the project. The wind farm construction phase is likely to occur over a period of around 24 months, although the extent and nature of pre-construction and construction activities will vary at different locations within the project area. The key pre-construction and construction activities that will be visible from areas surrounding the proposed wind farm include:

- ongoing detailed site assessment including sub surface geotechnical investigations;
- various civil works to upgrade local roads and access point;
- construction compound buildings and facilities;
- construction facilities, including portable structures and laydown areas;
- various construction and directional signage;
- mobilisation of rock crushing equipment and concrete batching plant (if required);
- excavation and earthworks; and
- various construction activities including erection of wind turbines, monitoring masts and terminal substation with associated electrical infrastructure works.

The majority of pre-construction and construction activities, some of which will result in physical changes to the landscape, are generally temporary in nature and for the most restricted to various discrete areas within or beyond the immediate wind farm project area. The majority of pre-construction and construction activities will be unlikely to result in an unacceptable level of visual impact for their duration and temporary nature.



- City, township or locality
- Wind turbine layout (indicative extent)
- Wind turbine distance offset



Figure 1 Location plan



Willatook Wind Farm LVIA

Legislative and planning frameworks

Section 4

4.1 Introduction

The LVIA has been undertaken with regard to various Federal, State and Local planning policies, as well as controls and policy guidelines applicable to the Willatook Wind Farm project. These include:

4.1.1 Planning Policies

- Victorian State Planning Policy Framework – relevant Clause 19.01
- Local Planning Policy Framework – relevant Clauses 21-22

4.1.2 Planning Controls

- Particular Provisions – relevant Clauses 52.32
- Zoning and Overlays

4.1.3 Relevant guidelines

- Policy and planning guidelines for development of wind energy facilities in Victoria, January 2016
- Draft National Wind Farm Guidelines, July 2010

4.2 State Planning Policy Framework

The Victorian Government State Planning Policy Framework Clause 19.01, Renewable Energy, sets out objectives, strategies and policy guidelines for the provision of renewable energy including the development of wind energy facilities.

4.3 Local Planning Policy Framework - Moyne Shire Council Planning Scheme

The Moyne Planning Scheme sets out Councils objectives for the Shire with regard to land use, development and protection of land via the State Governments Planning Policy Framework and the Local Planning Policy Framework.

The Moyne Planning Scheme references numerous Clauses in relation to objectives, strategies and policy guidelines to address Councils strategic planning objectives. The most relevant of these in relation to wind energy projects and the assessment of landscape and visual impacts include:

- Clause 21.03 Factors Influencing Future Planning and Development
- Clause 21.04 Municipal Vision
- Clause 21.06 Environment and
- Clause 22.02 Environment.

The Strategic Framework Map within Clause 21.04 Municipal Vision identifies a number of strategies with regard to protection of scenic values, development of tourism opportunities and the protection of existing agricultural

land use. The Map does not identify any specific direct or indirect strategic policies that relate to the site of the proposed Willatook Wind Farm or areas of the immediate or adjoining landscape.

4.4 Zoning and Overlays within the Willatook Wind Farm 5km Viewshed

The proposed Willatook Wind Farm is wholly located within the Rural Farming Zone (FZ) as defined in Clause 35.07 of the Moyne Planning Scheme. Wind energy facilities are a permissible use subject to the wind energy project meeting the requirements of Clause 52.32 Wind Energy Facility.

There are no Significant Landscape Overlays (SLO's) that occur within the proposed Willatook Wind Farm project area; however, some SLO do occur within the proposed Willatook Wind Farm 20km viewshed and include those areas illustrated on the relevant Moyne Planning Scheme Maps:

- Map 19 (19ESO)
- Map 32 (32SLO and 32ESO)
- Map 33 (33ESO)
- Map 34 (34SLO and 34ESO) and
- Map 37 (37SLO and 37ESO).

4.5 Particular provisions

The Moyne Planning Scheme outlines particular provisions for wind energy facilities including information to accompany applications that relates to potential landscape and visual impacts. In general, the application information includes:

- *A site plan, photographs or other techniques to accurately describe the site and surrounding area.*
- *Accurate visual simulations illustrating the development in the context of the surrounding area and from key public view points*
- *A description of how the proposal responds to any significant landscape features for the area identified in the planning scheme.*
- *An assessment of:*
 - *the visual impact of the proposal on the landscape; and*
 - *the visual impact on abutting land that is subject to the National Parks Act 1975 and Ramsar wetlands and coastal areas.*

4.6 Policy and planning guidelines for development of wind energy facilities in Victoria, November 2017 (the Victorian Guidelines)

The purpose of the Victorian Guidelines is to set out:

- a framework to provide a consistent and balanced approach to the assessment of wind energy projects across the state

- a set of consistent operational performance standards to inform the assessment and operation of a wind energy facility project and
- guidance as to how planning permit application requirements might be met.

4.7 Draft National Wind Farm Guidelines

The Draft National Wind Farm Development Guidelines, originally issued October 2009, have been revised following a first round of public consultation and comment. The revised Guidelines were re-issued in July 2010 for a second round of comments. The Environment Protection and Heritage Standing Committee ceased further development of the Guidelines in 2010. The Guidelines (Appendix C Landscape) adopt a staged approach to the assessment of landscape values and impacts. The stages are identified as:

- Site selection
- Project Feasibility
- Planning Application
- Construction
- Operations and
- Decommissioning.

The tasks within each of the stages are further broken down in these draft guidelines and are summarised below. The Project Feasibility stage, as the most pertinent to the preparation of this LVIA is further described in the Guidelines by the following tasks:

- Defining the scope and policy context
- Landscape character and significance analysis
- View analysis
- Community values analysis and
- Identification of possible cumulative impacts.

4.8 Coastal Spaces Landscape Assessment Study (September 2006)

The Coastal Spaces Landscape Assessment Study notes *'This large Character Area is 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. Behind the dunes several water features occur, including Lake Yambuk and Fitzroy outlet, which are scenic recreation locations. To the west, adjacent Character Areas contain steep and often vegetated landforms that provide a sense of containment of the plains. The Codrington wind farm dominates the skyline for part of the coastal length of this Character Area'*.

4.9 South West Landscape Assessment Study (June 2013)

The South West Landscape Assessment Study (SWLAS) was commissioned by the former Department of Planning and Community Development. The SWLAS was undertaken to *'better understand and assess the visual character and significance of the wide range of landscape types, which include the volcanic plains and cones that dominate much of the area, to the Great Dividing Range in the north, and the Grampians in the central west. The study will be used to better to better inform planning scheme policy to assist planning decision making, and to ensure landscapes of importance are adequately protected and management into the future'*.

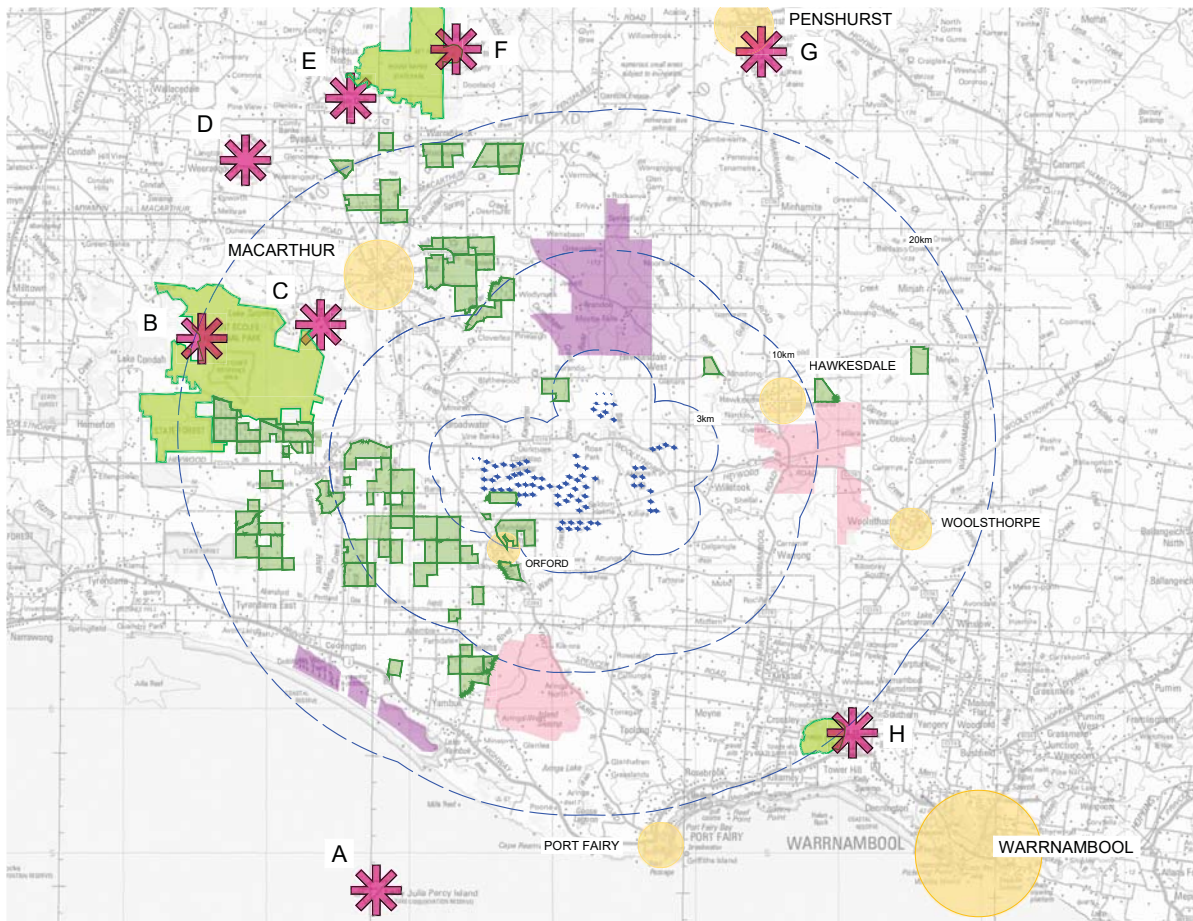
The SWLAS presented a number of recommendations to implement landscape protection and management strategies, including an additional 20 Significant Landscape Overlays (SLO) across the SWLAS study area. The SWLAS recommendations include the establishment of an SLO across portions of the proposed Willatook Wind Farm site (Lava Flows & Mount Eccles (Budj Bim) Surrounds).

GBD note that, following completion in June 2013, the SWLAS recommendations have not been implemented through the Victorian Planning Provisions. The SWLAS is not specifically referenced in the Victorian Guidelines and the recommendations have not been incorporated into the Moyne Planning Scheme.

4.10 Planning considerations

The key considerations drawn from the existing planning policy framework which are directly relevant to this LVIA are as follows:

- The Moyne Shire Council Planning Scheme applies Overlays across landscape features within the municipality. The Moyne Shire Council Planning Scheme identifies no existing SLO immediately within or adjoining the wind farm site.
- The Willatook Wind Farm site is located within land designated as Farming Zone within the Moyne Shire Council Planning Scheme.
- There are Environmental Significance Overlays within the wind farm viewshed.
- There are a small number of localities or settlements within the wind farm viewshed. These are located beyond 2 km from the wind farm turbines.
- The Victorian Guidelines (November 2017) present a comprehensive and clear set of considerations by which to assess the potential visual impacts of wind farm developments.
- The Draft National Guidelines (July 2010) ceased development in 2010 and have not been revisited or updated. The guidelines lack a degree of technical application which is more clearly set out in standard industry texts such as the Guidelines for Landscape and Visual Impact Assessment (3rd Edition) Landscape Institute and Institute of Environmental Management & Assessment, 2013.
- The SWLAS (June 2013) present a range of informative landscape observations, but have not been formally adopted into the Victorian Planning Provisions or the Moyne Planning Scheme.



Willatook Wind Farm LVIA



Figure 2 Regional landscape and volcanic features



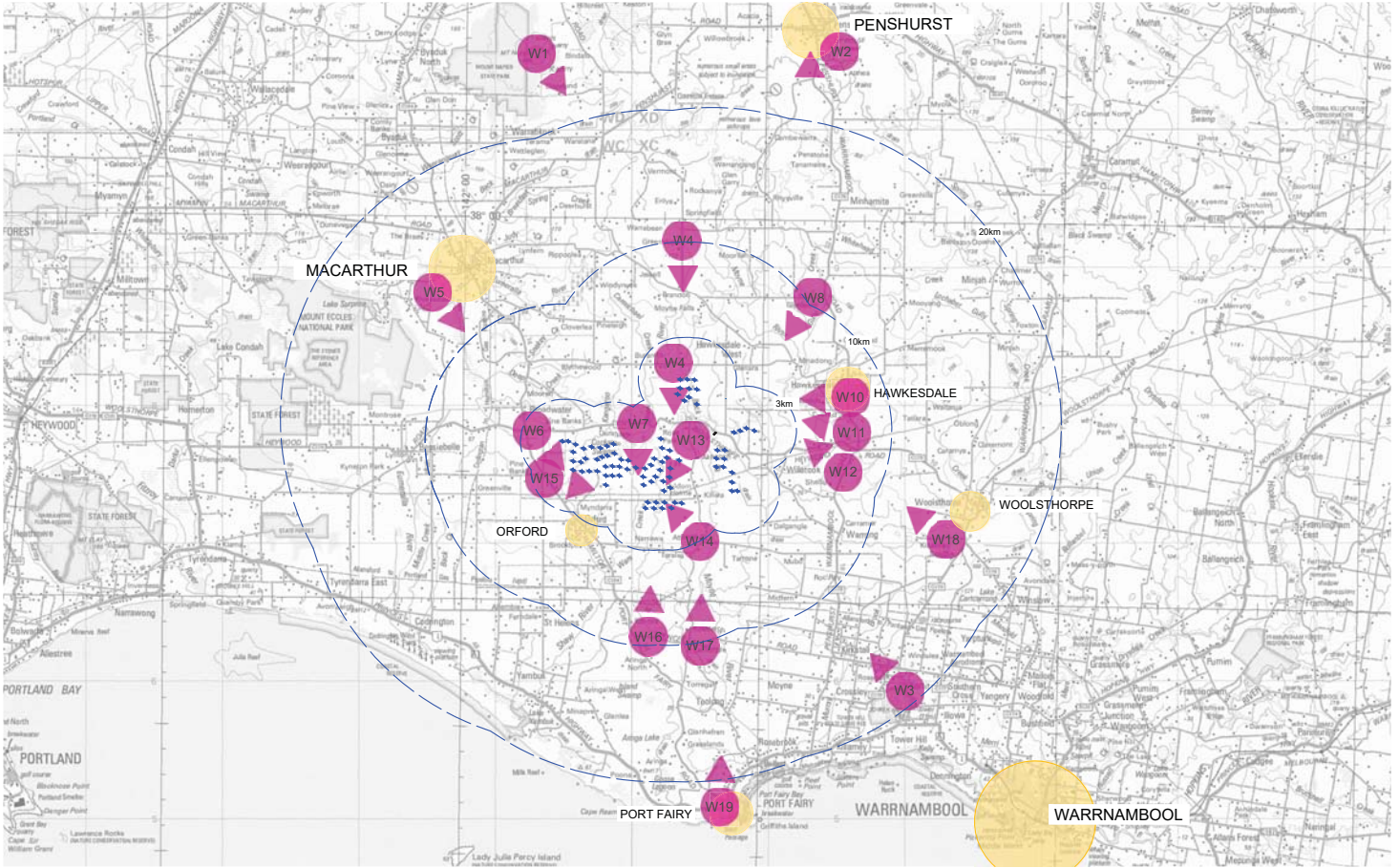
Panoramic photographs


Section 5


5.1 Panoramic photographs

A series of individual and panorama digital photographs and aerial images were taken during the course of the fieldwork to illustrate existing views in the vicinity of the Project and to give a sense of the overall site in its setting. The panorama photographs and aerial images were digitally stitched together to form a segmented panorama image to provide a visual illustration of the existing view from each photo location.

The panoramic photographs presented in this LVIA have been annotated to identify local features within and beyond the Project Site. The photograph and aerial image locations are illustrated in **Figure 3** and the photographs illustrated in **Figures 4 to 15**.



 Wind turbine layout (indicative extent)

 Photo location


 City, township or locality



Figure 3 Photo locations

Willatook Wind Farm LVIA

GREEN BEAN DESIGN
landscape architects



Photo Location W1- View east to south from Mount Napier summit

Refer Detail A below

Refer Detail B below

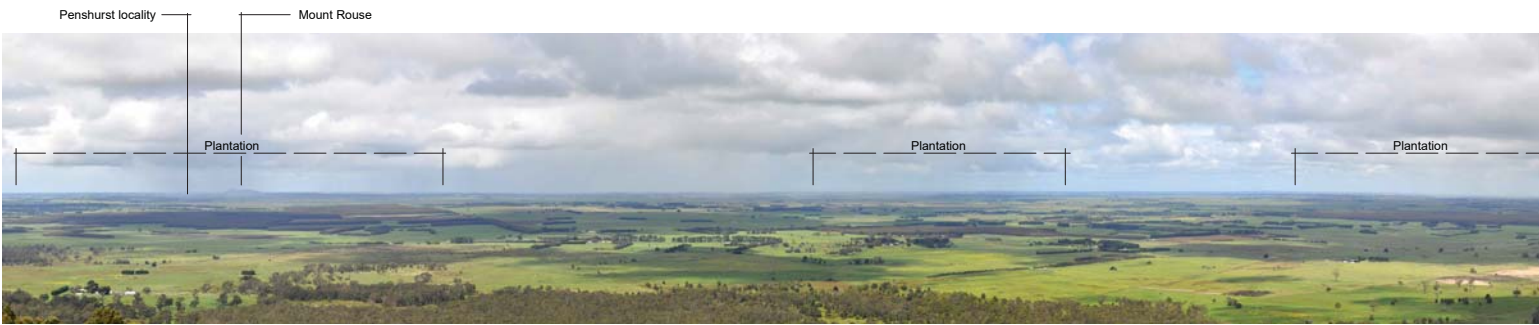


Photo Location W1- Detail A

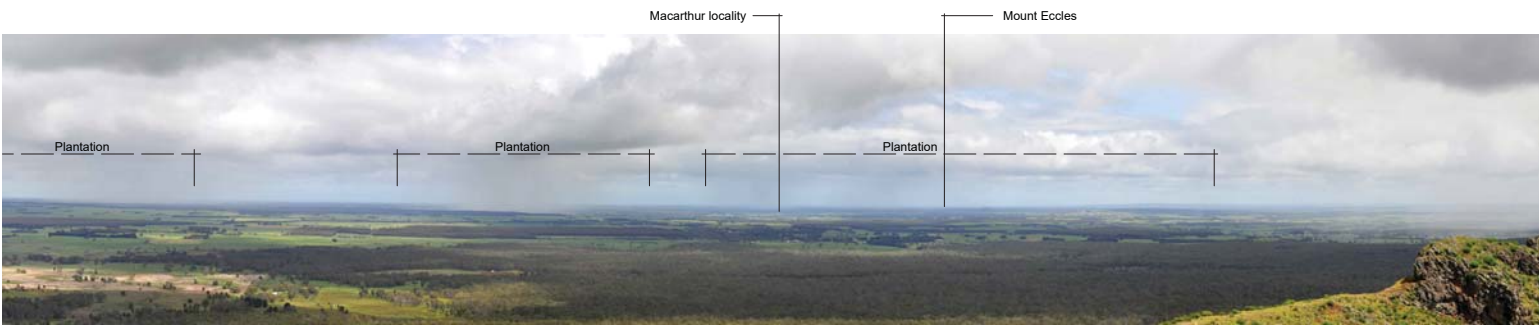


Photo Location W1- Detail B

Figure 4 Photo sheet 1

Willatook Wind Farm LVIA

Extent of Willatook Wind Farm visibility (blue dashed line) illustrated on the panoramic photographs is indicative only



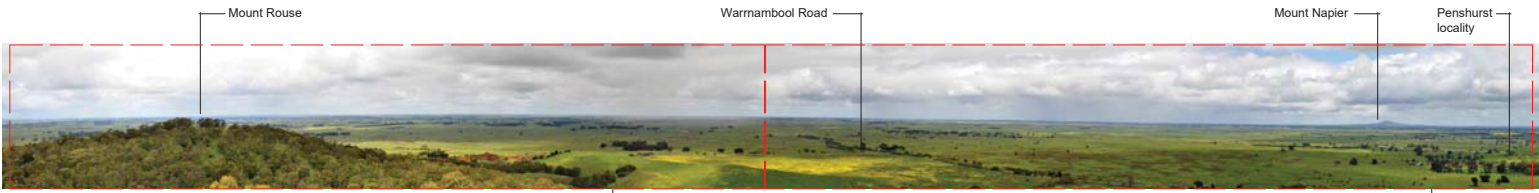


Photo Location W2- View south east to west from Mount Rouse summit

Refer Detail A below

Refer Detail B below



Photo Location W2- Detail A



Photo Location W2- Detail B

Figure 5 Photo sheet 2

Willatook Wind Farm LVIA

Extent of Willatook Wind Farm visibility (blue dashed line) illustrated on the panoramic photographs is indicative only





Photo Location W3- View south west to north from Tower Hill

Refer Detail A below

Refer Detail B below



Photo Location W3- Detail A



Photo Location W3- Detail B

Figure 6 Photo sheet 3

Willatook Wind Farm LVIA

Extent of Willatook Wind Farm visibility (blue dashed line) illustrated on the panoramic photographs is indicative only



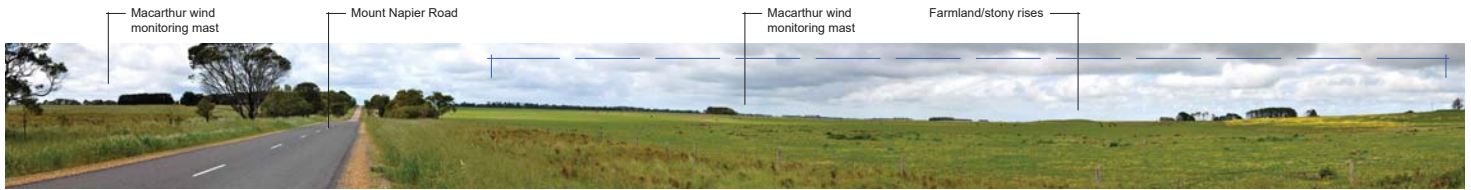


Photo Location W4- View east to south west from Mount Napier Road



Photo Location W5- View east to south from Lake Gorrie Road



Photo Location W6- View east to south west from Woolsthorpe Heywood Road

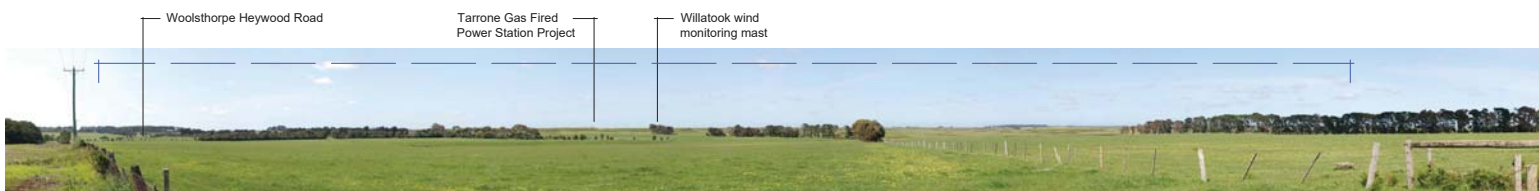


Photo Location W7- View east to south west from Woolsthorpe Heywood Road

Figure 7 Photo sheet 4

Willatook Wind Farm LVIA

Extent of Willatook Wind Farm visibility (blue dashed line) illustrated on the panoramic photographs is indicative only

Tower Hill Reserve

Port Fairy

Views toward Macarthur, Woolsthorpe and Hawkesdale wind farm turbines blocked by crater rim and vegetation



Photo Location W3a - View south west to north from Tower Hill, Von Guerard Lookout

Refer Detail A below

Refer Detail B below



Photo Location W2- Detail A

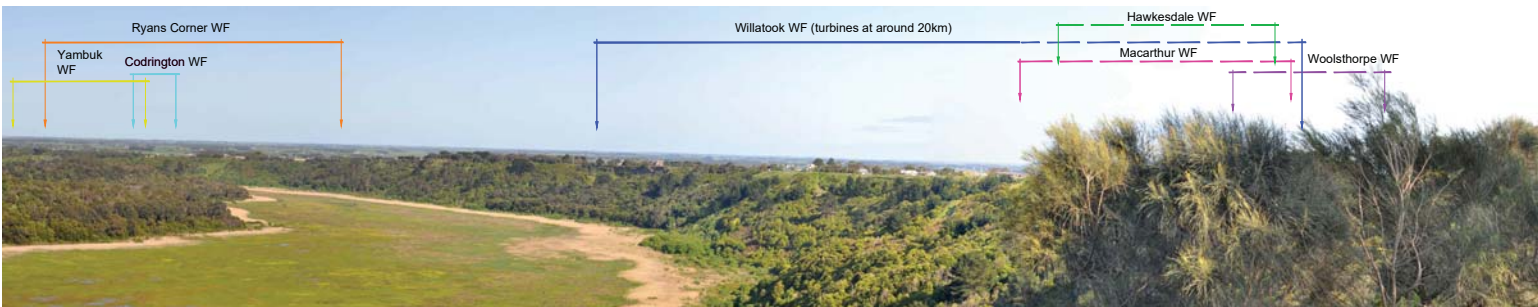


Photo Location W2- Detail B

Figure 8 Photo sheet 5

Willatook Wind Farm LVIA

Extent of Willatook Wind Farm visibility (blue dashed line) illustrated on the panoramic photographs is indicative only





Macarthur Hawkesdale Road

Photo Location W8- View south to west from Macarthur Hawkesdale Road



Kangertong Road

Photo Location W9- View east to west from Kangertong Road



Photo Location W10- View west to north west from Hawkesdale Township



Existing 500kV transmission line

Tarrone Gas Fired Power Station

Photo Location W11- View south west to north west from Penshurst Warrambool Road

Figure 9 Photo sheet 6

Willatook Wind Farm LVIA

Extent of Willatook Wind Farm visibility (blue dashed line) illustrated on the panoramic photographs is indicative only



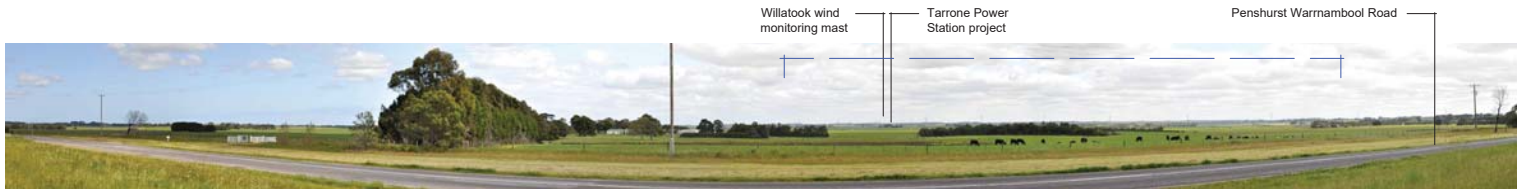


Photo Location W12- View south to north from Penshurst Warrambool Road



Photo Location W13- View south east to south west from Tarrone North Road



Photo Location W14- View north west from Tarrone Road North



Photo Location W15- View north east to south from Hamilton Port Fairy Road

Figure 10 Photo sheet 7

Willatook Wind Farm LVIA

Extent of Willatook Wind Farm visibility (blue dashed line) illustrated on the panoramic photographs is indicative only





Photo Location W16- View north to east from Spencer Street



Photo Location W17- View north west to east from Spencer Street



Photo Location W18- View west to north from Wickham Road



Photo Location W19- View north west to north east from Princes Highway

Figure 11 Photo sheet 8

Willatook Wind Farm LVIA

Extent of Willatook Wind Farm visibility (blue dashed line) illustrated on the panoramic photographs is indicative only

Mount Rouse

Dwelling D49



View north east to east from Kangertong Road looking toward and beyond the operational Macarthur Wind Farm.

This aerial image illustrates a typical arrangement of mature tree planting surrounding residential dwellings to provide shelter and privacy screening.

Figure 12
Aerial photo 1

Willatook Wind Farm LVIA

GREEN BEAN DESIGN

landscape architects

Mount Rouse

Dwelling D27



View north from Nagorckas Road looking toward and beyond the operational Macarthur Wind Farm

This aerial image illustrates a typical arrangement of mature tree planting surrounding residential dwellings to provide shelter and privacy screening.

Figure 13
Aerial photo 2

Willatook Wind Farm LVIA

GREEN BEAN DESIGN
landscape architects

Mount Napier (around 33km)

Macarthur Wind Farm (around 11km)

Southern Grampians (around 65km)

Dwelling D8



View north west to north from Tarrone North Road looking toward and beyond the operational Macarthur Wind Farm

Figure 14
Aerial photo 3

Willatook Wind Farm LVIA

Codrington and Yambuk Wind Farms (around 20km)

Dwelling D40

Dwelling D29

Dwelling D22



View west to south west from Tarrone substation (west of Tarrone North Road) Kangertong Road looking toward distant views of the Codrington and Yambuk Wind Farm sites

Figure 15
Aerial photo 4

Willatook Wind Farm LVIA

Landscape character assessment

Section 6

6.1 Regional landscape character

The regional landscape character within the Moyne Shire has been identified and described by Moyne Shire Council within the Moyne Planning Scheme (Clause 21.06) which notes that *'Since early European settlement, the characteristics of the Shire have changed greatly. The majority of the land in the Shire has been converted to agriculture, whilst other land is used for purposes including urban settlement, industrial activity and manufacturing, extractive industry and recreation. Some areas including the various parks and reserves have however been retained in an essentially natural state'*.

The Moyne Planning Scheme further identifies four distinct physiographic units which describe a broad scale subdivision based on terrain texture, rock types and geologic structure and history. These units include the following:



Plate 3 – Typical photo across Flat Basalt Volcanic Plains from the summit of Mount Rouse

The Flat Basalt Volcanic Plains

The flat basalt Volcanic Plains accounting for the majority of the Moyne Shires area. The landform is mostly horizontal at around 150-200 metres above sea level with a gentle dip to the south (toward the ocean). A number of volcanic cones to 120 to 180 metres above sea level are scattered over the Plains



Plate 4 – Typical photo across stony rises toward Mount Napier.

The Stony rises

These areas generally occur within the north west portion of the Shire above the Volcanic Plains. As a feature of volcanic activity, the Stony rises exhibit a complex contorted topography of nonlinear form.



Plate 5 – Typical photo across the Coastal Plains south of Mount Eccles National Park

The Coastal Plains

The Coastal Plains occur in the south eastern portion of the Moyne Shire sloping gently east across low lying sediment deposits, with a further area of Coastal Plain in the south west portion of the Moyne Shire to the west of the Shaw River and south of Mount Eccles National Park.



Plate 6 – Typical photo across coastal dunes east of the operational Codrington wind farm

Coastal Dune

The Coastal Dunes extend along the western extent of the Moyne Shires coastline to the west of Lake Yambuk.

Whilst the physiographic units present a useful understanding of the main structural elements of the landscape they do not reflect many of the landscapes extrinsic values including aesthetic and recreational worth applied by a broader cross section of the local community and visitors to the Moyne Shire, and do not describe the largely cultural and modified landscape that has evolved over the historically short period of time following European settlement.

In order to further address the requirements to describe the landscape in the EES, a number of landscape character areas have been identified within the Willatook Wind Farm viewshed.

6.2 Landscape character area

As part of the LVIA process it is important to understand the nature and sensitivity of different components of landscape character, and to assess them in a clear and consistent process. For the purpose of this LVIA, landscape character is defined as ‘*the distinct and recognisable pattern of elements that occur consistently in a particular type of landscape*’ (The Countryside Agency and Scottish Natural Heritage 2002). The pattern of elements includes characteristics such as landform, vegetation, land use and settlement.

This LVIA has identified six Landscape Character Areas (LCA’s), which generally occur within the viewshed of the proposed Willatook Wind Farm site. The LCA’s represent areas that are relatively consistent and recognisable in terms of their key landscape elements and physical attributes; which may include a combination of

topography/landform, vegetation/landcover, land use and built structures (including settlements and local road corridors).

The LCA's are not definable as discrete areas, and characteristics within one LCA may well occur within adjoining or surrounding LCA's. The LCA's have not been assessed, described or illustrated as singular 'landscape units'. For the purpose of this LVIA the LCA's have been identified as:

- LCA 1 – Low undulating farmland
- LCA 2 – Level or gently sloping land (improved farmland);
- LCA 3 – Water bodies and drainage lines;
- LCA 4 – Volcanic features;
- LCA 5 – Plantation woodland;
- LCA 6 – Settlements (rural homesteads and townships) and
- LCA7 – Macarthur Wind Farm.

6.3 Landscape character assessment

An understanding of a particular landscape's key characteristics and principal visual features is important in defining a distinctiveness and sense of place and to determine its sensitivity to change. The criteria applied in the determination of landscape character assessment and the ability of a landscape to accommodate change are outlined in **Table 3**. These criteria are based on established industry good practice employed in the assessment of wind farm developments and have been adopted for numerous wind farm assessments across Australia. The criteria are broadly outlined in the National Wind Farm Development Guidelines (Draft v2.4), Section 6.1 Landscape Character Units, and covered in more detail within the Guidelines for Landscape and Visual Impact Assessment, Third Edition, Landscape Institute and Institute of Environmental Management & Assessment, 2013 – Chapter 5 Assessment of landscape effects.

Landscape sensitivity is a relative concept, and landscape values of the surrounding environment may be considered of a higher or lower sensitivity than other areas in the Victorian region. Whilst landscape character assessment is largely based on a systematic description and analysis of landscape characteristics, this LVIA acknowledges that some individuals and other members of the local community may place higher values on the local landscape. These values may transcend preferences (likes and dislikes) and include personal and cultural influences.

Table 3 – Criteria for the assessment of landscape character

Landscape Character Assessment Criteria			
Characteristic	Aspects indicating lower sensitivity to the wind farm development	↔	Aspects indicating higher sensitivity to the wind farm development
Landform and scale:	<ul style="list-style-type: none"> • Large scale landform • Simple • Featureless • Absence of strong topographical variety 	↔	<ul style="list-style-type: none"> • Small scale landform • Distinctive and complex • Human scale indicators • Presence of strong topographical variety
Landcover: patterns, complexity and consistency	<ul style="list-style-type: none"> • Simple • Predictable • Smooth, regular and uniform 	↔	<ul style="list-style-type: none"> • Complex • Unpredictable • Rugged and irregular
Settlement and human influence	<ul style="list-style-type: none"> • Concentrated settlement pattern • Presence of contemporary structures (e.g. utility, infrastructure or industrial elements) 	↔	<ul style="list-style-type: none"> • Dispersed settlement pattern • Absence of modern development, presence of small scale, historic or vernacular settlement
Movement	<ul style="list-style-type: none"> • Prominent movement, busy 	↔	<ul style="list-style-type: none"> • No evident movement, still
Rarity	<ul style="list-style-type: none"> • Common or widely distributed example of landscape character area within a regional context 	↔	<ul style="list-style-type: none"> • Unique or limited example of landscape character area within a regional context
Intervisibility with adjacent landscapes	<ul style="list-style-type: none"> • Limited views into or out of landscape • Neighbouring landscapes of low sensitivity • Weak connections, self-contained area and views • Simple large-scale backdrops 	↔	<ul style="list-style-type: none"> • Prospects into and out from high ground or open landscape • Neighbouring landscapes of high sensitivity • Contributes to wider landscape • Complex or distinctive backdrops

The landscape sensitivity assessment criteria set out in **Table 3** have been evaluated for the landscape character area by applying a professionally determined judgement on a sliding scale between 1 and 5.

A scale of 1 indicates a landscape characteristic with a lower sensitivity to the wind farm development (and will be more likely to accommodate the wind farm development). A scale of 5 indicates a landscape characteristic

with a high level of sensitivity to the wind farm development (and less likely to accommodate the wind farm development).

The scale of sensitivity for the landscape character area is outlined in **Tables 4 to 10** and is set out against each characteristic identified in **Table 3**.

The overall landscape sensitivity for the landscape character area is a summation of the scale for each characteristic identified in **Tables 4 to 10**.

The overall scale is expressed as a total out of 30 (i.e. 6 characteristics for the landscape character area with a potential top scale of 5). Each characteristic is assessed separately and the criteria set out in **Table 3** are not ranked in equal significance. The overall landscape sensitivity for the landscape character area has been determined as either:

High (Scale of 23 to 30) – key characteristics of the landscape character area will be impacted by the proposed project, and will result in major and visually dominant alterations to perceived characteristics of the landscape character area which may not be fully mitigated by existing landscape elements and features. The degree to which the landscape may accommodate the proposed project development will result in a number of perceived uncharacteristic and significant changes.

Medium (Scale 15 to 22) – distinguishable characteristics of the landscape character area may be altered by the proposed project, although the landscape character area may have the capability to absorb some change. The degree to which the landscape character area may accommodate the proposed project will potentially result in the introduction of prominent elements to the landscape character area, but may be accommodated to some degree.

Low Rating (Scale of 7 to 14) – the majority of the landscape character area characteristics are generally robust, and will be less affected by the proposed project. The degree to which the landscape may accommodate the wind farm will not significantly alter existing landscape character.

Negligible Rating (Up to 6) the characteristics of the landscape character area will not be impacted or visibly altered by the proposed project.

6.4 Analysis of Landscape Sensitivity

The following section of this LVIA provides an analysis of landscape sensitivity within the Willatook Wind Farm 20km viewshed and considers each of the 7 LCA's.

6.4.1 LCA 1 Low undulating farmland



Plate 7 – Typical photo low undulating farmland

Table 4 – LCA 1 – Low undulating farmland -Landscape Sensitivity

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Landform and Scale					
	The low undulating grassland is a medium scale and open landscape with a gently undulating landform . The structure of the landform is simple containing few distinct features and has a general absence of any strong topographical elements .				
Landcover					
	Landcover is predominantly simple and predictable within the context of widespread pasture areas across the Moyne Shire. The overall landscape pattern created by the grass pasture is smooth, regular and uniform . Areas of cultural planting surround the majority of rural dwellings in the form of evergreen windbreaks.				
Settlement and human influence					
	The settlement pattern is largely dispersed across the landscape and comprises rural farm homesteads and individual properties with a small number of localities surrounding the Willatook Wind Farm site. There is a general absence of modern development throughout this landscape, excluding agricultural structures and local roads and access tracks.				
Movement					
	Movement is generally restricted to occasional passing traffic, livestock as well as agricultural machinery.				

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Rarity	Undulating farmland is generally well represented and a common feature across the regional area of the Moyne Shire.				
Intervisibility					
	Undulating grassland areas appear as a simple backdrop in views from surrounding elevated areas. Undulating landform can retain and constrict views within the landscape, but generally contributes to the wider landscape.				
Overall Sensitivity Rating	Medium (Score 18 out of 30)				

6.4.2 LCA 2 Level or gently sloping farmland



Plate 8 – Typical photo across level or gently sloping farmland

Table 5 – LCA 2 – Level or gently sloping farmland - Landscape Sensitivity

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Landform and Scale					
	Level or gently sloping grassland is a medium scale and open landscape with a gently sloping landform . The structure of the landform is simple containing few distinct features and has a general absence of any strong topographical elements .				
Landcover					
	Landcover is predominantly simple and predictable within the context of widespread areas of farmland across the broader regional area of the Moyne Shire. The overall landscape pattern created by grass pasture within this landscape is smooth, regular and uniform , although mosaics of timbered stands on adjoining landscape areas create some diversity and contrast in pattern.				
Settlement and human influence					
	There is a general absence of settlement within this landscape with a small and dispersed number of rural residential structures (some abandoned). Human influence within the landscape includes roads, minor access tracks and fences occurring throughout as well as more visually prominent structures including high voltage transmission lines.				
Movement					
	A lack of any significant movement gives this landscape an overall still character.				

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Rarity	Level and gently sloping farmland is generally well represented and a common feature across the broader regional area of the Moyne Shire.				
Intervisibility					
	Intervisibility is partially limited as views from within this landscape area are contained by roadside and wind break tree planting.				
Overall Sensitivity Rating	Medium (Score 16 out of 30)				

6.4.3 LCA 3 Water bodies and drainage lines



Plate 9 – Typical photo toward drainage line
(Shaw River)

Table 6 – LCA 3 - Water bodies and drainage lines - Landscape Sensitivity

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Landform and Scale					
	Landform is generally simple alongside the majority of drainage lines through large scale pastoral landscape. Drainage lines are largely featureless and have been largely cleared, with tree cover limited to occasional or small groups of trees.				
Landcover					
	Landcover through this LCA is simple and regular comprising cultivated ground or improved pasture.				
Settlement and human influence					
	Settlement is dispersed with some evidence of utility infrastructure and agricultural elements.				
Movement					
	There is limited evidence of movement within the LCA with occasional traffic along roads and machinery working in surrounding fields.				
Rarity					
	The principal landscape elements within this LCA are represented within the local area, the 20km viewshed, as well as the wider are of the Moyne Shire. The significance and value of drainage elements within this LCA are considered to important within a 'local district' context.				

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Intervisibility	Views into and out of this LCA limited and restricted by surrounding landform and vegetation which restricts opportunities for long distant views.				
Overall Sensitivity Rating	Medium (Score 15 out of 30)				

6.4.4 LCA 4 Volcanic features



Plate 10 – Typical photo toward volcanic cone (Mount Napier)

Plate 11 – Typical photo toward ‘stony rises’

Table 7 – LCA 4 – Volcanic features - Landscape Sensitivity

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Landform and Scale					
	Volcanic features exhibit a distinct and complex landform characteristic and moderate scale features in the landscape. Volcanic features present strong topographical variety within a broader level to gently undulating landscape.				
Landcover					
	Landcover is predominantly simple and predictable The overall landscape pattern created by grass pasture within this landscape is smooth, regular and uniform , although mosaics of timbered areas on surrounding volcanic slopes and cultural planting surrounding dwellings create some diversity and contrast in pattern.				
Settlement and human influence					
	Settlement is occasional and dispersed within this landscape and the main influences of human activity are the effects of agricultural improvement within the landscape.				
Movement					
	Movement is generally limited to local roads and access tracks.				
Rarity					
	Volcanic features are a limited example of a landscape character type found within south west Victoria.				

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Intervisibility	Extensive views are available from the upper portions of larger scale volcanic features including the volcanic cones. Prospects extend beyond the immediate area of the of the landscape character area and contribute to the wider landscape.				
Overall Sensitivity Rating	High (Score 23 out of 30)				

6.4.5 LCA 5 Plantation woodland



Plate 12 – Typical photo toward timber plantation

Table 8 – LCA 5 – Plantation woodland- Landscape Sensitivity

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Landform and Scale					
	Plantation areas occur across a small range of landform types that are generally defined by gently sloping or undulating landform resulting in a moderate scale landform. The landform is simple containing few distinct features and has an absence of any strong topographical elements .				
Landcover					
	Landcover is predominantly simple and predictable within the context of similar plantation areas within the south west of Victoria. The overall landscape pattern created by plantation areas creates diversity and contrast to the smooth, regular and uniform grass pasture and cultivated areas within this landscape. The darker coloured foliage of plantation areas contrast against the surrounding backdrop of lighter toned pastures and cultivated areas.				
Settlement and human influence					
	Settlement is occasional and dispersed surrounding plantation areas with the majority of dwellings visually screened from surrounding landscape areas. The main influences of human activity are the effects of agricultural improvement within the landscape.				
Movement					
	Movement is generally limited to local roads and access tracks.				

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Rarity	Plantation areas occur across portions of the Moyne Shire from medium sized areas to smaller discrete parcels and are a more widely distributed landscape area within a regional context.				
Intervisibility					
	The level of intervisibility between this landscape and adjoining areas is generally determined by the location and extent of plantation area relative to view locations, but on the whole is limited as views from within this landscape are constrained by dense tree planting.				
Overall Sensitivity Rating	Low (Score 14 out of 30)				

6.4.6 LCA 6 Settlements



Plate 13 – Typical photo Hawkesdale Township



Plate 14 – Typical photo Macarthur Township

Table 9 – LCA 6 – Settlements - Landscape Sensitivity

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Landform and Scale					
	Dispersed rural settlement is generally surrounded and contained by gently sloping and low undulating landform resulting in an overall small scale rural agricultural environment.				
Landcover					
	The overall landscape pattern is defined by human scale indicators including houses, shops and roads together with a variety of built structures which create some diversity and contrast in pattern. There are generally no elements that result in the presence of strong topographical variety.				
Settlement and human influence					
	Dwellings are dispersed beyond the main settlement localities of Macarthur, Orford and Hawkesdale and are generally associated with individual farms and rural structures.				
Movement					
	Movement is generally limited to local roads and access tracks.				
Rarity					
	Small scale settlements are dispersed across the landscape, as well as the broader regional area of the Moyne Shire.				

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Intervisibility	Intervisibility is limited where views are partially contained by buildings and structures, although views from elevated areas of the settlement extend beyond and across adjoining landscape areas.				
Overall Sensitivity Rating	Medium (Score 16 out of 30)				

6.4.7 LCA 7 Macarthur Wind Farm



Plate 7 – Typical photo to Macarthur Wind Farm

Table 10 – LCA 7 – Macarthur Wind Farm - Landscape Sensitivity

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Landform and scale					
	Level or gently sloping grassland presents a medium scale and generally open landscape. The structure of the landform is simple containing few distinct natural features and has a general absence of any strong topographical elements .				
Landcover					
	Landcover is predominantly simple and predictable within the context of widespread areas of farmland across the broader regional area of the Moyne Shire. The overall landscape pattern created by grass pasture within this landscape is smooth, regular and uniform , although mosaics of timbered stands on adjoining landscape areas create some diversity and contrast in pattern.				
Settlement and human influence					
	Dwellings are dispersed beyond the main settlement localities of Macarthur, Orford and Hawkesdale and are generally associated with individual farms and rural structures. The wind turbines are located in an irregular order across grass pasture and present largely noncomplex simple forms.				
Movement					
	External movement is generally limited to local roads and access tracks. Within the wind farm movement associated with rotation of wind turbine blades is reasonably constant and visible from areas beyond the LCA.				

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Rarity	Small scale settlements are dispersed across the landscape, as well as the broader regional area of the Moyne Shire.				
Intervisibility					
	Intervisibility is limited where views are partially contained by buildings and structures, although views from elevated areas of the settlement extend beyond and across adjoining landscape areas.				
Overall Sensitivity Rating	Low (Score 14 out of 30)				

6.5 Landscape values (local and regional)

6.5.1 What are landscape values?

For the purpose of this LVIA landscape values have been considered as a set of professional judgements on the importance to society of the local and regional landscape surrounding the proposed wind farm development. Societal landscape values may extend across a range of specific interests such as historic, ecological or cultural issues. The purpose of identifying local and regional landscape values is to consider what, if any, losses to landscape features or characteristics may result from the construction and operation of the wind farm development, and how this may impact upon local and regional landscape values.

6.5.2 Historical landscape values

Both the local and regional landscape has a strong association with early European settlement and agricultural production and specifically the establishment of pastoral and agricultural properties. The European historical and cultural association with settlement and agrarian transition is set against a backdrop of indigenous populations being relocated and ultimately removed from the landscape. The removal of the indigenous population resulted in long held landscape cultural values and practices being replaced by those employed by early settlers in the mid to early 19th century. Landscape change resulting from the abrupt replacement of landscape values (from subsistence to industrial agriculture) has wrought significant alteration to this landscape; however, the existing landscape pattern is one that most people at the local and regional scale would recognise as typical and representative of a rural agricultural landscape. A detailed consideration and assessment of the relationship between landscape and indigenous populations is described in the Heritage Assessment Report.

6.5.3 Existing landscape values

Whilst the landscape is likely to hold more significant value at a local level, for those who both work and reside within the landscape surrounding the proposed wind farm development, there are specific references to designations or policies which indicate or recognise intrinsic values of landscape. Whilst there are no 'iconic' landscape elements (including constructed or natural features) that occur within the local or regional landscape

that are recognised at a national level, there are largely remnant volcanic features which have a broader public value attached to them. The majority of land within and surrounding the wind farm development is privately owned and, at a local and regional scale, opportunities for the broader public to access and explore the landscape and obtain distant and panoramic views are largely limited to existing rights of way such as road corridors. The proposed wind farm development is not considered to have the potential to have a significant impact on existing landscape values.

6.5.4 Summary

In terms of overall landscape sensitivity and value, this LVIA has determined that the landscape within the viewshed of the proposed Willatook Wind Farm has a medium sensitivity to accommodate change, and represents a landscape that is reasonably typical of landscape types found in surrounding areas of the Moyne Shire and more broadly within south west Victoria.

As a landscape with an overall medium sensitivity to accommodate change, some characteristics are likely to be altered by the wind farm; however, the landscape will have some capability to accommodate change. This capability is largely derived from the presence of predominantly large scale and open landscape across portions of the wind farm, together with the relatively low settlement density within the Willatook Wind Farm viewshed.

This LVIA has determined that the wind farm would not be an unacceptable development within the Willatook Wind Farm viewshed, which in a broader visual context also contains built elements such as roads, agricultural industry, aircraft landing strips, communication towers, powerlines as well as operating and approved wind farms within the regional location of the Willatook Wind Farm site.

Despite being 'naturalistic' in appearance large portions of the Moyne Shire landscape have been heavily modified by agricultural improvement for pasture and arable production post European settlement. Irrespective of the extent and nature of modifications to the landscape, it is not correct to assume that the landscape surrounding the wind farm should be any less valued as a result of modification. Physical change in the appearance of the landscape is an ongoing and constant process from both human and environmental influences and can result in both positive and negative effects.

Zone of Visual Influence and Visibility

Section 7

7.1 Zone of Visual Influence (ZVI)

The ZVI diagrams are used to identify theoretical areas of the landscape from which wind turbines, or portions of turbines, may be visible within the viewshed. They are useful for providing an overview as to the extent to which the proposed Willatook Wind Farm may be visible from surrounding areas within the viewshed.

The tip of blade, hub height and whole turbine ZVI diagrams have been prepared using industry best practice methods. The ZVI diagrams includes the Willatook Wind Farm turbines visible from tip of blade and hub height.

7.2 ZVI Methodology

The ZVI methodology is a purely geometric assessment where the visibility of the wind turbines is determined from carrying out calculations based on a digital terrain model of the Project Site and the surrounding terrain.

Calculations have been made to determine the visibility of the wind turbines from blade tips (essentially a view toward any part of the wind turbine rotor, including views toward the tips), and hub height (essentially a view between the nacelle and tip of blade).

The ZVI assessment methodology is considered to be very conservative as:

- the screening effects of any structures and vegetation above ground level are not considered in any way. Therefore, the Project may not be visible at some locations indicated on the ZVI diagrams due to the local presence of trees or other screening materials.
- additionally, the number of turbines visible from any location is also influenced by prevailing weather conditions. Inclement or cloudy weather would tend to mask the visibility of the wind turbines.#

Accordingly, while a ZVI diagram is a useful visualisation tool, it is very conservative in nature and the level of visibility as illustrated in the ZVI diagram is unlikely to occur from all view locations within the surrounding viewshed.

A diagram illustrating the tip of blade, hub height and whole turbine visibility is illustrated in **Figure 16** and the ZVI diagrams are shown in **Figures 17, 18 and 19**.

The tip of blade, hub height and whole turbine ZVI diagrams illustrate similar areas of potential visibility and highlight the extent and influence of landform surrounding the Willatook Wind Farm site.

7.3 Visibility

The level of wind turbine visibility of the Willatook Wind Farm would result from a number of factors including, but not limited to:

- Distance
- Movement

- Relative position
- Climatic and Atmospheric Conditions

7.4 Distance

With an increase in distance the proportion of a person's horizontal and vertical view cone occupied by a visible turbine structure, or group of turbine structures, would decline.

As the view distance increases so do the atmospheric effects resulting from dust particles and moisture in the atmosphere, which makes the turbines appear to be grey thus potentially reducing the contrast between the wind turbines and the background against which they are viewed.

Whilst the distance between a view location and the wind turbines is a primary factor to consider when determining potential visibility, there are other issues which may also affect the degree of visibility. The influence of distance on visibility and proportional representation is illustrated in **Figure 20**.

7.5 Movement

The visibility of the wind turbines would vary between the categories of static and dynamic view locations. In the case of static views the relationship between a wind turbine and the landscape would not tend to vary greatly. The extent of vision may be relatively wide as a person would tend to scan back and forth across the landscape where panoramic views are available.

In contrast views from a moving vehicle are dynamic as the visual relationship between wind turbines is constantly changing as well as the visual relationship between the wind turbines and the landscape in which they are seen. The extent of vision can be partially constrained by the available view from within a vehicle at proximate distances.

7.6 Relative position

In situations where the view location is at a lower elevation than the wind turbine structure most of it would be viewed against the sky. The degree of visual contrast between a white coloured turbine and the sky would depend on the presence of background clouds and their colour. Dark grey clouds would contrast more strongly with white turbines than a background of white clouds.

The level of contrast is also influenced by the position of the sun relative to the individual wind turbines and the view location. Where the sun is located in front of the viewer, the visible portion of the wind turbine would be seen in shadow. Where the background to the wind turbine is dark toned the visual contrast would be reduced.

Where the sun is located behind the view location then the visible portion of the wind turbine would be in full sun. If the background is also light toned, such as white clouds, then the contrast is less when compared to a dark background.

7.7 Climatic and Atmospheric Conditions

Local climatic and atmospheric conditions have the potential to influence the visibility of the proposed Willatook Wind Farm from surrounding view locations, and more significantly, from middle ground and distant view locations.

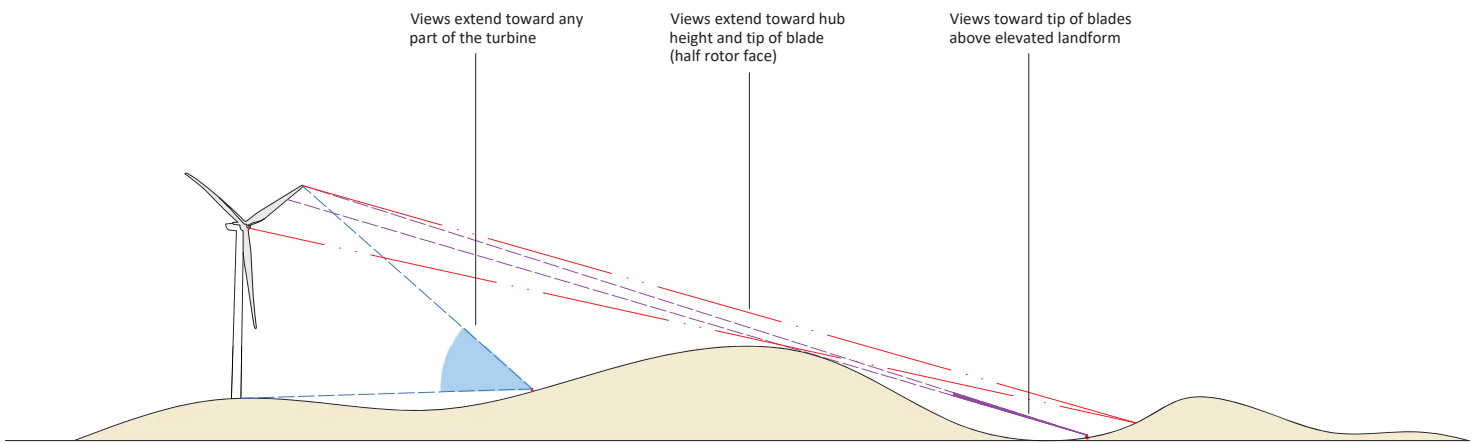
The Bureau of Meteorology has collected meteorological data over the past 27 years at the Hamilton Airport weather station which indicates that there are:

- 56 clear days (annual mean average)
- 165 cloudy days (annual mean average) and
- 106 days of rain (annual mean average).

Rainfall would tend to reduce the level of visibility toward the proposed Willatook Wind Farm from a number of surrounding view locations, with the degree of visibility tending to decrease over distance. Rain periods may also reduce the number of visitors travelling through the areas from which the proposed Willatook Wind Farm may be visible, and potentially decrease the duration of time spent at a particular public view location with a view toward the proposed Willatook Wind Farm.

Cloud cover would also tend to reduce the level of visibility of the proposed Willatook Wind Farm and lessen the degree of contrast between the wind turbine structures and the background against which the wind turbines may be visible.

On clear or partly cloudy days, the position of the sun would also have an impact on the degree of visibility of the proposed Willatook Wind Farm. The degree of impact would be largely dependent on the relationship between the position and angle of the sun relative to the view location. Late afternoon and early evening views toward the west would result in the wind turbines silhouetted above the horizon line, and with increasing distance would tend to reduce the contrast between the wind turbine structures and the surrounding landform.



'Tip of blade'

View toward 'tip of blade' - where views extend toward any part of the turbine including views toward the tip of blades above elevated landform and ridgelines.

'Hub height'

View toward 'hub height' - where views extend toward the wind turbine hub (nacelle) and the tip of blades.

'Whole turbine'

View toward 'whole turbine' - where views extend toward the wind turbine from base of tower to tip of blade.

Figure 16
ZVI visibility

Willatook Wind Farm LVIA

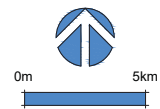
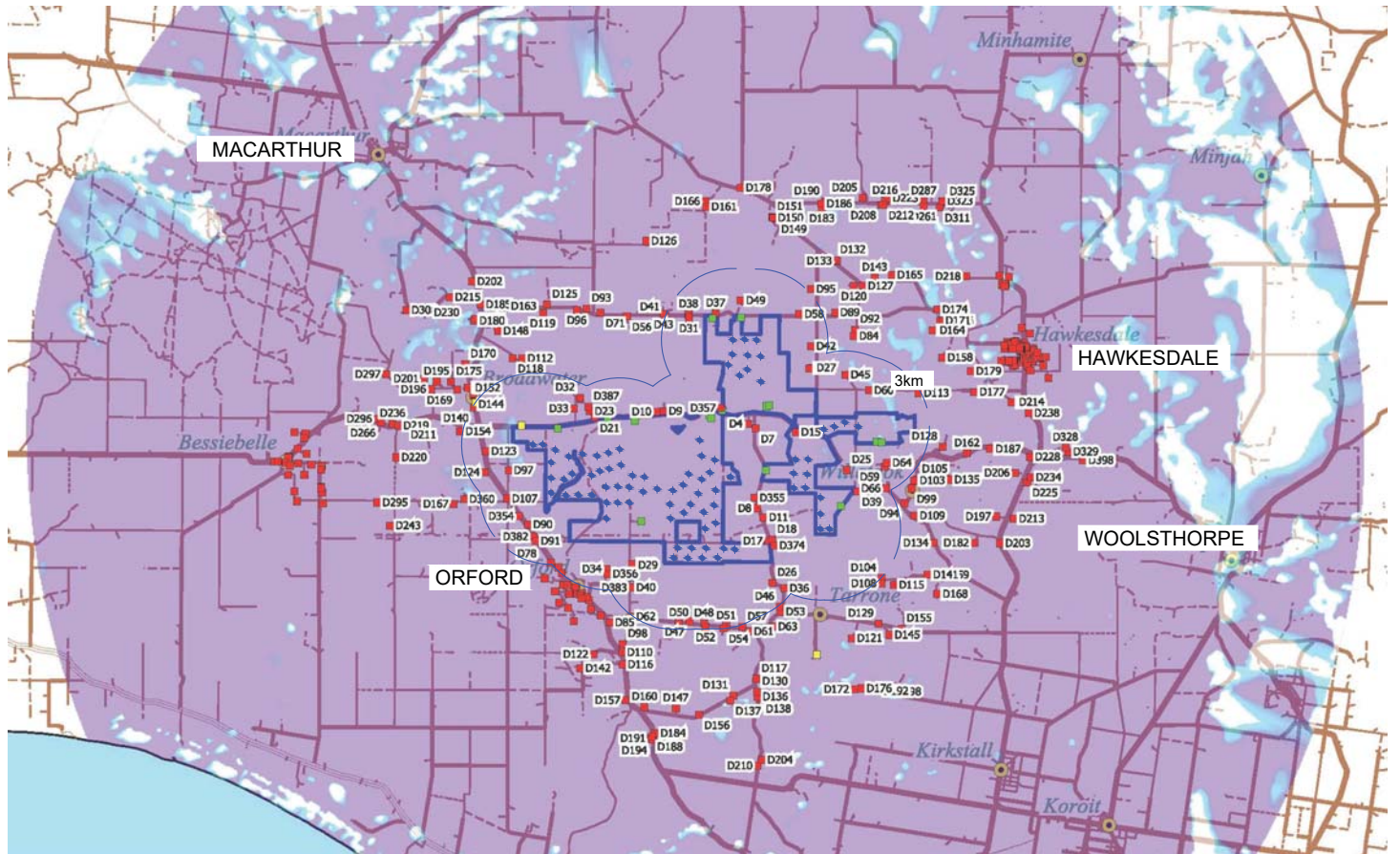
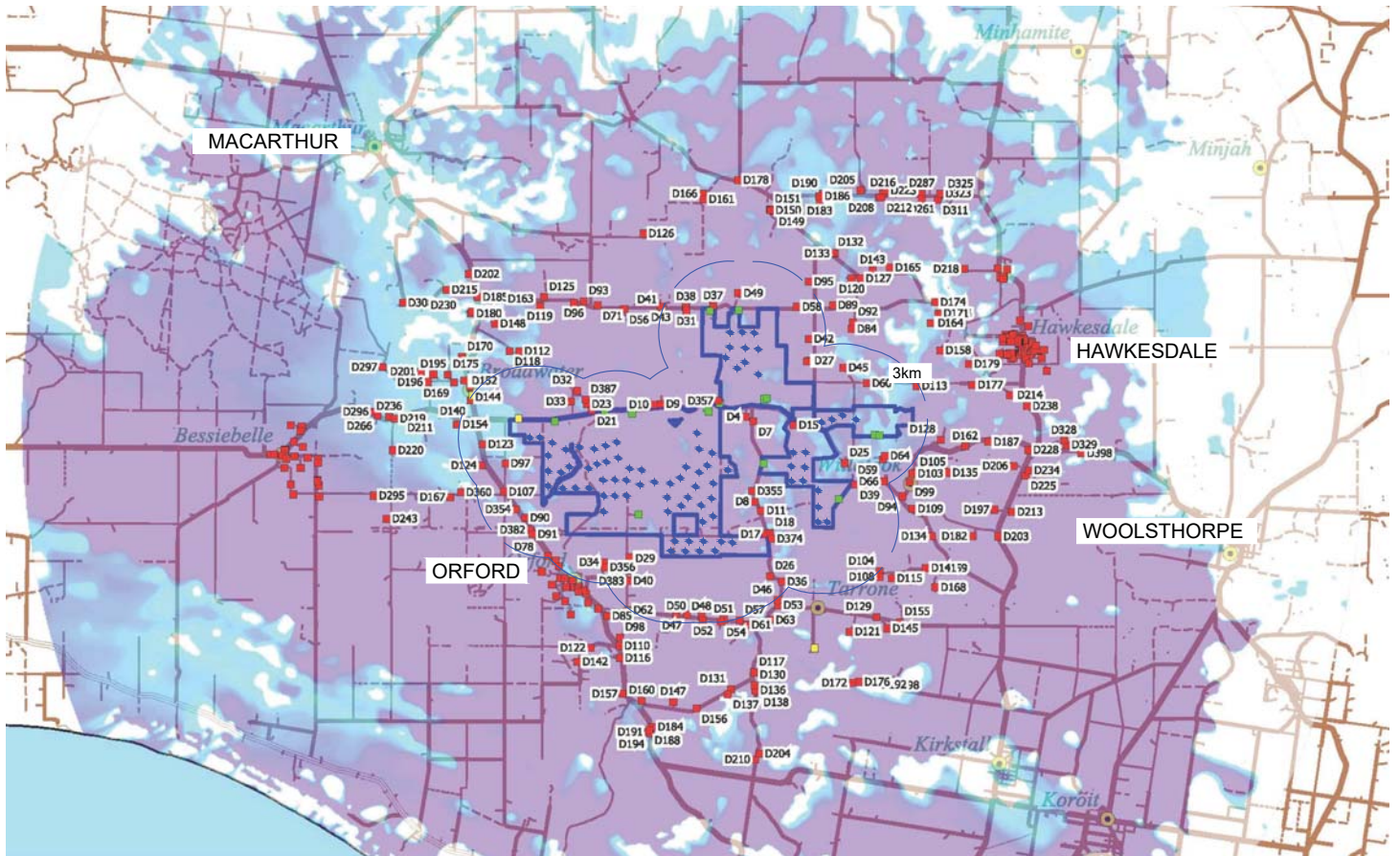


Figure 17
ZVI Diagram - tip of blade

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Willatook Wind Farm LVIA



- Willatook Wind Farm Site
- Turbine
- Participating Landowner Dwelling
- Participating Landowner Dwelling (Not Within Site)
- Non-Participating Landowner Dwelling

- No. WTG Rotor Planes Visible 1-20
- 21-41
- 42-61
- 62-83

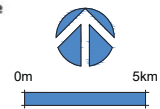
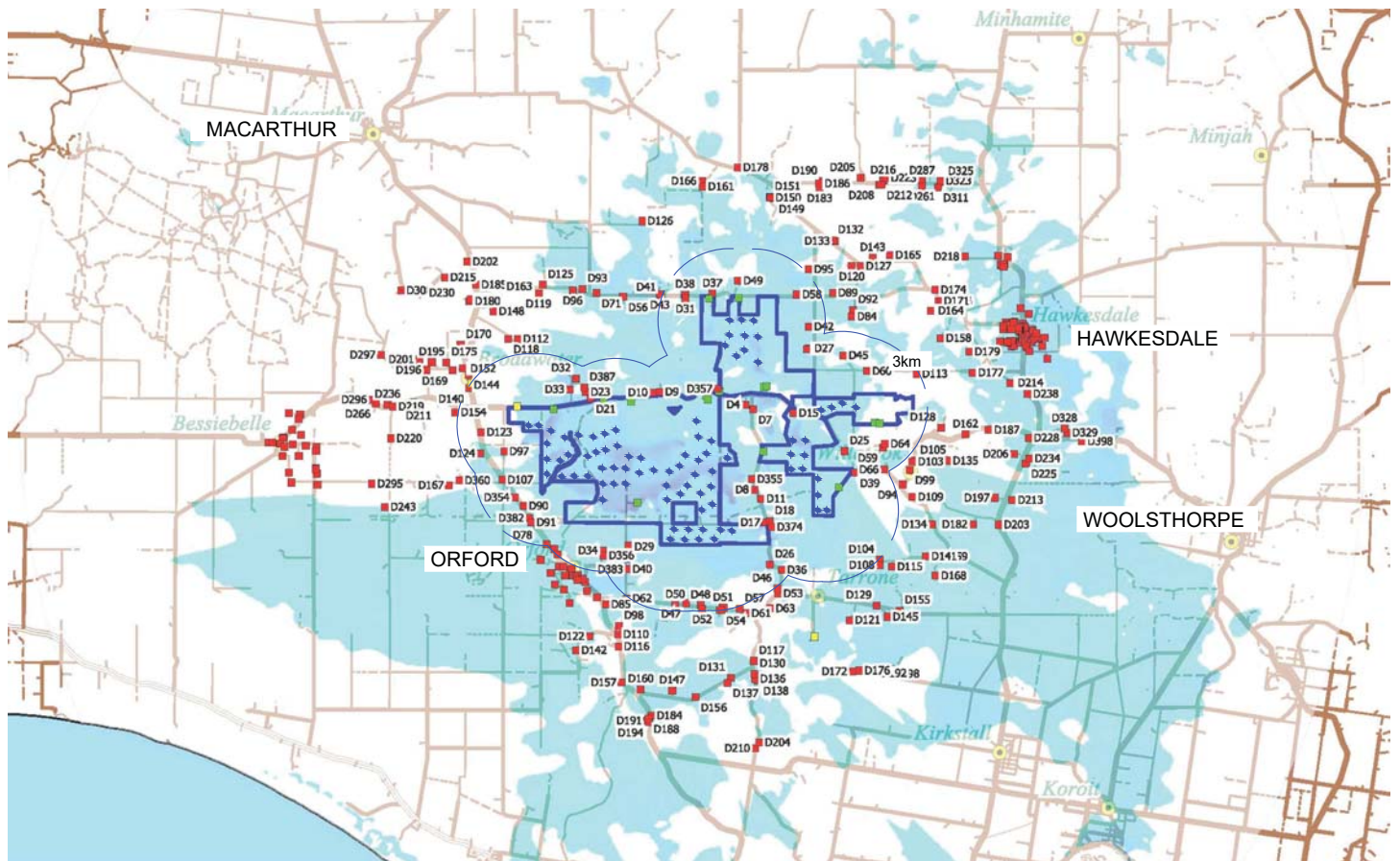


Figure 18
ZVI Diagram - rotor face

Willatook Wind Farm LVIA



- Willatook Wind Farm Site
- Turbine
- Participating Landowner Dwelling
- Participating Landowner Dwelling (Not Within Site)
- Non-Participating Landowner Dwelling

- No. WTG Tower Bases Visible
- 1-20
- 21-41
- 42-61
- 62-83

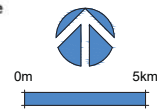


Figure 19
ZVI Diagram - whole turbine

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Willatook Wind Farm LVIA



Maroona Wind Farm - View distance 2 km



Maroona Wind Farm - View distance 3 km



Maroona Wind Farm - View distance 4 km



Maroona Wind Farm - View distance 5 km

Maroona Wind Farm turbines: Vestas V126, 150 m tip height
 Photographs: Nikon D700, 50mm prime lens

Approximate wind turbine swept area

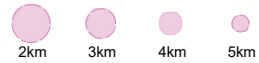


Figure 20
 Wind turbine visibility

Willatook Wind Farm LVIA

Key views

Section 8

8.1 Key Views (Moyne Planning Scheme Clause 21.06)

The Moyne Planning Scheme identifies several key viewing locations within the Shire that are frequented by tourist and visitors to the Region. These are predominantly coastal locations and include:

- Bay of Islands (over 60km from the proposed Willatook Wind Farm turbines)
- The Craggs (20km from the Willatook Wind Farm turbines)
- Lake Yambuk (17km from the Willatook Wind Farm turbines) and
- Tower Hill (20km from the Willatook Wind Farm turbines).

Views toward the proposed Willatook Wind Farm turbines from The Bay of Islands, The Craggs and Lake Yambuk are unlikely to be significant by virtue of distance and the likely screening by a combination of topography, vegetation and built structures between these locations and the proposed Willatook Wind Farm.

The view from Tower Hill together with views from the other prominent volcanic features of Mount Eccles, Mount Napier and Mount Rouse are considered below.

8.2 Mount Eccles

The view east from the summit of Mount Eccles toward the proposed Willatook Wind Farm turbines (approximately 15km) is screened by mature tree cover and is therefore unlikely to have any significant impact on views from this key view location.

8.3 Mount Napier

Mount Napier is located within the South Grampian Local Government Area but offers regional views across the Moyne Shire. Views from the summit extend to 360 degrees and would provide opportunities to view wind turbines within a number of wind energy projects within the Moyne Shire and adjoining Southern Grampians Local Government areas.

The nearest Willatook Wind Farm turbines would be located approximately 25.5km from this view location, and would be visible beyond a portion of the Macarthur wind energy project. At around 25.5km the proposed Willatook Wind Farm turbines would not tend to appear as dominant elements in the view.

8.4 Mount Rouse

Mount Rouse is also located within the South Grampian Local Government Area and offers regional views across the Moyne Shire. Views from the summit extend to almost 360 degrees and would provide opportunities to view wind turbines in a number of wind energy projects within the Moyne Shire and adjoining Southern Grampians Local Government areas.

The closest proposed Willatook Wind Farm turbines would be located approximately 26km from this view location, and would be visible beyond a portion of the Macarthur wind energy project. At around 26km the wind turbines and would not tend to dominate the view.

8.5 Tower Hill

Tower Hill is nominated within the Moyne Planning Scheme as a key viewing location. Its historical significance is well documented, including the painting by Eugene von Guerard which documents the view in 1855. Clause 21.06 of the Moyne Planning Scheme identifies Tower Hill as State Significant evidenced by a visually stunning volcanic landscape.

The existing view from Tower Hill (von Guerard Lookout) is illustrated in **Figure 8**, which also illustrates the likely extent of visibility toward operational wind energy projects (Yambuk and Codrington), approved wind energy projects not constructed (Ryan's Corner, Hawkesdale and Woolsthorpe), the operational Macarthur Wind Farm, as well as the proposed Willatook Wind Farm. It is apparent that views toward wind turbines to the north of Tower Hill will be screened by existing vegetation on the crater rim, including views toward the Woolsthorpe, Hawkesdale, Macarthur wind energy projects, as well as around one third of the proposed Willatook Wind Farm.

The closest proposed Willatook Wind Farm turbines would be located approximately 20km from the Tower Hill lookouts, and at this distance would not dominate the views available from this key viewing location. There would be no overlap between the proposed Willatook Wind Farm project and other wind farms located at a similar offset distance and a significant degree of visual separation would allow the proposed Willatook Wind Farm to be identified as a singular development, albeit at a distant view.

The Moyne Planning Scheme "Preferred Character" of the coastal area around Tower Hill is:

An open rural character will be retained and enhanced with increased coverage of native vegetation in stands and corridors in the area. Tower Hill will be protected and managed as a valued and natural landscape feature while cultural vegetation patterns in productive pastoral areas (including non-invasive exotic feature planting) will be maintained.

Pursuing and meeting the objectives for the "Preferred Character" would assist in minimising both localised views toward the proposed Willatook Wind Farm.

Visual effects

Section 9

9.1 Introduction

The overall determination of visual effects resulting from the construction and operation of the Willatook Wind Farm would result primarily from a combination of receiver sensitivity and the magnitude of visual effects.

A determination of visual effects from the combination of receiver sensitivity and the magnitude of visual effect is a well-established methodology and has been applied extensively on wind farm LVIA in Victoria and across Australia. The standard methodology is set out in industry and best practice guidelines including the Guidelines for Landscape and Visual Impact Assessment, Third Edition, Landscape Institute and Institute of Environmental Management & Assessment, 2013 – Chapter 6 Assessment of visual effects as well as the NSW Wind Energy Visual Assessment Bulletin (December 2016).

9.2 Sensitivity of visual receivers

Judging the sensitivity of visual receivers needs to take account of the occupation or activity of people experiencing the view at particular locations and the extent to which their attention or interest is focussed on views within and surrounding the wind farm site.

9.3 Magnitude of visual effects

Judging the magnitude of the visual effects needs to take account of:

- the scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the proposed development
- the degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of form, scale and mass, line height, colour and texture
- the nature of the view of the proposed development, in terms of the relative amount of time over which it will be experienced and whether views will be full, partial or glimpses.

Tables 11 and **12** set out definitions and criteria for sensitivity and magnitude.

The combination of sensitivity and magnitude will provide the rating of visual effect for viewpoints. **Table 13** sets out the relative visual impact grading values which combines issues of sensitivity and magnitude for the Willatook Wind Farm project.

Table 11 – Receiver location sensitivity

View Category	Sensitivity
Residential Properties	Highest Sensitivity
Areas of high scenic value (National Parks or designated landscapes)	▽
Public recreational areas	▽
Rural employment/farming	▽
Motorists	▽
Business (commercial)	▽
Industrial areas	Lower Sensitivity

Table 12 – Magnitude assessment criteria

Criteria	Definition
Distance	
Very short	<1 km
Short	1 – 3 km
Moderate	3 km – 5 km
Long	5 km - 10 km +
Duration of effect	
High	> 2 hours
Moderate	30 - 120 minutes
Low	10 – 30 minutes
Very low	< 10 minutes
Degree of screening	
High	Screening effectively blocks views toward wind turbines
Moderate	Screening partially screens views toward wind turbines
Low	Screening filters some views toward wind turbines
Very low	Limited or no screening toward wind turbines

An overall determination of visual effect at each receiver location has also been assessed and determined against the visual impact grading matrix in **Table 13** below. The levels of sensitivity and magnitude of visual effects outlined in **Table 13** are **used as a guide** to determine levels of visual effect and are not absolute.

Whilst a receiver location may have both a high sensitivity and high magnitude, which result in a high visual impact; the visual impact may be offset and mitigated by screening, through tree cover or intervening landform surrounding or beyond the receiver location.

The location of non-associated residential dwellings is illustrated in **Figure 21**. Associated residential dwellings and non-residential structures, such as agricultural sheds, within 5 km of the Willatook Wind Farm turbines have not been assessed.

Table 13 Visual impact grading matrix

		Scale or magnitude of visual effects				
		High	Moderate	Low	Negligible	
		Very short distance view over a long duration of time. A high extent of wind turbine visibility will tend to dominate the available skyline view and significantly disrupt existing views or vistas. Total loss or major change to pre-development view or introduction of elements which are uncharacteristic to the existing landscape features.	Short to medium distance views over a medium duration of time. A moderate extent of wind turbine visibility will have the potential to dominate available views with visibility receding over increasing distance. Partial alteration to pre-development view or introduction of elements that may be prominent but not uncharacteristic with the existing landscape.	Medium to long distance views over a low to medium duration of time. Wind turbines in views, at long distances or visible for a short duration not expected to be significantly distinct in the existing view. Minor alteration to pre-development view or introduction of elements that may not be uncharacteristic with the existing landscape.	Visible change perceptible at a very long distance, or visible for a very short duration, and/or is expected to be less distinct within the existing view. Very minor loss or alteration to pre-development view or introduction of elements which are not uncharacteristic with the existing landscape features.	
Sensitivity of visual receptor	High	Indicator People with a proprietary interest and prolonged viewing opportunities such as those in dwellings or visitors to attractive and/or well-used recreational facilities. Views from a regionally important location whose interest is specifically focussed on the landscape e.g. from lookouts or areas within National Parks.	High	High-moderate	Moderate	Negligible
	Moderate	People with an interest in their environment e.g. visitors to environmental areas, bush walkers and horse riders etc...those travelling with an interest in their surroundings	High-moderate	Moderate	Moderate-low	Negligible
	Low	People with a passing interest in their surroundings e.g. those travelling along local roads between townships, or people whose interest is not specifically focussed on the wider landscape e.g. service providers or commuters.	Moderate	Moderate-low	Low	Negligible
	Negligible	People with no specific interest in their surroundings or those with occasional and transient views travelling at speed along highways or from a place of work where attention may not be focussed on surrounding views.	Negligible	Negligible	Negligible	Negligible

9.4 Views from townships and localities

Townships and localities within the landscape surrounding the Willatook Wind Farm include:

- Macarthur (Population 522* including area surrounding the township)
- Orford (Population 105*)
- Bessiebelle and
- Hawkesdale (Population 322*, including area surrounding the township).

*Populations quoted from the Australian Bureau of Statistics 2016 Census Data.

Whilst some wind turbines may be visible over the distances between localities and the wind farm, views toward the wind turbines would be partially restricted by development and built structures within localities. Potential views toward the wind farm will also tend to be disrupted by discrete areas of vegetation both within and beyond localities. Given the potential for screening, it is considered that the wind farm would be unlikely to have any significant visual effect on people within localities surrounding the proposed Willatook wind farm development.

Table 14 Visual impact grading

Sensitivity of visual receiver	High
Magnitude of visual effects	Moderate low
Visual Impact	Moderate low

9.5 Views from highways and local roads

The main roads as illustrated include the Princes Highway, Hamilton Port Fairy Road and the Penshurst Warrnambool Road. It is noted that the proposed Willatook Wind Farm is unlikely to be visible from the Princes Highway and that views from the other main roads will be influenced by both landform and vegetation alongside the road corridors. The dynamic and constantly changing nature of views from vehicles travelling along local roads will tend to be transitory in nature and generally short term.

Table 15 Visual impact grading (highways)

Sensitivity of visual receiver	Moderate low
Magnitude of visual effects	Moderate
Visual Impact	Moderate low

Table 16 Visual impact grading (local roads)

Sensitivity of visual receiver	Moderate
Magnitude of visual effects	Moderate
Visual Impact	Moderate

9.6 Views from agricultural land

GBD acknowledge that the proposed Willatook Wind Farm may have the potential to impact people engaged in predominantly farming activities, where views toward wind turbines occur from surrounding and non-associated agricultural areas. Ultimately the level of impact would depend on the type of activities engaged in as well as the location of the activities together with the degree of screening provided by local vegetation within individual properties. Whilst views toward the turbines will occur from a wide area of surrounding rural agricultural land, this LVIA has determined that the sensitivity of visual impacts is less for those employed or carrying out work in rural areas compared to potential views from residential dwellings; however, the sensitivity of individual view locations will also depend on the perception of the viewer.

Table 17 Visual impact grading

Sensitivity of visual receiver	Low
Magnitude of visual effects	Moderate
Visual Impact	Moderate-low

9.7 View from publicly accessible locations

Publicly accessible locations, other than road corridors, include various public open spaces, recreational areas, reserves or public meeting places. The majority of public open spaces and recreational areas are those associated and located within surrounding localities, where the influence of both distance and existing vegetative cover is likely to screen any potential views toward the Willatook Wind Farm site.

Table 18 Visual impact grading

Sensitivity of visual receiver	Moderate
Magnitude of visual effects	Moderate low

Visual Impact	Moderate-low
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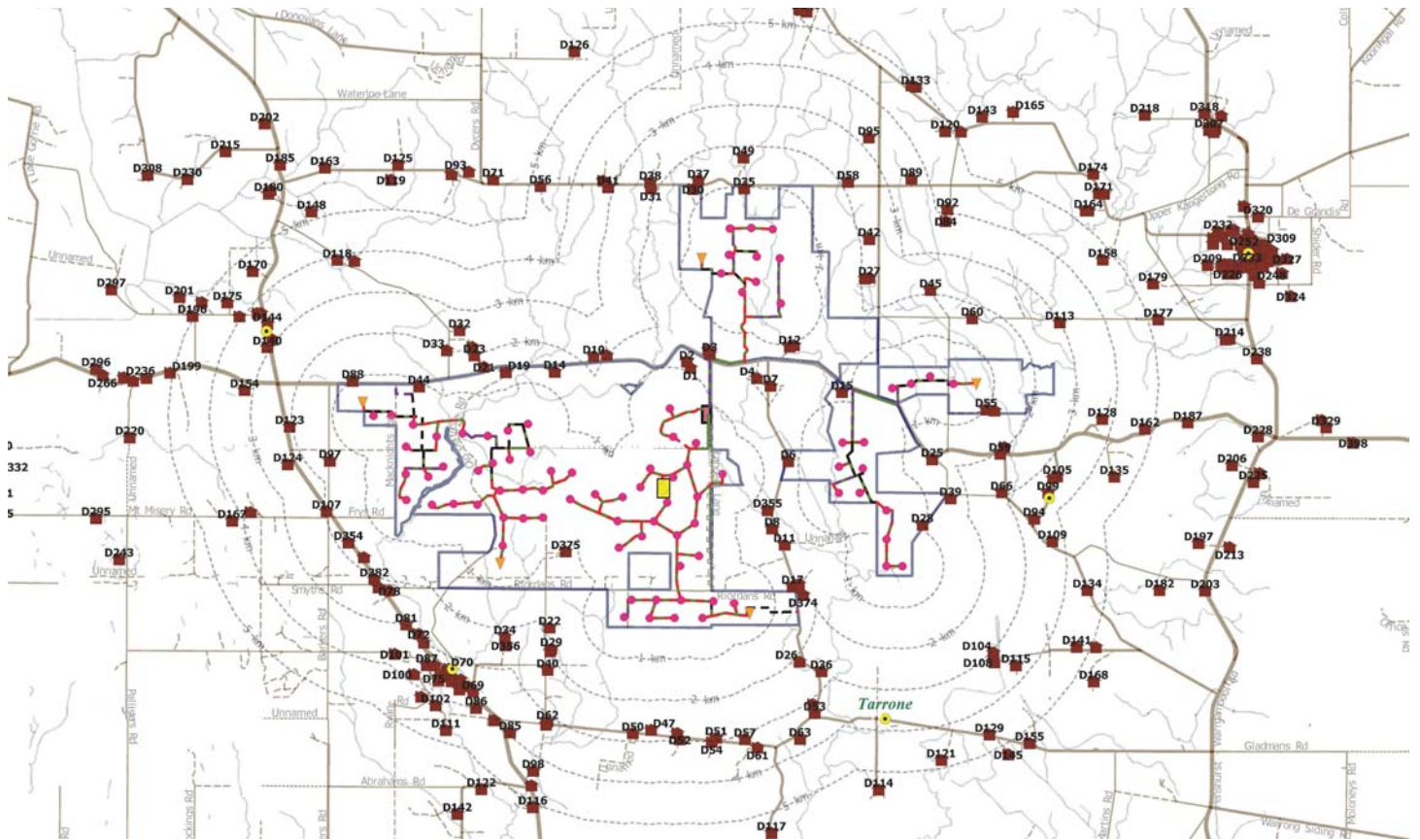
9.8 Views from residential dwellings

Existing residential dwellings are illustrated in **Figure 21** and include dwellings on properties that are not associated with the proposed Willatook Wind Farm development.

The site inspection noted that a number of residential dwellings within the landscape surrounding the wind farm were screened by tree and/or windbreak shelter planting. It is possible that not all residential dwellings will have direct or significant views toward the proposed Willatook wind turbines.

Some residential dwellings have been assessed as discrete groups where the dwellings are located within proximity to one another and/or where the direction of view and overall visual effect is considered to be similar.

Residential dwellings included in **Table 19** have been assessed within a 3km offset distances.



- Proposed wind turbine
- Residential dwelling
- Proposed substation
- ▲ Proposed met mast
- Proposed quarry



Figure 21 Residential locations

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Willatook Wind Farm LVIA

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
Residential dwellings around 3km of a Willatook Wind Farm turbine							
D4	Non-associated landowner Residential dwelling Sensitivity: High	1,925m (Turbine 52)	High	High	Moderate High	Short distance views toward the Willatook wind turbines from the dwelling and immediate curtilage would be largely screened and/or partially filtered by tree planting surrounding and beyond the dwelling. Tree screening also restricts views north toward the Macarthur Wind Farm wind turbines (around 7km), as well as other wind turbines within proposed but not constructed projects.	Low
D7	Non-associated landowner Residential dwelling (Potentially unoccupied) Sensitivity: High	2,100m (Turbine 52)	High	High	Moderate High	Short distance views toward the Willatook wind turbines from the dwelling and immediate curtilage would be largely screened and/or partially filtered by tree planting surrounding and beyond the dwelling. Tree screening also restricts views north toward the Macarthur Wind Farm wind turbines (around 7km), and generally other wind turbines within proposed but not constructed projects.	Low
D8	Non-associated landowner	1,870m (Turbine 47)	High	High	Moderate High	Short distance views toward the Willatook wind turbines (east and west of Tarrone Road North) from the dwelling and immediate curtilage would	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
	Residential dwelling (Potentially unoccupied) Sensitivity: High					be largely screened and/or partially filtered by tree planting surrounding and beyond the dwelling. Tree screening also restricts views north toward the Macarthur Wind Farm wind turbines (in excess of 10km), and generally other wind turbines within proposed but not constructed projects.	
D9	Non-associated landowner Residential dwelling Sensitivity: High	1,990m (Turbine 39)	High	High	Moderate High	Short distance views toward the Willatook wind turbines (north and south of Woolsthorpe Heywood Road), from the dwelling and immediate curtilage would be largely screened and/or partially filtered by tree planting surrounding and beyond the dwelling. Tree screening also restricts any direct views north toward the Macarthur Wind Farm wind turbines (around 6km), and generally other wind turbines within proposed but not constructed projects.	Low
D10	Non-associated landowner Residential dwelling Sensitivity: High	2,230m (Turbine 39)	High	High	Moderate High	Short distance views toward the Willatook wind turbines (north and south of Woolsthorpe Heywood Road), from the dwelling and immediate curtilage would be largely screened and/or partially filtered by tree planting surrounding and beyond the dwelling. Tree screening also restricts any direct views north toward the Macarthur Wind	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
						Farm wind turbines (around 6km), and generally other wind turbines within proposed but not constructed projects.	
D11	Non-associated landowner Residential dwelling Sensitivity: High	1,185m (Turbine 29)	High	High	Moderate High	Short distance views toward the Willatook wind turbines (west of Tarrone Road North), from the dwelling and immediate curtilage would be largely screened and/or partially filtered by tree planting surrounding and beyond the dwelling. Tree screening also restricts any direct views north toward the Macarthur Wind Farm wind turbines (in excess of 10km). Relatively open and unrestricted views would extend toward Willatook wind turbines located east to north east from the residential dwelling and curtilage.	Moderate High
D15	Non-associated landowner Residential dwelling Sensitivity: High	1,200m (Turbine 24)	High	High	Moderate High	Short distance views toward the Willatook wind turbines from the dwelling and immediate curtilage would be partially screened and/or filtered by scattered tree planting surrounding the dwelling as well as trees alongside the Woolsthorpe Heywood Road corridor. Tree screening also restricts any direct views north toward the Macarthur Wind Farm wind turbines (in excess of 7km). Views would extend toward	Low Moderate

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
						Willatook wind turbines located east to north east from the dwelling and dwelling curtilage.	
D17	Non-associated landowner Residential dwelling Sensitivity: High	1,470m (Turbine 29)	High	High	Moderate High	Short distance views toward the Willatook wind turbines (north east and west of Tarrone Road North) from the dwelling and immediate curtilage would be largely screened and/or partially filtered by tree planting surrounding and beyond the dwelling. Tree screening and landform also restricts views north toward the Macarthur Wind Farm wind turbines (in excess of 10km), and generally other wind turbines within proposed but not constructed projects.	Low
D18	Non-associated landowner Residential dwelling Sensitivity: High	1,642m (Turbine 29)	High	High	Moderate High	Short distance views toward the Willatook wind turbines (west of Tarrone Road North), from the dwelling and immediate curtilage would be largely screened and/or partially filtered by tree planting surrounding and beyond the dwelling. Tree screening also restricts any direct views north toward the Macarthur Wind Farm wind turbines (in excess of 10km). Views would extend toward Willatook wind turbines located east to north east from the residential dwelling and curtilage.	Moderate High

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
D21	Non-associated landowner Residential dwelling Sensitivity: High	1,620m (Turbine 53)	High	High	Moderate High	Short distance views would extend south east to south west across the Woolsthorpe Heywood toward Willatook wind turbines within the west portion of the project site. Tree screening and landform also restricts views north east toward the Macarthur Wind Farm wind turbines (in excess of 7km), and generally other wind turbines within proposed but not constructed projects.	Moderate High
D22	Non-associated landowner Residential dwelling Sensitivity: High	1,835m (Turbine 30)	High	High	Moderate High	Short distance views would extend north to east toward Willatook wind turbines within the central and south portions of the project site. Tree screening and landform restricts views north toward the Macarthur Wind Farm wind turbines (in excess of 12km), and generally other wind turbines within proposed but not constructed projects.	Moderate High
D23	Non-associated landowner Residential dwelling Sensitivity: High	1,880m (Turbine 21)	High	High	Moderate High	Short distance views would extend south east to south west across the Woolsthorpe Heywood toward Willatook wind turbines within the west portion of the project site. Tree screening generally restricts views north east toward the Macarthur Wind Farm wind turbines (in excess of	Moderate High

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
						7km), and generally other wind turbines within proposed but not constructed projects.	
D24	Non-associated landowner Residential dwelling Sensitivity: High	2,145m (Turbine 69)	High	High	Moderate High	Short distance views west and south east toward Willatook wind turbines within the north and east portion of the project site would be generally screened and/or filtered by tree planting beyond the dwelling. Tree screening also generally restricts views north east toward the Macarthur Wind Farm wind turbines (around 4.5km), and generally other wind turbines within proposed but not constructed projects.	Low
D25	Non-associated landowner Residential dwelling Sensitivity: High	1,645m (Turbine 66)	High	High	Moderate High	Short distance views toward the Willatook wind turbines (to the north and south of the Woolsthorpe Heywood Road), from the dwelling and immediate curtilage would be partially screened and/or partially filtered by tree planting beyond the dwelling. Tree screening also restricts any direct views north toward the Macarthur Wind Farm wind turbines (in excess of 9km). Views would extend toward Willatook wind turbines located east to north east from the dwelling and curtilage.	Low Moderate

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
D26	Non-associated landowner Residential dwelling Sensitivity: High	2,145m (Turbine 29)	High	High	Moderate High	Short distance views toward the Willatook wind turbines (to the north west and north east of Tarrone Road North), from the dwelling and immediate curtilage would be largely screened and/or partially filtered by tree planting beyond the dwelling. Tree screening also restricts any direct views north toward the Macarthur Wind Farm wind turbines (in excess of 13km). Views would extend toward Willatook wind turbines located east to north east from the dwelling and curtilage.	Low
D27	Non-associated landowner Residential dwelling Sensitivity: High	2,240m (Turbine 69)	High	High	Moderate High	Short distance views west and south east toward Willatook wind turbines within the north and east portion of the project site would be generally screened and/or filtered by tree planting surrounding and beyond the dwelling. Tree screening also generally restricts views north east toward the Macarthur Wind Farm wind turbines (around 4.5km), and generally other wind turbines within proposed but not constructed projects	Low
D29	Non-associated landowner	1,930m (Turbine 30)	High	High	Moderate High	Short distance views north and north east would extend toward Willatook wind turbines within the central and south portion of the project site.	Moderate High

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
	Residential dwelling Sensitivity: High					Distance and tree screening generally restrict views north toward the Macarthur Wind Farm wind turbines (around 13km), and generally other wind turbines within proposed but not constructed projects	
D31	Non-associated landowner Residential dwelling Sensitivity: High	2,140m (Turbine 56)	High	High	Moderate High	Short distance view south east toward Willatook wind turbines within the north portion of the project site would be largely screened and/or filtered by tree planting surrounding and beyond the dwelling. Tree screening also generally restricts short distance views north toward the Macarthur Wind Farm wind turbines (around 1.7km), and generally other wind turbines within proposed but not constructed projects	Low
D32	Non-associated landowner Residential dwelling Sensitivity: High	2,470m (Turbine 21)	High	High	Moderate High	Short distance view south toward Willatook wind turbines within the west portion of the project site would be partially screened and/or filtered by tree planting and farm buildings beyond the dwelling. Tree screening also generally restricts long distance views north toward the Macarthur Wind Farm wind turbines (around 7km), and generally other wind turbines within proposed but not constructed projects	Moderate

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
D33	Non-associated landowner Residential dwelling Sensitivity: High	1,960m (Turbine 70)	High	High	Moderate High	Short distance view south toward Willatook wind turbines within the west portion of the project site would be partially screened and/or filtered by tree planting beyond the dwelling as well as tree planting alongside Dunmore Lane. Tree screening also generally restricts long distance views north toward the Macarthur Wind Farm wind turbines (around 7km), and generally other wind turbines within proposed but not constructed projects.	Low
D34	Non-associated landowner Residential dwelling Sensitivity: High	2,235m (Turbine 64)	High	High	Moderate High	Short distance view south toward Willatook wind turbines within the west and central portion of the project site would be screened and/or filtered by tree planting beyond the dwelling. The dwelling is also surrounded by plantation trees to the north, east and west. Tree screening also restricts long distance views north toward the Macarthur Wind Farm wind turbines (around 13km), and generally other wind turbines within proposed but not constructed projects.	Low
D36	Non-associated landowner Residential dwelling	2,689m (Turbine 29)	High	High	Moderate High	Short distance views north east through to west north west toward Willatook wind turbines would be largely screened by tree planting beyond the dwelling. Tree screening also restricts long	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
	Sensitivity: High					distance views north toward the Macarthur Wind Farm wind turbines (around 13km), and generally other wind turbines within proposed but not constructed projects.	
D37	Non-associated landowner Residential dwelling Sensitivity: High	1,375m (Turbine 56)	High	High	Moderate High	Short distance view south toward Willatook wind turbines within the north portion of the project site would be partially filtered by tree planting beyond the dwelling. Tree screening also restricts short distance views north toward the Macarthur Wind Farm wind turbines (around 1.8km), and generally other wind turbines within proposed but not constructed projects.	Low Moderate
D38	Non-associated landowner Residential dwelling Sensitivity: High	2,225m (Turbine 56)	High	High	Moderate High	Short distance view south east across Kangerton Road toward Willatook wind turbines within the north portion of the project site would be largely screened and/or filtered by tree planting surrounding and beyond the dwelling. Tree screening also generally restricts short distance views north toward the Macarthur Wind Farm wind turbines (around 1.7km), and generally other wind turbines within proposed but not constructed projects	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
D39	Non-associated landowner Residential dwelling (Potentially unoccupied) Sensitivity: High	1,585m (Turbine 66)	High	High	Moderate High	Short distance view north through to south west toward Willatook wind turbines would be partially screened and/or filtered by tree planting adjacent to, and beyond the dwelling. Landform and tree screening also generally restrict long distance views north toward the Macarthur Wind Farm wind turbines (in excess of 10km), and generally other wind turbines within proposed but not constructed projects	Low
D40	Non-associated landowner Residential dwelling Sensitivity: High	2,274m (Turbine 30)	High	High	Moderate High	Short distance views north and north east would extend toward Willatook wind turbines within the central and south portion of the project site. Distance and tree screening generally restrict views north toward the Macarthur Wind Farm wind turbines (around 13km), and generally other wind turbines within proposed but not constructed projects.	Moderate
D41	Non-associated landowner Residential dwelling Sensitivity: High	3,128m (Turbine 56)	High	High	Moderate High	Short distance view south of Kangerton Road toward Willatook wind turbines within the north portion of the project site would be partially screened and/or filtered by tree planting surrounding and beyond the dwelling. Tree screening also generally restricts short distance	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
						views north toward the Macarthur Wind Farm wind turbines (around 2km), and generally other wind turbines within proposed but not constructed projects	
D42	Non-associated landowner Residential dwelling Sensitivity: High	2,222m (Turbine 69)	High	High	Moderate High	Short distance views west and south east toward Willatook wind turbines within the north and east portion of the project site would be generally screened and/or filtered by tree planting beyond the dwelling. Tree screening also generally restricts views north east toward the Macarthur Wind Farm wind turbines (around 3.5km), and generally other wind turbines within proposed but not constructed projects.	Low
D43	Non-associated landowner Residential dwelling Sensitivity: High	3,287m (Turbine 56)	High	High	Moderate High	Short distance view south east across Kangerton Road toward Willatook wind turbines within the north portion of the project site would be largely screened and/or filtered by tree planting surrounding and beyond the dwelling. Tree screening also partially restricts short distance views north toward the Macarthur Wind Farm wind turbines (around 1.7km), and generally other wind turbines within proposed but not constructed projects	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
D45	Non-associated landowner Residential dwelling Sensitivity: High	2,070m (Turbine 25)	High	High	Moderate High	Short distance views south and west across Nardoo and Nagorckas Road toward Willatook wind turbines within the north and east portion of the project site would be partially screened and/or filtered by tree planting surrounding and beyond the dwelling. Tree screening also restricts long distance views north toward the Macarthur Wind Farm wind turbines (around 5km), and generally other wind turbines within proposed but not constructed projects	Low
D47	Non-associated landowner Residential dwelling Sensitivity: High	2,739m (Turbine 77)	High	High	Moderate High	Short distance views north west to north east toward Willatook wind turbines within the south and central portion of the project site would be partially filtered by tree planting beyond the dwelling. Tree screening and landform largely restricts long distance views north toward the Macarthur Wind Farm wind turbines (around 15km), and generally other wind turbines within proposed but not constructed projects	Low Moderate
D48	Non-associated landowner Residential dwelling	2,820m (Turbine 78)	High	High	Moderate High	Short distance views north to north east toward Willatook wind turbines within the south and central portion of the project site would be partially filtered by tree planting beyond the	Low Moderate

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
	Sensitivity: High					dwelling. Tree screening and landform largely restricts long distance views north toward the Macarthur Wind Farm wind turbines (around 15km), and generally other wind turbines within proposed but not constructed projects	
D49	Non-associated landowner Residential dwelling Sensitivity: High	1,700m (Turbine 4)	High	High	Moderate High	Short distance view south across Kangerton Road toward Willatook wind turbines within the north portion of the project site would be largely screened and/or filtered by tree planting surrounding and beyond the dwelling. Tree screening also partially restricts short distance views north toward the Macarthur Wind Farm wind turbines (around 1.8km), and generally other wind turbines within proposed but not constructed projects.	Low
D50	Non-associated landowner Residential dwelling Sensitivity: High	2,850m (Turbine 30)	High	High	Moderate High	Short distance views north west to north east toward Willatook wind turbines within the south and central portion of the project site would be partially filtered by tree planting beyond the dwelling. Tree screening and landform largely restricts long distance views north toward the Macarthur Wind Farm wind turbines (around	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
						15km), and generally other wind turbines within proposed but not constructed projects	
D51	Non-associated landowner Residential dwelling Sensitivity: High	2,955m (Turbine 79)	High	High	Moderate High	Short distance views north to north east toward Willatook wind turbines within the south and central portion of the project site would be partially filtered by tree planting beyond the dwelling. Tree screening and landform largely restricts long distance views north toward the Macarthur Wind Farm wind turbines (around 15km), and generally other wind turbines within proposed but not constructed projects	Low
D52	Non-associated landowner Residential dwelling Sensitivity: High	2,978m (Turbine 78)	High	High	Moderate High	Short distance views north to north east across Tarrone Lane toward Willatook wind turbines within the south and central portion of the project site would be partially filtered by tree planting beyond the dwelling. Tree screening and landform largely restricts long distance views north toward the Macarthur Wind Farm wind turbines (around 15km), and generally other wind turbines within proposed but not constructed projects	Low
D54	Non-associated landowner	3,043m (Turbine 79)	High	High	Moderate High	Short distance views north to north east across Tarrone Lane toward Willatook wind turbines within the south and central portion of the project	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
	Residential dwelling Sensitivity: High					site would be partially filtered by tree planting beyond the dwelling. Tree screening and landform largely restricts long distance views north toward the Macarthur Wind Farm wind turbines (around 15km), and generally other wind turbines within proposed but not constructed projects	
D57	Non-associated landowner Residential dwelling Sensitivity: High	3,151m (Turbine 79)	High	High	Moderate High	Short distance views north west to north east toward Willatook wind turbines within the south and central portion of the project site would be partially filtered by tree planting beyond the dwelling. Tree screening and landform largely restricts long distance views north toward the Macarthur Wind Farm wind turbines (around 15km), and generally other wind turbines within proposed but not constructed projects	Low
D58	Non-associated landowner Residential dwelling Sensitivity: High	2,152m (Turbine 51)	High	High	Moderate High	Short distance view south across Kangerton Road toward Willatook wind turbines within the north portion of the project site would be largely screened and/or filtered by tree planting surrounding and beyond the dwelling. Tree screening also partially restricts short distance views north toward the Macarthur Wind Farm wind turbines (around 2km), and generally other	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
						wind turbines within proposed but not constructed projects.	
D59	Non-associated landowner Residential dwelling Sensitivity: High	2,064m (Turbine 57)	High	High	Moderate High	Short distance view north west would extend across the Woolsthorpe Heywood Road toward Willatook wind turbines within east portion of the project site. Long distance views north toward the Macarthur Wind Farm wind turbines (around 10km), would be largely screened by landform and trees. Some recent screen planting has been installed within the property along the Woolsthorpe Heywood Road corridor which would provide some degree of potential future screening.	Moderate
D60	Non-associated landowner Residential dwelling Sensitivity: High	1,629m (Turbine 57)	High	High	Moderate High	Short distance view south west to north west toward Willatook wind turbines within the north and east portion of the project site would be largely screened by tree planting surrounding the dwelling. Long distance views north toward the Macarthur Wind Farm wind turbines (around 6.5km), would also be largely screened by trees.	Low
D64	Non-associated landowner	2,002m (Turbine 57)	High	High	Moderate High	Short distance view south west to north west toward Willatook wind turbines within the north and east portion of the project site would be	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
	Residential dwelling Sensitivity: High					largely screened by tree planting surrounding the dwelling. Long distance views north toward the Macarthur Wind Farm wind turbines (around 9.5km), would also be largely screened by trees.	
D66	Non-associated landowner Residential dwelling Sensitivity: High	2,835m (Turbine 66)	High	High	Moderate High	Short distance views south west to north west toward Willatook wind turbines within the east portion of the project site would be partially screened by tree planting beyond the dwelling. Long distance views north toward the Macarthur Wind Farm wind turbines (around 11km), would also be largely screened by trees.	Low Moderate
D72	Non-associated landowner Residential dwelling Sensitivity: High	2,984m (Turbine 64)	High	High	Moderate High	Short distance view north east toward Willatook wind turbines within the west portion of the project site would be largely screened by tree planting beyond the dwelling. The wind farm would also be partially screened by (but not dependent on) plantation woodland to the north and east of the dwelling. Long distance views north toward the Macarthur Wind Farm wind turbines (around 13km), would also be largely screened by trees.	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
D73	Non-associated landowner Residential dwelling Sensitivity: High	3,060m (Turbine 64)	High	High	Moderate High	Short distance view north east toward Willatook wind turbines within the west portion of the project site would be largely screened by tree planting beyond the dwelling. The wind farm would also be partially screened by (but not dependent on) plantation woodland to the north and east of the dwelling Long distance views north toward the Macarthur Wind Farm wind turbines (around 13km), would also be largely screened by trees.	Low
D78	Non-associated landowner Residential dwelling Sensitivity: High	2,261m (Turbine 42)	High	High	Moderate High	Short distance view north east toward Willatook wind turbines within the west portion of the project site would be largely screened by tree planting beyond the dwelling. The wind farm would also be partially screened by (but not dependent on) plantation woodland to the north and east of the dwelling. Long distance views north toward the Macarthur Wind Farm wind turbines (around 13km), would also be largely screened by trees.	Low
D81	Non-associated landowner	3,081m (Turbine 64)	High	High	Moderate High	Moderate distance views north to east toward the Willatook wind turbines would extend across the Hamilton Port Fairy Road and above and beyond	Low Moderate

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
	Residential dwelling Sensitivity: High					the timber plantations east of the road. Views toward wind turbines would be generally restricted to upper portions of turbine structures where screened by plantation trees. Views toward the Willatook wind turbines would become more extensive following timber harvesting. Long distance views north toward the Macarthur Wind Farm wind turbines (around 13.5km), would also be largely screened by trees both within and beyond plantation areas.	
D90	Non-associated landowner Residential dwelling Sensitivity: High	1,748m (Turbine 42)	High	High	Moderate High	Short distance view north to north east toward Willatook wind turbines within the west portion of the project site would be largely screened by tree planting beyond the dwelling. The wind farm would also be partially screened by (but not dependent on) plantation woodland to the north and east of the dwelling. Long distance views north toward the Macarthur Wind Farm wind turbines (around 13km), would also be largely screened by trees.	Low
D91	Non-associated landowner	2,261m (Turbine 42)	High	High	Moderate High	Short distance view north to north east toward Willatook wind turbines within the west portion of the project site would be largely screened by tree planting beyond the dwelling. Long distance views	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
	Residential dwelling (Potentially unoccupied) Sensitivity: High					north toward the Macarthur Wind Farm wind turbines (around 13km), would also be largely screened by trees.	
D97	Non-associated landowner Residential dwelling Sensitivity: High	1,542m (Turbine 19)	High	High	Moderate High	Short distance view north to south east toward Willatook wind turbines within the west portion of the project site would be partially filtered by tree planting beyond the dwelling. Long distance views north toward the Macarthur Wind Farm wind turbines (around 11km), would also be largely screened by distance and trees.	Moderate
D104	Non-associated landowner Residential dwelling Sensitivity: High	3,067m (Turbine 81)	High	High	Moderate High	Moderate distance view north west toward Willatook wind turbines within the east portion of the project site would be largely screened by tree planting beyond the dwelling. Long distance views north toward the Macarthur Wind Farm wind turbines (around 15km), would also be largely screened by distance and trees.	Low
D107	Non-associated landowner	1,976m (Turbine 42)	High	High	Moderate High	Short distance view east toward Willatook wind turbines within the west portion of the project site would be partially filtered by tree planting to the	Low Moderate

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
	Residential dwelling Sensitivity: High					west and east of the Hamilton Port Fairy Road. Long distance views north toward the Macarthur Wind Farm wind turbines (around 12km), would also be largely screened by distance and trees.	
D108	Non-associated landowner Residential dwelling Sensitivity: High	3,233m (Turbine 81)	High	High	Moderate High	Moderate distance view north west toward Willatook wind turbines within the east portion of the project site would be partially filtered by tree planting beyond the dwelling. Long distance views north toward the Macarthur Wind Farm wind turbines (around 15km), would also be largely screened by distance and trees.	Low
D113	Non-associated landowner Residential dwelling Sensitivity: High	2,980m (Turbine 57)	High	High	Moderate High	Moderate distance view north west to south west toward Willatook wind turbines within the east portion of the project site would be partially filtered by tree planting beyond the dwelling. Long distance views north toward the Macarthur Wind Farm wind turbines (around 8km), would also be largely screened by distance and trees.	Low
D123	Non-associated landowner Residential dwelling	2,060m (Turbine 19)	High	High	Moderate High	Short distance view east toward Willatook wind turbines within the west portion of the project site would be partially filtered by tree planting surrounding and beyond the dwelling. Long distance views north toward the Macarthur Wind	Moderate

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
	Sensitivity: High					Farm wind turbines (around 11km), would also be largely screened by distance and trees.	
D124	Non-associated landowner Residential dwelling Sensitivity: High	2,418m (Turbine 19)	High	High	Moderate High	Short distance view east toward Willatook wind turbines within the west portion of the project site would be partially filtered by tree planting to the west of the Hamilton Port Fairy Road. Long distance views north toward the Macarthur Wind Farm wind turbines (around 12km), would also be largely screened by distance and trees.	Low Moderate
D140	Non-associated landowner Residential dwelling Sensitivity: High	3,022m (Turbine 19)	High	High	Moderate High	Moderate distance view would extend across the Hamilton Port Fairy Road south east toward Willatook wind turbines within the west portion of the project site. Long distance views north toward the Macarthur Wind Farm wind turbines (around 12km), would also be largely screened by distance and trees.	Low Moderate
D354	Non-associated landowner Residential dwelling Sensitivity: High	1,747m (Turbine 42)	High	High	Moderate High	Short distance view would extend across the Hamilton Port Fairy Road south east toward Willatook wind turbines within the west portion of the project site. Long distance views north toward the Macarthur Wind Farm wind turbines (around	Moderate

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
						12km), would also be largely screened by distance and trees.	
D355	Non-associated landowner Residential dwelling (Potentially unoccupied) Sensitivity: High	1,406m (Turbine 43)	High	High	Moderate High	Short distance views toward the Willatook wind turbines (east and west of Tarrone Road North) from the dwelling and immediate curtilage would be largely screened and/or partially filtered by tree planting surrounding and beyond the dwelling. Tree screening also restricts views north toward the Macarthur Wind Farm wind turbines (in excess of 10km), and generally other wind turbines within proposed but not constructed projects.	Low
D356	Non-associated landowner Residential dwelling (Potentially unoccupied) Sensitivity: High	2,444m (Turbine 64)	High	High	Moderate High	Short distance view south toward Willatook wind turbines within the west and central portion of the project site would be screened and/or filtered by tree planting beyond the dwelling. The dwelling is also surrounded by plantation trees to the north, east and west Tree screening also restricts long distance views north toward the Macarthur Wind Farm wind turbines (around 13km), and generally other wind turbines within proposed but not constructed projects.	Low

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
D357	Non-associated landowner Residential dwelling Sensitivity: High	1,640m (Turbine 8)	High	High	Moderate High	Short distance views toward the Willatook wind turbines from the dwelling and immediate curtilage would be largely screened and/or partially filtered by tree planting surrounding and beyond the dwelling. Tree screening also restricts views north toward the Macarthur Wind Farm wind turbines (around 6km), as well as other wind turbines within proposed but not constructed projects.	Low
D382	Non-associated landowner Residential dwelling Sensitivity: High	2,105m (Turbine 42)	High	High	Moderate High	Short distance view would extend across the Hamilton Port Fairy Road east to north east toward Willatook wind turbines within the west portion of the project site. Tree planting alongside drainage lines, around 350m west of the dwelling, may provide some filtering of views toward wind turbines. Long distance views north toward the Macarthur Wind Farm wind turbines (around 12km), would also be largely screened by distance and trees.	Low Moderate
D383	Non-associated landowner Residential dwelling	1,993m (Turbine 30)	High	High	Moderate High	Short distance views north and north east would extend toward Willatook wind turbines within the central and south portion of the project site. Distance and tree screening generally restrict	Moderate High

Table 19 – Residential visual effect matrix (Refer **Figure 21** for residential receiver locations)

Receiver location	SENSITIVITY		MAGNITUDE			Degree of visibility and screening	Visual effect
	Category of receiver location and sensitivity grading	Approximate distance to closest turbine	Potential duration of effect	Extent of visibility (ZVI hub height)	Overall magnitude grading		
	Sensitivity: High					views north toward the Macarthur Wind Farm wind turbines (around 13km), and generally other wind turbines within proposed but not constructed projects	

9.9 Summary of residential visual effect (within 3 km of wind turbines)

This LVIA identified a combined total of 60 non-associated residential dwellings located around 3km from a proposed wind turbine.

An assessment of residential dwellings determined:

- 7 of the 63 residential dwelling locations would have a moderate high visual effect
- 6 of the 63 residential dwelling locations would have a moderate visual effect
- 11 of the 63 residential dwelling locations would have a low moderate visual effect and
- 39 of the 63 residential dwelling locations would have a low visual effect.

The field assessment for the majority of residential receiver locations was undertaken from the closest publicly accessible location, with a conservative approach adopted where there was no opportunity to confirm the actual extent of available view from areas within or immediately surrounding the residence. It is anticipated that some visibility ratings would be less than those determined subject to a process of verification of existing screening from private property.

9.10 Summary of residential visual significance (beyond 3 km of wind turbines)

The majority of residential dwellings located beyond the 3km wind turbine offset are unlikely to be significantly impacted by the wind farm development. The localised influence of topography, as illustrated in the ZVI diagrams, has some impact on the extent and nature of views beyond the 3km to 5 km and wider viewshed. Similar to some residential dwellings located within 3 km of the wind turbines, residential dwellings beyond 3km include varying degrees of tree planting within proximity to dwellings which may offer greater screening significance as distance from the wind turbines increases.

Cumulative assessment

Section 10

10.1 What is Cumulative Impact Assessment?

A cumulative landscape and visual impact may result from a wind farm being constructed in conjunction with other existing or proposed wind farm developments or other large-scale infrastructure projects, and may be either associated or separate to it.

Separate wind farm or other developments may occur within the established viewshed of the proposed wind farm, or may be located within a regional context where visibility is dependent on a journey between each site or project viewshed.

‘Direct’ cumulative visual impacts may occur where two or more wind farms or other infrastructure developments have been constructed within the same locality, and may be viewed from the same view location simultaneously.

‘Indirect’ cumulative visual impacts may occur where two or more wind farms or other infrastructure developments have been constructed within the same locality, and may be viewed from the same view location but not within the same field of view (i.e. the viewer has to turn their head in order to view both wind farms).

‘Sequential’ cumulative visual impacts may arise as a result of multiple wind farms or other infrastructure developments being observed at different locations during the course of a journey (e.g. from a vehicle travelling along a highway or from a network of local roads), which may form an impression of greater magnitude within the construct of short term memory.

10.2 Other wind farm and infrastructure developments in the Regional Area

There are around 12 wind energy developments that are currently operational, approved or proposed within the same regional context as the proposed Willatook Wind Farm. These are identified in **Table 20**.

Table 20 - Regional Wind Farm Developments

Other Wind Farm	Turbine tip height	Status	Number of turbines
Codrington	79m	Operating	14
Yambuk	105m	Operating	20
Portland Wind Energy Project Cape Bridgewater, Cape Nelson North and Cape Nelson South	135m	Operating or under construction	29, 11 and 22
Ryan's Corner	180m	Approved	68
Woolsthorpe	168m	Approved	20
Hawkesdale	180m	Approved	31

Table 20 - Regional Wind Farm Developments

Other Wind Farm	Turbine tip height	Status	Number of turbines
Salt Creek	150m	Under construction	13
Oaklands Hill	125m	Under construction	32
Morton's Lane	148m	Approved	15
Macarthur	140m	Operating	140

10.3 Other wind farm turbines within the proposed Willatook Wind Farm 20km viewshed

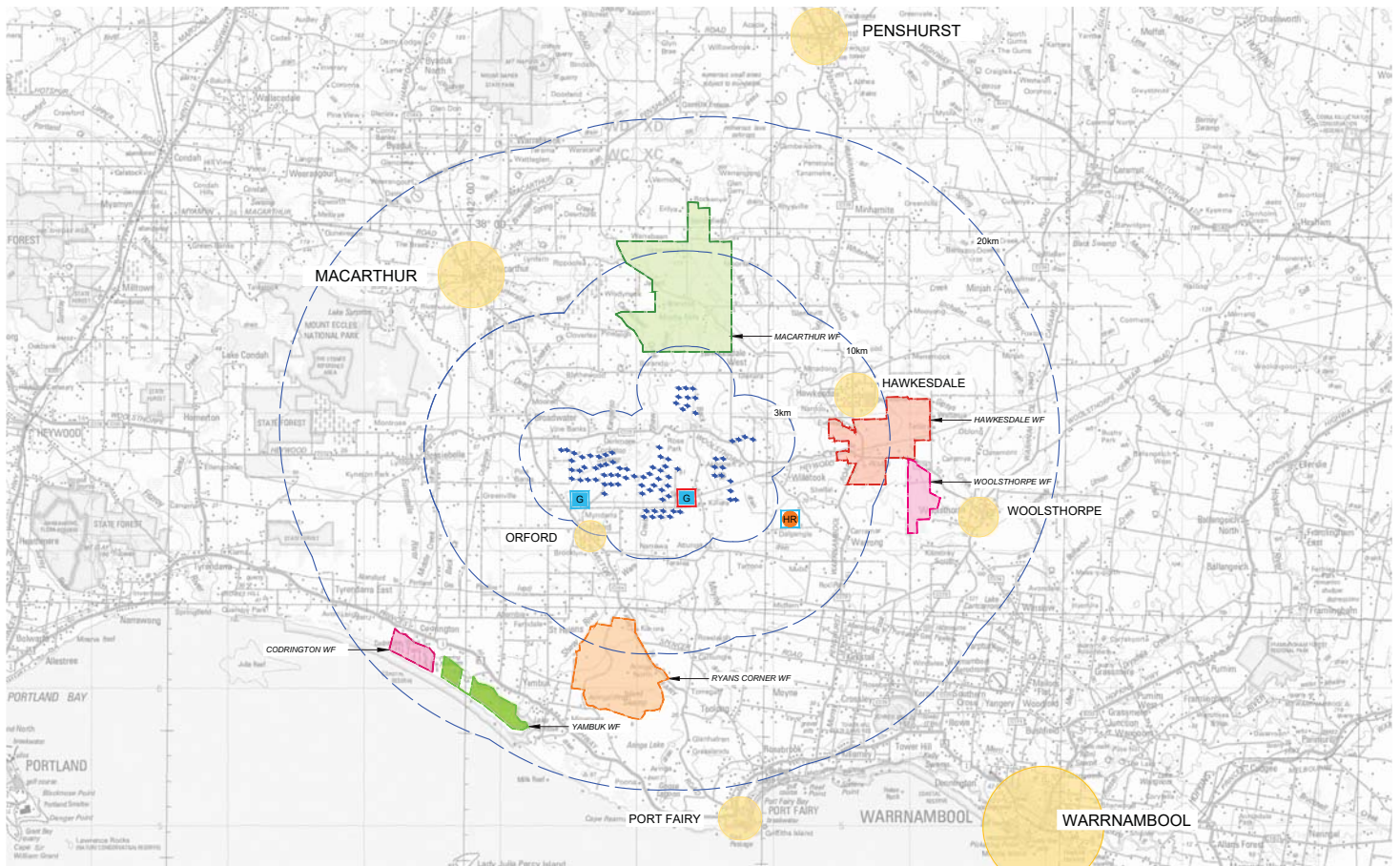
A number of wind turbines within constructed, approved and proposed wind farms would occur within the proposed Willatook Wind Farm 20km viewshed. The extent and location of wind turbines within the proposed Willatook Wind Farm 20km viewshed are illustrated in **Figure 22** and outlined in **Table 21**.

Table 21 - Other wind farm turbines within the 20km viewshed

Other Wind Farm	Approximate number of other turbines within Willatook 10km viewshed	Approximate number of other turbines within Willatook 20km viewshed	Approximate distance between closest Willatook wind turbine and other wind farm turbine
Macarthur	105	140	2.8km
Hawkesdale	20	31	6.2km
Woolsthorpe	0	20	9.3km
Tarrone	20	20	500m
Ryan's Corner	44	68	6.6km
Yambuk	0	20	16.9km
Codrington	0	14	17km

10.4 Proposed Willatook Wind Farm and other wind farm intervisibility from residential properties

The potential for the proposed Willatook wind farm turbines to be visible from residential and view locations together with other wind farm turbines are considered in **Table 22**.



- Woolsthorpe Wind Farm - Approved
- Ryans Corner Wind Farm - Approved
- Yambuk Wind Farm - Operational
- Macarthur Wind Farm - Operational
- Codrington Wind Farm - Operational
- Shaw River Gas Fired Power Station - Proposed
- Tamone Gas Fired Power Station - Approved
- Korot Geothermal Project - Proposed

★ Proposed Willatook wind turbine (indicative location)
 --- Distance offset from indicative turbine location



Figure 22 Other existing and proposed energy developments



Willatook Wind Farm LVIA

Table 22 Proposed Willatook and other wind farm residential property intervisibility

Other wind farm development	View description between the proposed Willatook and other wind farm	
	'Direct' Views	'Indirect' Views
Hawkesdale	Direct views between the wind farms will be largely restricted by distance and vegetation.	Some limited potential for indirect views from residential properties located between the wind farm projects.
Woolsthorpe	Direct views between the wind farms will be largely restricted by distance and vegetation.	Some limited potential for indirect views from residential properties located between the wind farm projects.
Macarthur	Some limited potential for direct views from a small number of residential properties along Kangertong and Heywood to Woolsthorpe Road with partial screening by tree planting.	Some potential for indirect views from residential properties located between the north portion of Willatook and south portion of Macarthur wind farm projects.
Ryan's Corner	Direct views between the wind farms will be largely restricted by distance and vegetation.	Some limited potential for indirect views from residential properties located between the wind farm projects.
Yambuk	Direct views between the wind farms will be largely restricted by distance and vegetation.	Restricted potential for indirect views between wind farm projects due to distance.
Codrington	Direct views between the wind farms will be largely restricted by distance and vegetation.	Restricted potential for indirect views between wind farm projects due to distance.

10.5 Proposed Willatook Wind Farm and other wind farm intervisibility from Key Viewing Locations

The potential for the proposed Willatook wind farm turbines to be visible from key view locations together with other wind farm turbines are considered in **Table 23**. 'Direct' and 'Indirect' views have been considered in the same contextual view given the wide angle of view available from the elevated key viewing areas.

Table 23 Willatook and other wind farm residential property intervisibility

Other wind farm developments	View description between the Willatook and other wind farm developments
	'Direct' Views and 'Indirect' Views
Hawkesdale	<p>Tower Hill (von Guerard Lookout)</p> <p>Views toward the Hawkesdale wind turbines are likely to be screened by trees and vegetation around the crater rim and therefore direct views are unlikely to occur,</p> <p>A cumulative visual impact resulting from the Willatook and Hawkesdale wind turbines is unlikely to occur from this location</p> <p>Mount Eccles</p> <p>Direct views from the summit of Mount Eccles are largely screened by tree planting on the slopes of the crater.</p> <p>A cumulative visual impact resulting from the Willatook and Hawkesdale wind turbines is unlikely to occur at this location.</p> <p>Mount Napier</p> <p>Direct views toward the Hawkesdale and Willatook wind turbines are unlikely to be distinguishable at 40+ km distance to the Hawkesdale wind turbines.</p> <p>A very low (and generally not perceivable) level of cumulative visual impact resulting from the Willatook and Hawkesdale wind turbines may occur at this location.</p> <p>Mount Rouse</p> <p>Direct views toward the Hawkesdale and Willatook wind turbines are unlikely to be distinguishable at 35+ km distance to the Hawkesdale wind turbines.</p> <p>A very low (and generally not perceivable) level of cumulative visual impact resulting from the Willatook and Hawkesdale wind turbines may occur at this location.</p>
Woolsthorpe	<p>Tower Hill (von Guerard Lookout)</p> <p>Views toward the Hawkesdale wind turbines are likely to be screened by trees and vegetation around the crater rim and therefore direct views are unlikely to occur,</p> <p>A cumulative visual impact resulting from the Willatook and Woolsthorpe wind turbines is unlikely to occur at this location.</p> <p>Mount Eccles</p> <p>Direct views from the summit of Mount Eccles are largely screened by tree planting on the slopes of the crater.</p>

Table 23 Willatook and other wind farm residential property intervisibility

Other wind farm developments	View description between the Willatook and other wind farm developments
	'Direct' Views and 'Indirect' Views
	<p>A cumulative visual impact resulting from the Willatook and Woolsthorpe wind turbines is unlikely to occur at this location.</p> <p>Mount Napier</p> <p>Direct views toward the Woolsthorpe and Willatook wind turbines are unlikely to be distinguishable at 45+ km distance to the Woolsthorpe wind turbines.</p> <p>A very low (and generally not perceivable) level of cumulative visual impact resulting from the Willatook and Woolsthorpe wind turbines may occur at this location.</p> <p>Mount Rouse</p> <p>Direct views toward the Woolsthorpe and Willatook wind turbines are unlikely to be distinguishable at 35+ km distance to the Hawkesdale wind turbines.</p> <p>A very low (and generally not perceivable) level of cumulative visual impact resulting from the Woolsthorpe and Hawkesdale wind turbines may occur at this location.</p>
Macarthur	<p>Tower Hill (von Guerard Lookout)</p> <p>Views toward the Macarthur wind turbines are likely to be screened by trees and vegetation around the crater rim and therefore direct views are unlikely to occur,</p> <p>A cumulative visual impact resulting from the Willatook and Macarthur wind turbines is unlikely to occur at this location.</p> <p>Mount Eccles</p> <p>Direct views from the summit of Mount Eccles toward the Willatook and Macarthur wind turbines are likely to be screened by tree planting surrounding the eastern portion of the crater.</p> <p>A cumulative visual impact resulting from the Willatook and Macarthur wind turbines is unlikely to occur at this location.</p> <p>Mount Napier</p> <p>Potential direct views may occur from the summit of Mount Napier toward the Macarthur and Willatook wind turbines; however, the Willatook turbines are unlikely to significantly increase the level of cumulative impact at around 26 km from the view location.</p> <p>Mount Rouse</p>

Table 23 Willatook and other wind farm residential property intervisibility

Other wind farm developments	View description between the Willatook and other wind farm developments
	'Direct' Views and 'Indirect' Views
	Potential direct views may occur from the summit of Mount Rouse toward the Macarthur and Willatook wind turbines; however, the Willatook turbines are unlikely to significantly increase the level of cumulative impact at around 25 km from the view location.
Ryan's Corner	<p>Tower Hill (von Guerard Lookout)</p> <p>Direct, but distant views, would extend toward the Ryan's Corner and proposed Willatook Wind Farms with a separation distance of around 6.5 km between closest turbines.</p> <p>Mount Eccles</p> <p>Direct views from the summit of Mount Eccles are largely screened by tree planting on the slopes of the crater.</p> <p>A cumulative visual impact resulting from the Ryan's Corner and Willatook wind turbines is unlikely to occur at this location.</p> <p>Mount Napier</p> <p>Direct views toward the Ryan's Corner and Willatook wind turbines are unlikely to be distinguishable at 45+ km distance to the Ryan's Corner wind turbines.</p> <p>A very low (and generally not perceivable) level of cumulative visual impact resulting from the Willatook and Ryan's Corner wind turbines may occur at this location.</p> <p>Mount Rouse</p> <p>Direct views toward the Ryan's Corner and Willatook wind turbines are unlikely to be distinguishable at 45+ km distance to the Ryan's Corner wind turbines.</p> <p>A very low (and generally not perceivable) level of cumulative visual impact resulting from the Woolsthorpe and Hawkesdale wind turbines may occur at this location.</p>
Yambuk	<p>Tower Hill (von Guerard Lookout)</p> <p>Direct, but distant views, would extend toward the Yambuk and proposed Willatook Wind Farms with a separation distance of around 17 km between closest turbines.</p> <p>A cumulative visual impact resulting from the Yambuk and Woolsthorpe wind turbines is unlikely to occur at this location.</p> <p>Mount Eccles</p>

Table 23 Willatook and other wind farm residential property intervisibility

Other wind farm developments	View description between the Willatook and other wind farm developments
	'Direct' Views and 'Indirect' Views
	<p>Direct views from the summit of Mount Eccles are largely screened by tree planting on the slopes of the crater.</p> <p>A cumulative visual impact resulting from the Yambuk and Willatook wind turbines is unlikely to occur at this location.</p> <p>Mount Napier</p> <p>Direct views toward the Yambuk and Willatook wind turbines are unlikely to be distinguishable at 45+ km distance to the Yambuk wind turbines.</p> <p>Mount Rouse</p> <p>Direct views toward the Yambuk and Willatook wind turbines are unlikely to be distinguishable at 50+ km distance to the Yambuk wind turbines.</p>
Codrington	<p>Tower Hill (von Guerard Lookout)</p> <p>Direct, but distant views, would extend toward the Codrington and proposed Willatook Wind Farms with a separation distance of around 17 km between closest turbines.</p> <p>A cumulative visual impact resulting from the Codrington and Woolsthorpe wind turbines is unlikely to occur at this location.</p> <p>Mount Eccles</p> <p>Direct views from the summit of Mount Eccles are largely screened by tree planting on the slopes of the crater.</p> <p>A cumulative visual impact resulting from the Codrington and Willatook wind turbines is unlikely to occur at this location.</p> <p>Mount Napier</p> <p>Direct views toward the Codrington and Willatook wind turbines are unlikely to be distinguishable at 45+ km distance to the Codrington wind turbines.</p> <p>A cumulative visual impact resulting from the Codrington and Woolsthorpe wind turbines is unlikely to occur at this location.</p> <p>Mount Rouse</p>

Table 23 Willatook and other wind farm residential property intervisibility

Other wind farm developments	View description between the Willatook and other wind farm developments
	'Direct' Views and 'Indirect' Views
	<p>Direct views toward the Codrington and Willatook wind turbines are unlikely to be distinguishable at 45+ km distance to the Codrington wind turbines.</p> <p>A cumulative visual impact resulting from the Codrington and Woolsthorpe wind turbines is unlikely to occur at this location.</p>

Overall the proposed Willatook Wind Farm is not predicted to significantly increase the magnitude of visual impact for the majority of dwelling locations surrounding the proposed Willatook Wind Farm. The potential for the occurrence of 'direct' and 'indirect' cumulative visual impact is mitigated to a degree by the screening or partial filtering of views toward approved and existing wind farms.

Potential 'sequential' views will occur along various sections of local roads, including the Hamilton Port Fairy and Peshurst Warrnambool Roads whilst travelling in both north and southbound directions. Sequential views from local roads would be mitigated to some extent by undulating landform and tree cover alongside road corridors and the transitory nature of short term dynamic views.

Photomontages

Section 11

11.1 Photomontages

Photomontages have been prepared by DNV-GL Pty Ltd to illustrate the general appearance of the proposed Willatook Wind Farm turbines following construction. A total of 15 locations (WT01 to WT15) were selected to illustrate the proposed Willatook Wind Farm from view locations in surrounding areas.

The photomontage locations were selected following a review of ZVI maps, together with a site inspection to identify potential representative viewpoints. The photomontage locations were selected from surrounding road corridors and at a range of distances between the viewpoint and wind turbine to illustrate the potential influence of distance on visibility.

The photomontage locations are illustrated in **Figure 23** and photomontages presented in **Figures 24 to 61**.

Each photomontage includes the existing and proposed view at a 120-degree view angle, as well as a 54-degree view angle prepared with the regard to the Scottish Natural Heritage Guidelines, 2014. The following table outlines each photomontage location and the corresponding 54-degree view angle photomontage for each of the 120-degree view angle photomontage.

Table 24 – Photomontage details

Figure number and 120-degree view angle photomontage location	Corresponding 54-degree view angle Figure	Corresponding 54-degree view angle Figure	Corresponding 54-degree view angle Figure
Figure 24 Photo location WT01 - View south to west north west from the junction of Nagorckas Road and the Kangertong Road	Figure 25	-	-
Figure 26 Photo location WT02 - View east south east to south south west from the Kangertong Road	Figure 27	-	-
Figure 28 Photo location WT03 - View south south west to north west from the Nagorckas and Nardoo Road intersection	Figure 29	Figure 30	-
Figure 31 Photo location WT04 - View east to south from the Woolsthorpe Heywood Road	Figure 32	Figure 33	-
Figure 34 Photo location WT05 - View east to south south west from the Woolsthorpe Heywood Road	Figure 35	Figure 36	Figure 37
Figure 38 Photo location WT06 - View east north east to south south east from the Woolsthorpe Heywood Road	Figure 39	-	-
Figure 40 Photo location WT07 - View north north east to east south east from the Hamilton Port Fairy Road	Figure 41	-	-

Table 24 – Photomontage details

Figure number and 120-degree view angle photomontage location	Corresponding 54-degree view angle Figure	Corresponding 54-degree view angle Figure	Corresponding 54-degree view angle Figure
Figure 42 Photo location WT08 - view north west to east north east from the Hamilton Port Fairy Road	-	-	-
Figure 43 Photo location WT08 - view north west to east north east from the Hamilton Port Fairy Road	Figure 44	-	-
Figure 45 Photo location WT09 -view north west east to east north east from Tarrone Lane	Figure 46	Figure 47	-
Figure 48 Photo location WT10 - view west north west to north east from Faulkners North Road	Figure 49	-	-
Figure 50 Photo location WT11 - view west north west to north east from Tarrone North Road	Figure 51	-	-
Figure 52 Photo location WT12 - view west north west to north north east from the junction of Coomete Road and the Woolsthorpe Heywood Road	Figure 53	-	-
Figure 54 PM WT13 - view south to north west from Coomete Road	Figure 55	Figure 56	-
Figure 57 Photo location WT14 - view west south west to north north west from Malseeds Road	Figure 58	Figure 59	-
Figure 60 Photo location WT15 -view south west to north west from Austin Street, Hawkesdale	Figure 61	-	-

Each photomontage was generated through the following steps:

- A digital terrain model (DTM) of the proposed Willatook Wind Farm site was created from a terrain model of the surrounding area using digital contours
- The site DTM was loaded in the DNV-GL 'Wind Farmer' software package
- The layout of the wind farm and 3-dimensional representation of the wind turbine was configured in DNV-GL Wind Farmer
- The location of each viewpoint (photo location) was configured in Wind Farmer – the sun position for each viewpoint was configured by using the time and date of the photographs from that viewpoint
- The view from each photomontage location was then assessed in Wind Farmer. This process requires accurate mapping of the terrain as modelled, with that as seen in the photographs. The photographs,

taken from each photomontage location were loaded into Wind Farmer and the visible turbines superimposed on the photographs

- The photomontages were adjusted using Photoshop CS3 to compensate for fogging due to haze or distance, as well as screening by vegetation or obstacles and
- The final image was converted to JPG format and imported and annotated as the final figure.

The horizontal and vertical field of view within the majority of the photomontages exceeds the parameters of normal human vision. However, in reality the eyes, head and body can all move and under normal conditions a person would sample a broad area of landscape within a panorama view. Rather than restricting the extent of each photomontage to a single photographic image, a broader field of view is presented to more fully illustrate the extent of the wind turbines.

Whilst a photomontage can provide an image that illustrates a very accurate representation of a wind turbine in relation to its proposed location and scale relative to the surrounding landscape, this LVIA acknowledges that large scale objects in the landscape can appear smaller in photomontage than in real life and is partly due to the fact that a flat image does not allow the viewer to perceive any information relating to depth or distance.

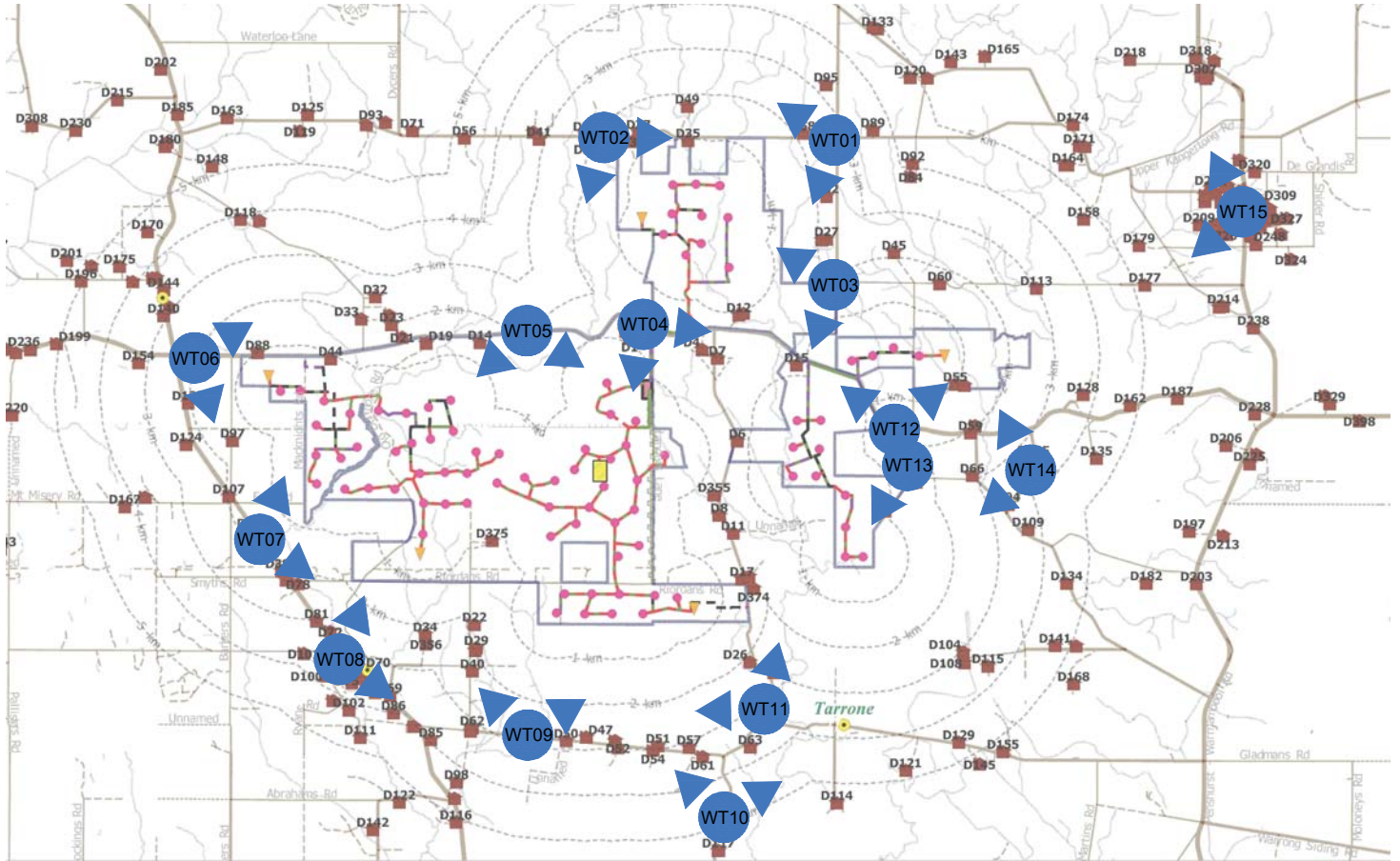


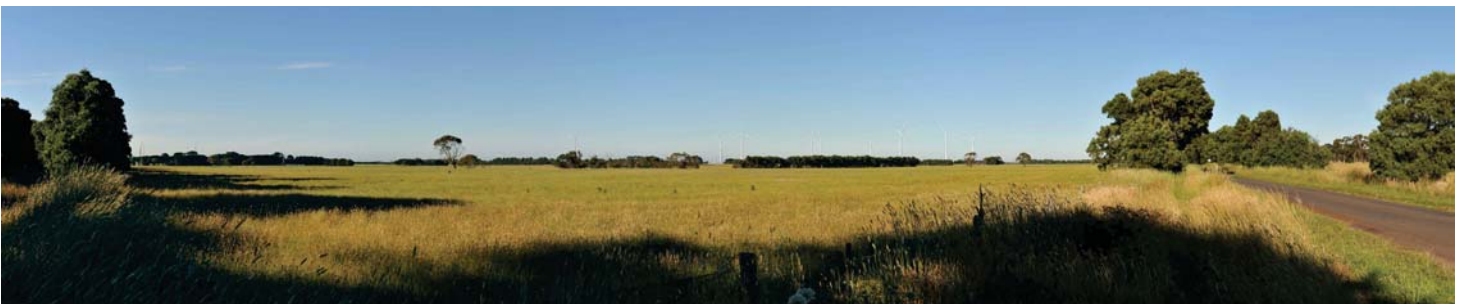
Figure 23 Photomontage location

GREEN BEAN DESIGN
landscape architects

Willatook Wind Farm LVIA



Photo location WT01 - Existing view south to west north west from the junction of Nagorckas Road and the Kangertong Road



PM WT01 - Proposed view south to west north west from the junction of Nagorckas Road and the Kangertong Road
 Approximate distance to closest visible wind turbine 2,780 metres

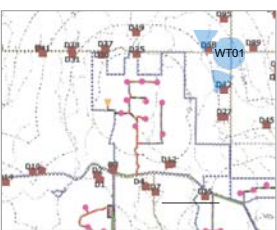
Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.

The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.





The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 24
PM WT01 120 degree view angle



Photomontage location plan

Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling
- 

General Notes: Photo location WT01

Coordinates: Easting 606898, Northing 5782963

Photo date: 12th December 2017, 8.05am

Elevation 132m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

Original Page Format - A1 Landscape

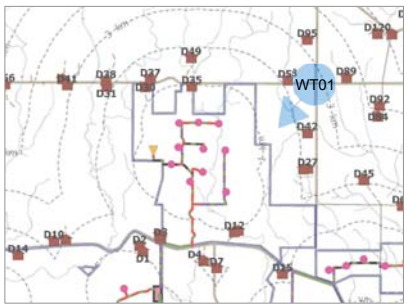
Photomontage WT01 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

Willatook Wind Farm LVIA

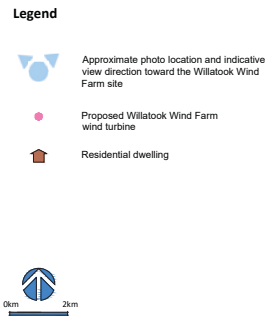




PM WT01 - Proposed view south south west to west south west from from the junction of Nagorckas Road and the Kangertong Road
 Approximate distance to closest visible wind turbine 2,780 metres



Photomontage location plan



General Notes: Photo location WT01

Coordinates: Easting 606898, Northing 5782963
 Photo date: 12th December 2017, 8.05am
 Elevation 132m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT01 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 25
PM WT01 54 degree view angle

Willatook Wind Farm LVIA



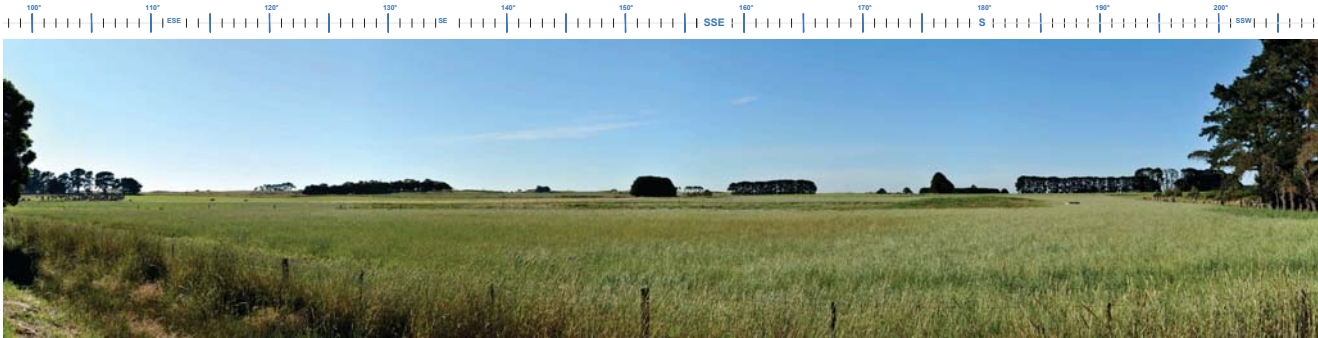


Photo location WT02 - Existing view east south east to south south west from the Kangertong Road



PM WT02 - Proposed view east south east to south south west from the Kangertong Road

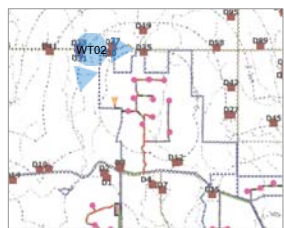
Approximate distance to closest visible wind turbine 1,980 metres

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.

The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.

The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.



Legend

Approximate photo location and indicative view direction toward the Willatook Wind Farm site

Proposed Willatook Wind Farm wind turbine

Residential dwelling

0km 2km

Photomontage location plan

General Notes: Photo location WT02

Coordinates: Easting 601616, Northing 5782991

Photo date: 12th December 2017, 8:35am

Elevation 126m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

Original Page Format - A1 Landscape

Photomontage WT02 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

Figure 26
PM WT02 120 degree view angle



Willatook Wind Farm LVIA

110°

ESE

120°

130°

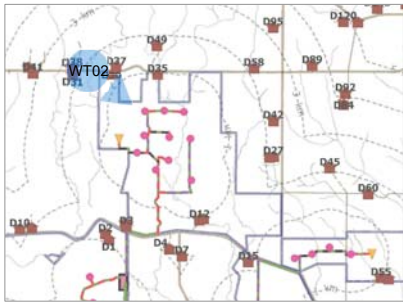
SE

140°




150°



PM WT02 - Proposed view east south east to south south east from from the Kangertong Road
 Approximate distance to closest visible wind turbine 1,980 metres



Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling

General Notes: Photo location WT02

Coordinates: Easting 601616, Northing 5782991
 Photo date: 12th December 2017, 8.35am
 Elevation 126m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT02 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 27
PM WT02 54 degree view angle



Photo location WT03 - Existing view south south west to north west from the Nagorckas and Nardoo Road intersection



PM WT03 - Proposed view south south west to north west from the Nagorckas and Nardoo Road intersection

Approximate distance to closest visible wind turbine 2,400 metres

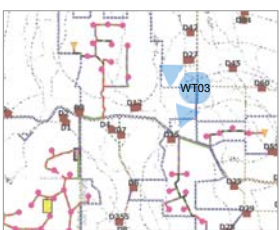
Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.

The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.





The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 28
PM WT03 120 degree view angle



Photomontage location plan

Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling
-  0km 2km

General Notes: Photo location WT03

Coordinates: Easting 606893, Northing 5779738

Photo date: 12th December 2017, 9.06am

Elevation 114m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

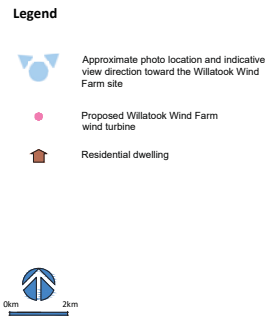
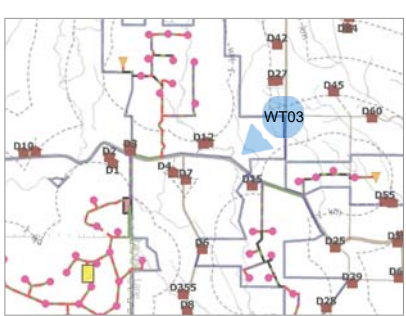
Original Page Format - A1 Landscape

Photomontage WT03 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

Willatook Wind Farm LVIA



PM WT03 - Proposed view south south west to west south west from the Nagorckas and Nardoo Road intersection
 Approximate distance to closest visible wind turbine 5,341 metres



General Notes: Photo location WT03

Coordinates: Easting 606893, Northing 5779738
 Photo date: 12th December 2017, 9.06am
 Elevation 114m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT03 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

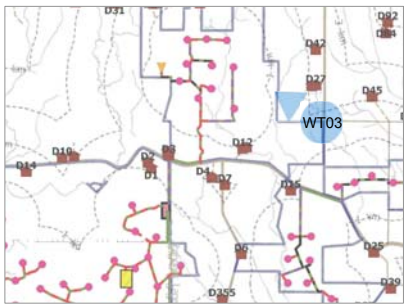
Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

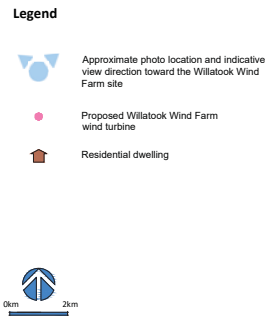
Figure 29
PM WT03 54 degree view angle



PM WT03 - Proposed view west to north west from the Nagorckas and Nardoo Road intersection
 Approximate distance to closest visible wind turbine 2,400 metres



Photomontage location plan



General Notes: Photo location WT03

Coordinates: Easting 606893, Northing 5779738
 Photo date: 12th December 2017, 9.06am
 Elevation 114m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT03 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 30
 PM WT03 54 degree view angle



Photo location WT04 - Existing view south east to west south west from the Woolsthorpe Heywood Road



PM WT04 - Proposed view south east to west south west from the Woolsthorpe Heywood Road

Approximate distance to closest visible wind turbine 1,534 metres

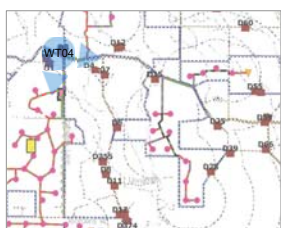
Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.

The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.





The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 31
PM WT04 120 degree view angle



Photomontage location plan

Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling
- 

General Notes: Photo location WT04

Coordinates: Easting 602825, Northing 5778743

Photo date: 12th December 2017, 9:36am

Elevation 111m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

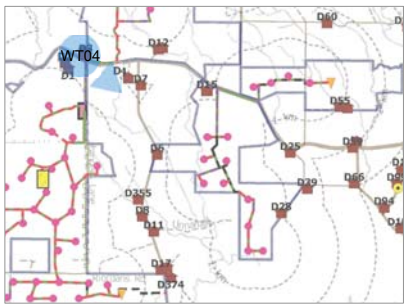
Original Page Format - A1 Landscape

Photomontage WT04 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

Willatook Wind Farm LVIA



PM WT04 - Proposed view east south east to south south east from the Woolstrophe Heywood Road
 Approximate distance to closest visible wind turbine 3,800 metres



Photomontage location plan



General Notes: Photo location WT04

Coordinates: Easting 602825, Northing 5778743
 Photo date: 12th December 2017, 9.36am
 Elevation 111m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT04 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

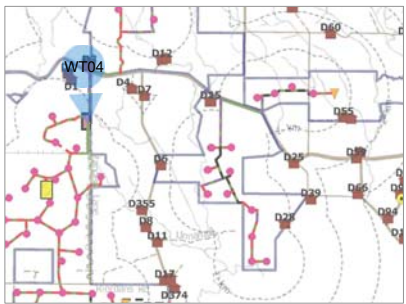
Figure 32
 PM WT04 54 degree view angle

Willatook Wind Farm LVIA

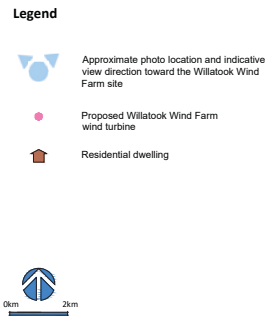




PM WT04 - Proposed view south to south west from the Woolsthorpe Heywood Road
 Approximate distance to closest visible wind turbine 1,534 metres



Photomontage location plan



General Notes: Photo location WT04

Coordinates: Easting 602825, Northing 5778743
 Photo date: 12th December 2017, 9.36am
 Elevation 111m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT04 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 33
 PM WT04 54 degree view angle



Willatook Wind Farm LVIA



Photo location WT05 - Existing view east to south south west from the Woolsthorpe Heywood Road



PM WT05 - Proposed view east to south south west from the Woolsthorpe Heywood Road

Approximate distance to closest visible wind turbine 1,870 metres

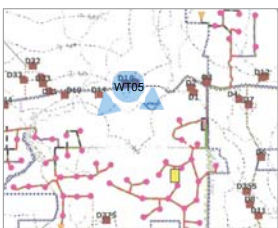
Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.

The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.

The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 34
PM WT05 120 degree view angle



Legend

Approximate photo location and indicative view direction toward the Willatook Wind Farm site

Proposed Willatook Wind Farm wind turbine

Residential dwelling



Photomontage location plan

General Notes: Photo location WT05

Coordinates: Easting 600350, Northing 5778727

Photo date: 12th December 2017, 9.50am

Elevation 105m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

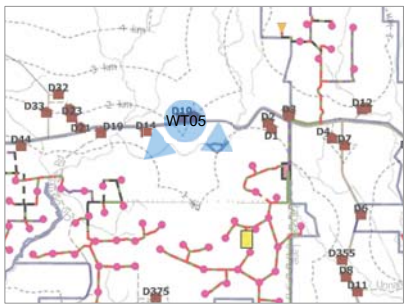
Original Page Format - A1 Landscape

Photomontage WT05 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

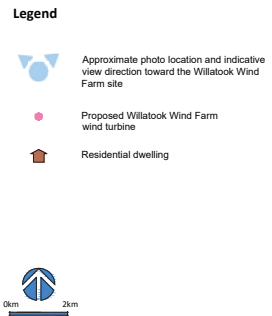
Willatook Wind Farm LVIA



PM WT05 - Proposed view east south east to south south east from the Woolsthorpe Heywood Road
 Approximate distance to closest visible wind turbine 1,870 metres



Photomontage location plan



General Notes: Photo location WT05

Coordinates: Easting 600350, Northing 5778727
 Photo date: 12th December 2017, 9.50am
 Elevation 105m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT05 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

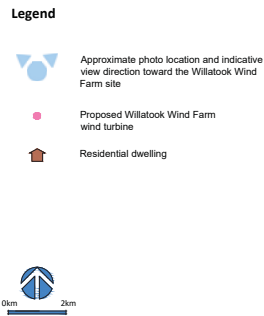
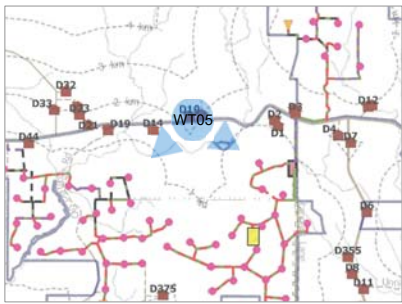
Figure 35
PM WT05 54 degree view angle

Willatook Wind Farm LVIA





PM WT05 - Proposed view south south east to south south west from the Woolsthorpe Heywood Road
 Approximate distance to closest visible wind turbine 2,820 metres



General Notes: Photo location WT05
 Coordinates: Easting 600350, Northing 5778727
 Photo date: 12th December 2017, 9.50am
 Elevation 105m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT05 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations
 A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 36
PM WT05 54 degree view angle

Willatook Wind Farm LVIA



220°

230°

240°

250°

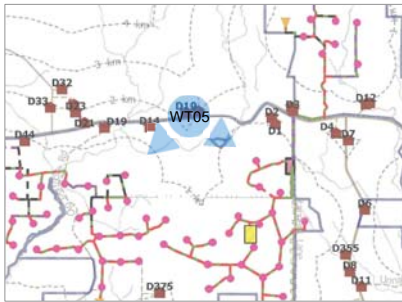
260°

SW

WSW






PM WT05 - Proposed view south south west to west from the Woolsthorpe Heywood Road
 Approximate distance to closest visible wind turbine 2,500 metres



Photomontage location plan

Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling

General Notes: Photo location WT05

Coordinates: Easting 600350, Northing 5778727
 Photo date: 12th December 2017, 9.50am
 Elevation 105m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT05 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 37
PM WT05 54 degree view angle



Photo location WT06 - Existing view east north east to south south east from the Woolsthorpe Heywood Road



PM WT06 - Proposed view east north east to south south east from the Woolsthorpe Heywood Road

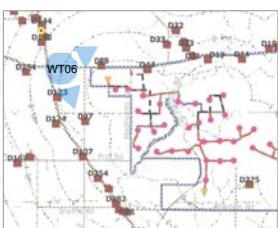
Approximate distance to closest visible wind turbine 2,000 metres

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.

The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.

The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.



Legend

Approximate photo location and indicative view direction toward the Willatook Wind Farm site

Proposed Willatook Wind Farm wind turbine

Residential dwelling



General Notes: Photo location WT06

Coordinates: Easting 592693, Northing 5778183

Photo date: 12th December 2017, 10.38am

Elevation 99m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

Original Page Format - A1 Landscape

Photomontage WT06 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

Photomontage location plan

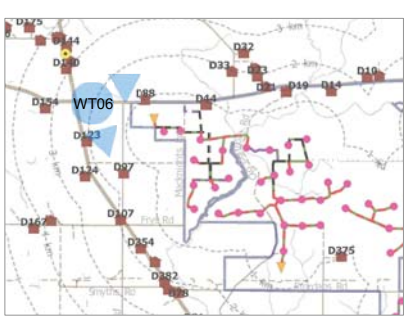
Willatook Wind Farm LVIA

Figure 38
PM WT06 120 degree view angle

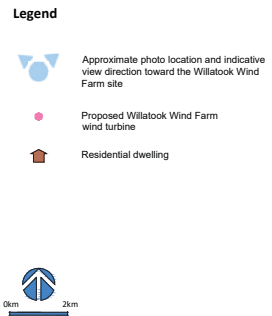




PM WT06 - Proposed view east to south east from the Woolsthorpe Heywood Road
 Approximate distance to closest visible wind turbine 2,000 metres



Photomontage location plan



General Notes: Photo location WT06

Coordinates: Easting 592693, Northing 5778183
 Photo date: 12th December 2017, 10.38am
 Elevation 99m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT06 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 39
 PM WT06 54 degree view angle

Willatook Wind Farm LVIA



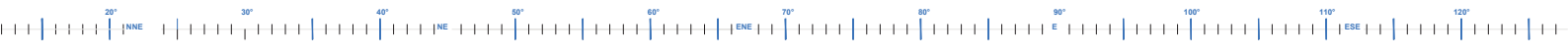
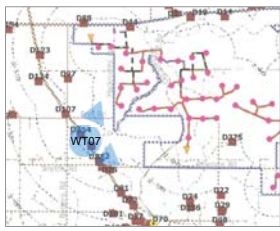


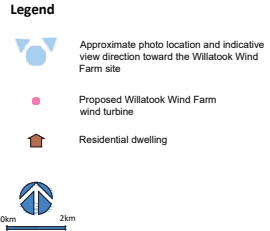
Photo location WT07 - Existing view north north east to east south east from the Hamilton Port Fairy Road



PM WT07 - Proposed view north north east to east south east from the Hamilton Port Fairy Road
Approximate distance to closest visible wind turbine 1,720 metres



Photomontage location plan



General Notes: Photo location WT07
 Coordinates: Easting 594092, Northing 5774279
 Photo date: 20th October 2010, 5.06pm
 Elevation 78m AHD
 Camera: Nikon D90, 50mm (75mm - 35mm focal length)
 Original Page Format - A1 Landscape
 Photomontage WT07 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

Photomontage limitations
 A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

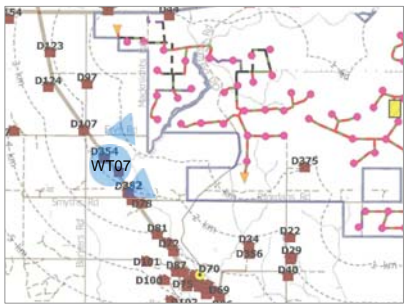
Figure 40
PM WT07 120 degree view angle



Willatook Wind Farm LVIA







PM WT07 - Proposed view north east to east from the Hamilton Port Fairy Road
 Approximate distance to closest visible wind turbine 1,720 metres



Photomontage location plan

Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling



General Notes: Photo location WT07

Coordinates: Easting 594092, Northing 5774279
 Photo date: 20th October 2010, 5.06pm
 Elevation 78m AHD
 Camera: Nikon D90, 50mm (75mm - 35mm focal length)
 Original Page Format - A1 Landscape
 Viewpoint WT07 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 41
 PM WT07 54 degree view angle

Willatook Wind Farm LVIA





Photo location WT08 - Existing view north west to east north east from the Hamilton Port Fairy Road, Orford



Wireframe WT08 - Proposed view north west to east north east from the Hamilton Port Fairy Road, Orford

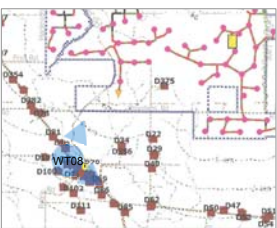
Approximate distance to closest visible wind turbine 3,500 metres

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.

The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.

The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.



Photomontage location plan

General Notes: Photo location WT08

Coordinates: Easting 596736, Northing 5770905

Photo date: 11th December 2017, 2:33pm

Elevation 76m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

Original Page Format - A1 Landscape

Photomontage/wireframe WT08 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

Figure 42
PM WT08 120 degree view angle



Willatook Wind Farm LVIA



Photo location WT08 - Existing view north west to east north east from the Hamilton Port Fairy Road, Orford



PM WT08 - Proposed view north west to east north east from the Hamilton Port Fairy Road, Orford

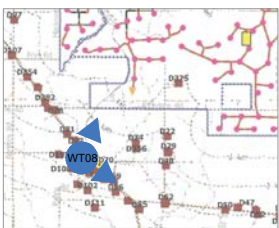
Approximate distance to closest visible wind turbine 3,500 metres

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.





The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.

The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.



Photomontage location plan

Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling
-  0km 2km

General Notes: Photo location WT08

Coordinates: Easting 596736, Northing 5770905

Photo date: 11th December 2017, 2:33pm

Elevation 76m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

Original Page Format - A1 Landscape

Photomontage/wireframe WT08 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

Figure 43
PM WT08 120 degree view angle



Willatook Wind Farm LVIA

350°

360°

10°

20°

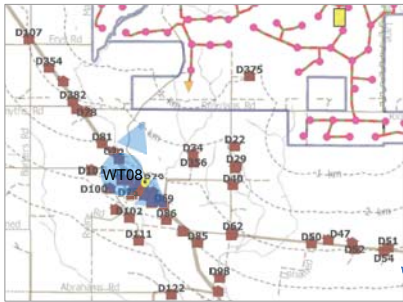
30°

N

NNE






PM WT08 - Proposed view north north west to north north east from the Hamilton Port Fairy Road
 Approximate distance to closest visible wind turbine 3,500 metres



Photomontage location plan

Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling



General Notes: Photo location WT08

Coordinates: Easting 596736, Northing 5770905
 Photo date: 11th December 2017, 2.33pm
 Elevation 76m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT08 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 44
 PM WT08 54 degree view angle

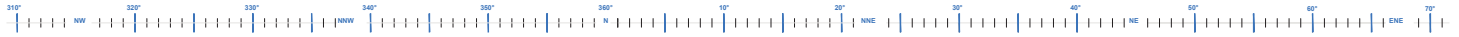


Photo location WT09 - Existing view north west to east north east from Tarrone Lane



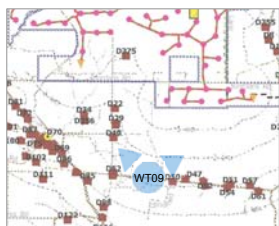
PM WT09 - Proposed view north west to east north east from Tarrone Lane
Approximate distance to closest visible wind turbine 2,800 metres

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.





The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.

The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.



Photomontage location plan

Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling
-  Scale bar: 0km to 2km

General Notes: Photo location WT09

Coordinates: Easting 599809, Northing 5769839

Photo date: 12th December 2017, 11.03am

Elevation 61m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

Original Page Format - A1 Landscape

Photomontage WT09 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

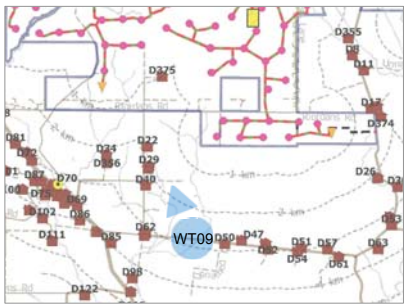
Figure 45
PM WT09 120 degree view angle



Willatook Wind Farm LVIA






PM WT09 - Proposed view north west to north from Tarrone Lane
 Approximate distance to closest visible wind turbine 4,900 metres



Photomontage location plan

Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling

General Notes: Photo location WT09

Coordinates: Easting 599809, Northing 5769839
 Photo date: 12th December 2017, 11.03am
 Elevation 61m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT09 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

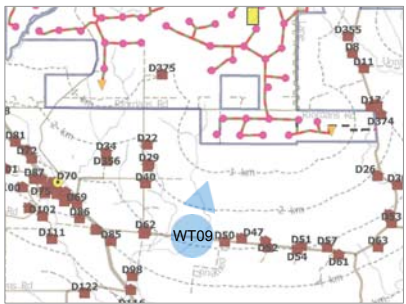
Figure 46
 PM WT09 54 degree view angle

Willatook Wind Farm LVIA

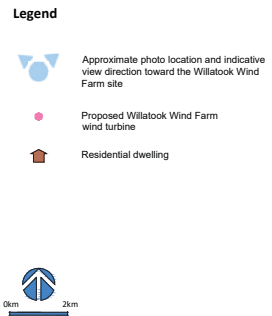




PM WT09 - Proposed view north to east north east from Tarrone Lane
 Approximate distance to closest visible wind turbine 2,800 metres



Photomontage location plan



General Notes: Photo location WT09

Coordinates: Easting 599809, Northing 5769839
 Photo date: 12th December 2017, 11.03am
 Elevation 61m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT09 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 47
 PM WT09 54 degree view angle

Willatook Wind Farm LVIA





Photo location WT10 - Existing view west north west to north east from Faulkners North Road



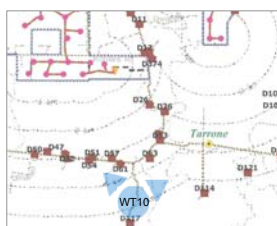
PM WT10 - Proposed view west north west to north east from Faulkners North Road
Approximate distance to closest visible wind turbine 5,000 metres

Photomontage limitations





A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.

The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.

The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.



Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling
-  0km 2km

Photomontage location plan

General Notes: Photo location WT10

Coordinates: Easting 604415, Northing 5767859

Photo date: 12th December 2017, 11.16am

Elevation 71m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

Original Page Format - A1 Landscape

Photomontage WT10 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

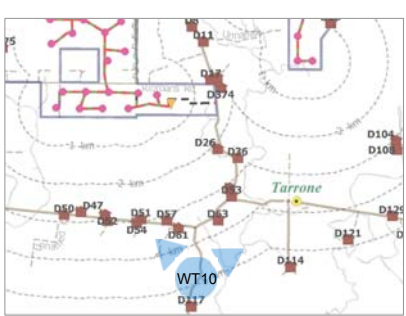
Willatook Wind Farm LVIA

Figure 48
PM WT10 120 degree view angle

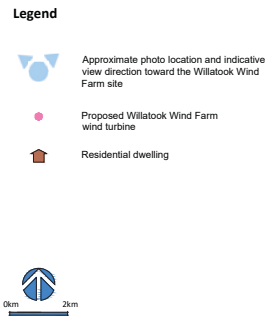




PM WT10 - Proposed view north west to north from Faulkners North Road
 Approximate distance to closest visible wind turbine 5,000 metres



Photomontage location plan



General Notes: Photo location WT10

Coordinates: Easting 604415, Northing 5767859
 Photo date: 12th December 2017, 11.16am
 Elevation 71m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT10 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 49
 PM WT10 54 degree view angle

Willatook Wind Farm LVIA

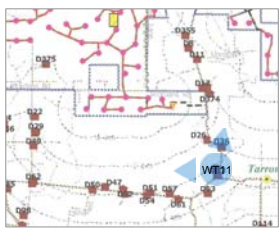




Photo location WT11 - Existing view west north west to north east from Tarrone North Road



PM WT11 - Proposed view west north west to north east from Tarrone North Road
 Approximate distance to closest visible wind turbine 3,100 metres



Photomontage location plan

Legend

- Approximate photo location and indicative view direction toward the Willatook Wind Farm site
- Proposed Willatook Wind Farm wind turbine
- Residential dwelling
- 0km 2km

General Notes: Photo location WT11

Coordinates: Easting 605376, Northing 5770426
 Photo date: 12th December 2017, 11.24am
 Elevation 72m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Photomontage WT11 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

Photomontage limitations

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The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.

The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

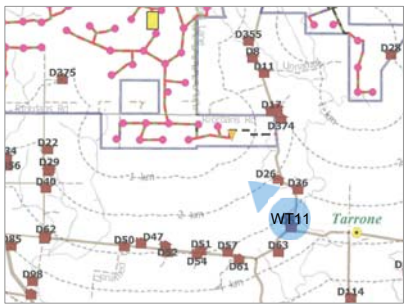
Figure 50
 PM WT11 120 degree view angle



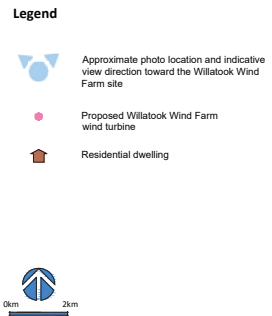
Willatook Wind Farm LVIA



PM WT11 - Proposed view west north west to north north west from Tarrone North Road
 Approximate distance to closest visible wind turbine 3,100 metres



Photomontage location plan



General Notes: Photo location WT11

Coordinates: Easting 604415, Northing 5767859
 Photo date: 12th December 2017, 11.16am
 Elevation 71m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT11 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 51
 PM WT11 54 degree view angle

Willatook Wind Farm LVIA





Photo location WT12 - Existing view west north west to north north east from the junction of Coomete Road and the Woolsthorpe Heywood Road



PM WT12 - Proposed view west north west to north north east from the junction of Coomete Road and the Woolsthorpe Heywood Road

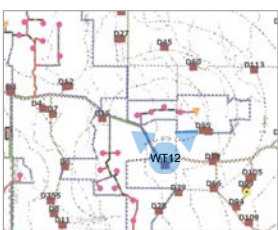
Approximate distance to closest visible wind turbine 1,770 metres

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.

The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.

The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.



Legend

- Approximate photo location and indicative view direction toward the Willatook Wind Farm site
- Proposed Willatook Wind Farm wind turbine
- Residential dwelling

General Notes: Photo location WT12

Coordinates: Easting 608174, Northing 5776472

Photo date: 12th December 2017, 11.57am

Elevation 84m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

Original Page Format - A1 Landscape

Photomontage WT12 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

Photomontage location plan

Willatook Wind Farm LVIA

Figure 52
PM WT12 120 degree view angle



330°

340°

350°

360°

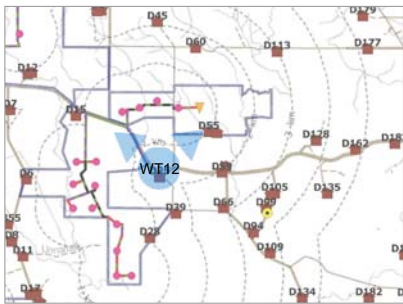
10°

NNW

N






PM WT12 - Proposed view north west to north north east from the junction of Coomete Road and the Woolsthorpe Heywood Road
 Approximate distance to closest visible wind turbine 1,770 metres



Photomontage location plan

Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling



General Notes: Photo location WT12

Coordinates: Easting 608174, Northing 5776472
 Photo date: 12th December 2017, 11.57am
 Elevation 84m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT12 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 53
PM WT12 54 degree view angle

Willatook Wind Farm LVIA





PM WT13 - Existing view south to north west from Coomete Road



PM WT13 - Proposed view south to north west from Coomete Road
 Approximate distance to closest visible wind turbine 1,740 metres

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.

The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.

The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

General Notes: Photo location WT13

Coordinates: Easting 608438, Northing 5776209

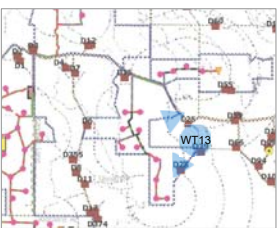
Photo date: 12th December 2017, 12.03pm

Elevation 89m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

Original Page Format - A1 Landscape

Photomontage WT13 is illustrated at a view angle of around 120 degrees which is within the general field, of human vision.



Legend

Approximate photo location and indicative view direction toward the Willatook Wind Farm site

Proposed Willatook Wind Farm wind turbine

Residential dwelling

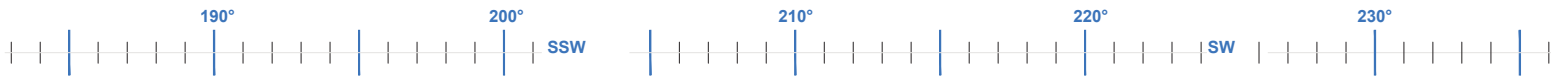


Photomontage location plan

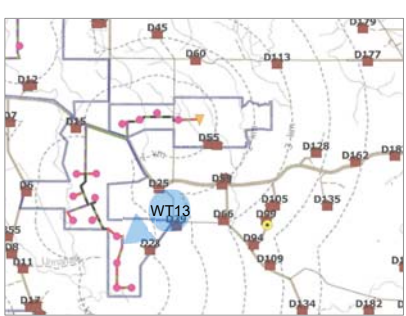
Willatook Wind Farm LVIA

Figure 54
 PM WT13 120 degree view angle









PM WT13 - Proposed view south to south west from the Coomete Road
 Approximate distance to closest visible wind turbine 1,740 metres



Photomontage location plan

Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
-  Proposed Willatook Wind Farm wind turbine
-  Residential dwelling



General Notes: Photo location WT13

Coordinates: Easting 608438, Northing 5776209
 Photo date: 12th December 2017, 12.03pm
 Elevation 89m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT13 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

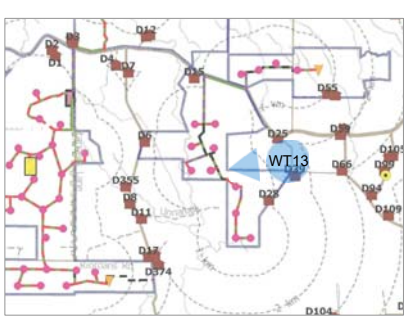
A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 55
PM WT13 54 degree view angle

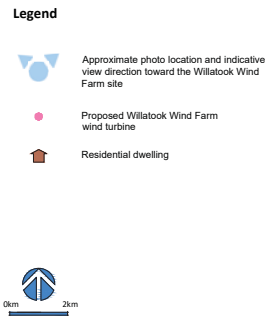




PM WT13 - Proposed view south west to west from the Coomete Road
 Approximate distance to closest visible wind turbine 1,740 metres



Photomontage location plan



General Notes: Photo location WT13

Coordinates: Easting 608438, Northing 5776209
 Photo date: 12th December 2017, 12.03pm
 Elevation 89m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT13 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

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 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 56
PM WT13 54 degree view angle



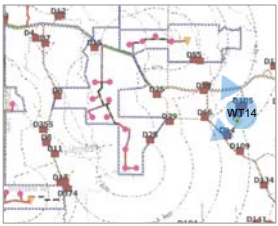
Willatook Wind Farm LVIA







Photo location WT14 - Existing view west south west to north north west from Malseeds Road



PM WT14 - Proposed view west south west to north north west from Malseeds Road
 Approximate distance to closest visible wind turbine 3,500 metres



Photomontage location plan

- Legend**
-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
 -  Proposed Willatook Wind Farm wind turbine
 -  Residential dwelling
 -  0km 2km

General Notes: Photo location WT14
 Coordinates: Easting 611142, Northing 5775677
 Photo date: 12th December 2017, 12.17pm
 Elevation 65m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Photomontage WT14 is illustrated at a view angle of around 120 degrees which is within the general field of human vision.

Photomontage limitations
 A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
 The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.
 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 57
PM WT14 120 degree view angle



Willatook Wind Farm LVIA

240°

250°

260°

270°

280°

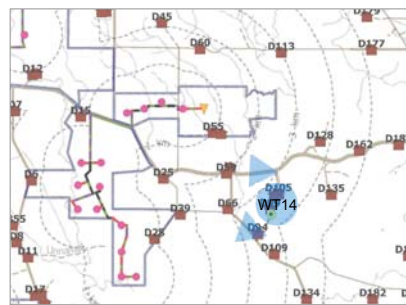
WSW

W



PM WT14 - Proposed view south west to west north west from Malseeds Road

Approximate distance to closest visible wind turbine 4,100 metres



Photomontage location plan

Legend



Approximate photo location and indicative view direction toward the Willatook Wind Farm site



Proposed Willatook Wind Farm wind turbine



Residential dwelling



0km 2km

General Notes: Photo location WT14

Coordinates: Easting 611142, Northing 5775677

Photo date: 12th December 2017, 12.17pm

Elevation 65m AHD

Camera: Nikon D700, 50mm 1:1.4D Lens

Original Page Format - A1 Landscape

Viewpoint WT14 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.

View flat at a comfortable arms length printed on A1 width paper in planar projection.

The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.

The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.

The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

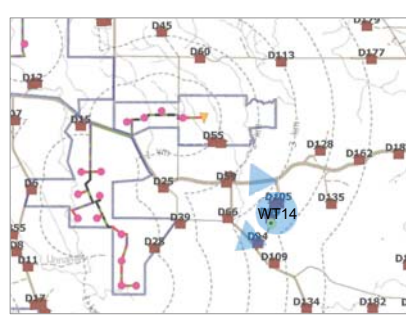
Figure 58
PM WT14 54 degree view angle

GREEN BEAN DESIGN

landscape architects



PM WT14 - Proposed view west to north north west from Malseeds Road
 Approximate distance to closest visible wind turbine 3,500 metres



Legend

- Approximate photo location and indicative view direction toward the Willatook Wind Farm site
- Proposed Willatook Wind Farm wind turbine
- Residential dwelling

0km 2km

Photomontage location plan

General Notes: Photo location WT14

Coordinates: Easting 611142, Northing 5775677
 Photo date: 12th December 2017, 12.17pm
 Elevation 65m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT14 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

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 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 59
 PM WT14 54 degree view angle

Willatook Wind Farm LVIA

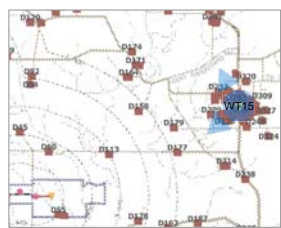




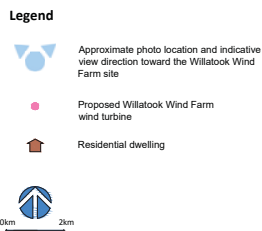
Photo location WT15 - Existing view south west to north west from Austin Street, Hawkesdale



PM WT15 - Proposed view south west to north west from Austin Street, Hawkesdale
 Approximate distance to closest visible wind turbine 11,700 metres



Photomontage location plan



General Notes: Photo location WT15

Coordinates: Easting 615998, Northing 5781483
 Photo date: 12th December 2017, 12.47pm
 Elevation 143m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Photomontage WT15 is illustrated at a view angle of around 90 degrees which is within the general field of human vision.

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.

The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate.

The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

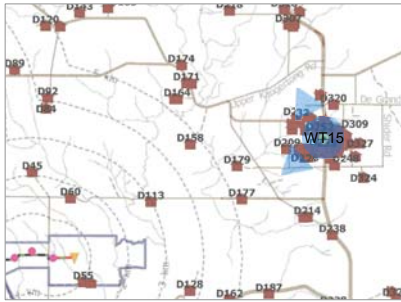
Figure 60
 PM WT15 85 degree view angle







Willatook Wind Farm LVIA



PM WT15 - Proposed view south west to west north west from Austin Street, Hakesdale
 Approximate distance to closest visible wind turbine 11,700 metres



Legend

-  Approximate photo location and indicative view direction toward the Willatook Wind Farm site
 -  Proposed Willatook Wind Farm wind turbine
 -  Residential dwelling
- 

General Notes: Photo location WT15

Coordinates: Easting 615998, Northing 5781483
 Photo date: 12th December 2017, 12.47pm
 Elevation 143m AHD
 Camera: Nikon D700, 50mm 1:1.4D Lens
 Original Page Format - A1 Landscape
 Viewpoint WT15 is illustrated at a view angle of around 54 degrees which is within the central, binocular field, of human vision.
 View flat at a comfortable arms length printed on A1 width paper in planar projection.
 The image will have a principle distance of around 812.5mm

Photomontage limitations

A photomontage can never show exactly what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions which vary through time and the resolution of the image. Also a static image cannot convey turbine movement.
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 The viewpoints illustrated are representative of views in this location, but cannot represent visibility at all locations.

Figure 61
 PM WT15 54 degree view angle



Pre-construction and construction

Section 12

12.1 Potential visual impacts

There are potential visual impacts that could occur during both pre-construction and construction phases of the project. The wind farm construction phase is likely to occur over a period of around 24 months, although the extent and nature of pre-construction and construction activities would vary at different locations within the project area.

The key pre-construction and construction activities that would be visible from areas surrounding the proposed wind farm include:

- ongoing detailed site assessment including sub surface geotechnical investigations;
- various civil works to upgrade local roads and access point;
- construction compound buildings and facilities;
- construction facilities, including portable structures and laydown areas;
- various construction and directional signage;
- mobilisation of rock crushing equipment and concrete batching plant (if required);
- excavation and earthworks; and
- various construction activities including erection of wind turbines, monitoring masts and substation with associated electrical infrastructure works.

The majority of pre-construction and construction activities, some of which would result in physical changes to the landscape (which have been assessed in this LVIA report), are generally temporary in nature and for the most restricted to various discrete areas within or beyond the immediate wind farm project area. The majority of pre-construction and construction activities would be unlikely to result in an unacceptable level of visual impact for their duration and temporary nature. The following images illustrate typical construction activities during preparation and installation of wind turbines:



Plate 1 Cable laying equipment



Plate 2 Typical crane plant utilised in wind turbine construction



Plate 3 Typical storage and laydown area



Plate 4 Typical contractors site office and amenities compound



Plate 5 Typical view toward wind turbines under construction

Mitigation measures

Section 13

13.1 Mitigation measures

In general mitigation measures would reduce the potential visual impact of the project in one of two ways:

- firstly, by reducing the visual prominence of the wind turbines and associated structures by minimising the visual contrast between the wind turbines and the landscape in which they are viewed; and
- secondly, by screening views toward the wind turbines from specific receiver locations.

The mitigation measures generally involve reducing the extent of visual contrast between the visible portions of the proposed structures and the surrounding landscape, and/or screening direct views toward the proposed wind farm where possible.

13.2 Detail design

Mitigation measures during the detail design process should consider:

- consideration in selection and location for tree planting which may provide partial screening or backdrop setting for some constructed elements and
- a review of materials and colour finishes for selected components including the use of non-reflective finishes to structures where possible.

13.3 Construction

Mitigation measures during the construction period should consider actions to:

- minimise tree removal where possible
- avoidance of temporary light spill beyond the construction site where temporary lighting is required
- progressively rehabilitate disturbed areas and
- protect mature trees within the proposed wind farm site where retained.

13.4 Operation

Mitigation measures during the operational period should consider:

- ongoing maintenance and repair of constructed elements
- replacement of damaged or missing constructed elements and
- long term maintenance (and replacement as necessary) of tree planting within the wind farm site to maintain visual filtering and screening of external views where appropriate.
- Landscape mitigations works (screen planting) at residential dwellings surrounding the wind farm site.

Conclusion

Section 14

14.1 Conclusion

In summary this LVIA determined the overall landscape character sensitivity to be Medium with some characteristics of the landscape likely to be altered by the wind farm, although the landscape will have some capability to accommodate change. This capability is largely derived from the medium to large scale and open landscape character identified in this part of the Moyne Shire, together with the relatively low density of people located within the immediate and surrounding area of the wind farm viewshed.

A number of the Landscape Character Areas identified and described in this LVIA are generally well represented throughout the Moyne Shire Council area and more generally within the south west portion of Victoria. This LVIA has determined that the landscape surrounding the proposed Willatook Wind Farm project area would have the ability to accommodate the physical changes associated with the wind farm and its associated structures.

This LVIA has also identified Landscape Character Areas with a higher sensitivity, including those associated with volcanic features. The proposed Willatook Wind Farm would be located around 20 km from prominent volcanic features including Tower Hill, Mount Napier and Mount Rouse. Given that distance is one key determinant for establishing degrees of visual impact, the proposed Willatook Wind Farm turbines are unlikely to dominate or significantly detract from the existing view from these key viewing locations.

Several wind farm developments have been previously approved in the Moyne Shire Council area and in areas of similar landscape characteristics to those of the proposed site.

The majority of residential dwellings surrounding the wind farm are strategically situated within the landscape to mitigate exposure to inclement weather, or have adopted measures to reduce these impacts by planting and maintaining windbreaks around dwellings. The extent of windbreak planting reduces the potential visibility of the windfarm from a number of residential view locations surrounding the wind farm area.

The proposed Willatook Wind Farm is unlikely to have a High or Moderate impact on views from any of the public view locations assessed in this LVIA. The majority of the public view locations are dynamic (motorists travelling along local roads) and include contextual views that will potentially change in reasonably quick succession within the spatial qualities of the surrounding landscape.

GBD acknowledge that the proposed Willatook Wind Farm may have the potential to impact people engaged in predominantly farming or recreational activities, where views toward wind turbines occur from surrounding and non-associated agricultural areas. Ultimately the level of impact would depend on the type of activities engaged in as well as the location of the activities together with the degree of screening provided by local landform or vegetation within individual properties. Whilst views toward the turbines will occur from a wide area of surrounding rural agricultural land, this LVIA has determined that the sensitivity of visual impacts is less for those employed or carrying out work in rural areas compared to potential views from residential dwellings; however, the sensitivity of individual view locations will also depend on the perception of the viewer.

A cumulative visual impact assessment determined that the proposed Willatook Wind Farm would be visible together with other wind farm projects from a small number of residential locations; however, views toward the Willatook and adjoining wind farm developments would be partially screened by existing wind break planting surrounding a number of rural residential dwellings. Cumulative impacts from key viewing locations, including Tower Hill, have been assessed and whilst multiple wind farm projects will be visible from elevated key viewing locations it is considered that the cumulative impact will be low in aggregate due to the distance of the proposed Willatook Wind Farm turbines from each key view location as well as the separation distance between individual wind farm developments. Sequential cumulative impacts would occur from local roads including the Hamilton Port Fairy Road and the Peshurst Warrnambool Road. The degree of cumulative impact for sequential views would tend to low for short term and transitory views.

The proposed Willatook Wind Farm is unlikely to have a significant impact on the character of the surrounding Townships, where views toward the wind farm from the majority of residential view locations would be screened by adjoining residences, tree cover and landform.

The proposed Willatook Wind Farm would be visible from a number of local roads including the Hamilton Port Fairy Road and Peshurst Warrnambool Road. This LVIA has determined that views toward the proposed Willatook Wind Farm would generally result in a Low visual impact for the majority of motorists travelling through the area.

Both pre-construction and construction activities are unlikely to result in an unacceptable level of visual impact due to the temporary nature of these activities, together with proposed restoration and rehabilitation strategies. The preferred location for some of the construction activities, including the on-site concrete batch plant and rock crusher, would generally be located away from publicly accessible areas, with the closest residential view location generally comprising associated landowners.

Although some mitigation measures may be considered appropriate to minimise the visual impact for a number of the elements associated with the wind farm, it is acknowledged that the degree to which the wind turbines may be visually mitigated is limited by their scale and position within the landscape relative to surrounding view locations. Despite this, the Proponent has engaged in ongoing consultation with local residents and made a number of adjustments to the location of individual turbines to reduce visual impacts where possible.