GREEN BEAN DESIGN landscape architects

ALBERTON WIND FARM

LANDSCAPE AND VISUAL IMPACT ASSESSMENT

Prepared for:

SYNERGY WIND Pty Ltd

Prepared by:

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DOUCMENT CONTROL

ITEM	DETAIL
Project Name:	**Alberton Wind Farm**
Report Title:	**Landscape and Visual Impact Assessment**
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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 Pty Ltd (GBD) was commissioned by Synergy Wind Pty Ltd (the Proponent) to undertake a Landscape and Visual Impact Assessment (LVIA) for the proposed Alberton Wind Farm and associated infrastructure.

The Alberton Wind Farm would comprise up to 34 wind turbines, connection to the electricity grid and ancillary structures such as control room, operations and maintenance building, terminal substation and access tracks. The proposed wind turbines have been modelled and assessed with an overall blade tip height of up to 200 metres and would be the most visible component of the development.

The landscape surrounding the proposed wind farm site has been identified as being part of the South Gippsland Coastal Plains regional landscape type, and is located within the Gippsland Region (Coastal Spaces Landscape Assessment Study 2006).

The typical landscape character area, within this landscape type, is broadly identified as low lying and flat, covering a long stretch of varied coastline. Valued visual links to natural landscapes include distant views toward Wilsons Promontory as well as occasional distant views toward mountains and ranges to the north.

The Coastal Spaces Landscape Assessment Study notes low density development scattered throughout the landscape character area with small 'lifestyle' settlements on the coast (Port Welshpool and Port Albert). Medium sized rural towns (Yarram) are located in the east of the landscape character area. The LVIA also notes a number of smaller towns located along the South Gippsland Highway within the landscape character area (Toora, Welshpool and Alberton). Whilst noting the Coastal Spaces Landscape Assessment was published in 2006, site inspections carried out for this LVIA identified a total of 103 non-associated residential dwellings within 3 kilometres of the Alberton Wind Farm turbines, which does not necessarily reflect 'low density' development.

The Coastal Spaces Landscape Assessment Study identifies the Nooramunga Marine and Coastal Park as being a State Significant landscape area and valued by the community for panoramic 'out views' of Wilsons Promontory, particularly from Snake Island. The park is noted as being visually significant and is generally located between 3 and 5 kilometres from the closest Alberton Wind Farm turbine. The park is characterised as a chain of small islands, barriers and spits of sand, mudflats and mangroves.

Wilsons Promontory National Park is located around 15 kilometres south west of the wind farm site and is identified as a landscape at both State and National levels for visually significant characteristics including geological and flora. The Coastal Spaces Landscape Assessment Study notes community value placed on this landscape for the extent of undeveloped character and 'near wilderness' experience.

The wind farm site is located between areas of State Forest which extend to the north and south of South Gippsland Highway. The forests occupy flat coastal land as well as gently undulating hills and are actively managed for timber production.

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 effect 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.

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

- would have a low visual effect on the rural/coastal townships of Toora, Welshpool and Port Welshpool
- would have a low moderate visual effect on the rural/coastal townships of Port Albert, Alberton and Yarram
- would result in moderate low (albeit short term and transitory impacts) effects on views from the South Gippsland Highway
- 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
- would not have a significant visual effect from public reserves and recreational areas, including any available views from state significant landscape areas such as the Nooramunga Marine and Coastal Park and Wilsons Promontory National Park.

The Alberton 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 Alberton Wind Farm would be unlikely to result in any significant cumulative visual impacts arising from visibility between other existing and operational wind farms. The Toora Wind Farm turbines, around 15 kilometres to the west of the Alberton Wind Farm site, are visible from a number of locations surrounding the proposed site. However, the distance between existing and proposed wind farms would result in a low level of magnitude with regard to potential visual impacts. Similarly, the Bald Hills Wind Farm, around 50 kilometres to the west of the Alberton Wind Farm is considered to have a negligible potential for cumulative visual impact. The spatial relationship between the wind farms together with the overall moderate number of wind turbines within each development would also limit the potential for broader sequential visual impacts to occur for people travelling through landscape surrounding the wind farms.

Although some mitigation measures are considered appropriate to minimise the visual effects for a number of ancillary structures associated with the proposed Alberton 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 Alberton Wind Farm project. This LVIA informs the assessment of the Alberton 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, January 2016
- Wellington Shire Council Planning Scheme and
- Coastal Spaces Landscape Assessment Study, September 2006.

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 Alberton 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 – Viewshed	This section identifies the area of land surrounding the wind farm which may be potentially affected by the proposed wind farm project.
6 – 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

Table 2 – Report structure

Report section	Description
	characteristics that occur within and surrounding the wind farm site.
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 – Landscape Character Assessment	This section describes the physical characteristics of the landscape surrounding the Alberton Wind Farm site and determines the overall sensitivity of the landscape to the wind farm development.
9 – Visual effects (key public view points)	This section describes and determines the potential visual effect of the wind farm on key public viewpoints within the Alberton 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 Alberton 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 Alberton Wind Farm.

Project location and description

Section 3

3.1 Project location

The proposed Alberton Wind Farm would be located across several private properties with a development footprint of approximately 59.39 hectares, around the township of Alberton West in South Gippsland, Victoria. Alberton is situated on the Albert River, about 30 kilometres east of Corner Inlet at Wilson's Promontory. It is located along the South Gippsland Highway, 6 kilometres south of Yarram and 216 kilometres east of Melbourne. The closest township to the project is, Yarram, to the South-East. The Project is situated within the Wellington Shire. The project site location in both regional and local contexts is illustrated in **Figures 1** and **2**.

3.2 Project description

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

- up to thirty-four wind turbines to a maximum 200 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 Alberton Wind Farm indicative wind turbine layout is illustrated in **Figures 1** and **2.**

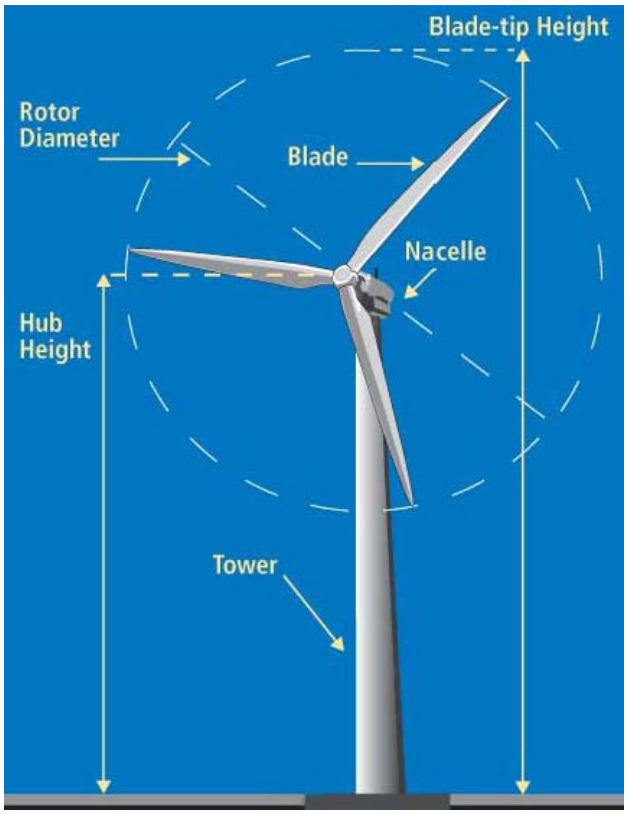
3.3 Wind turbines

The specific elements of the wind turbines typically comprise:

- concrete foundations;
- tubular tapering steel and/or concrete towers;
- 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. 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 of the proposed Alberton Wind Farm is sufficiently low such that the installation of obstacle lights is not necessary, even if the maximum height of the wind turbines were 200m'*. 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 permanent wind monitoring masts would not create a significant visual effect in the context of the overall wind farm development, and are structures similar in scale, or smaller than a number of surrounding communication masts visible in the landscape surrounding the wind farm project area.

The permanent wind monitoring masts would not create a significant visual effect in the context of the overall wind farm development, and are structures similar in scale, or smaller than a number of surrounding communication masts visible in the landscape surrounding the wind farm project area.

3.6 On-site access tracks

On-site access tracks would be constructed to provide access to turbine locations across the site during construction and operation. During construction, the majority of access tracks would be approximately 6 m wide to allow for vehicle manoeuvring, and reduced to 2.5 m wide following construction.

The final access track design would be developed on a number of environmental grounds, including minimising the potential for visual effect 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 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 18 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 effect for their duration and temporary nature.

Legend

- Proposed wind turbine
- Distance from turbine
- 2 km viewshed
- Township

Figure 1
Regional location

0m 5km

Alberton Wind Farm

Landscape and Visual Impact Assessment

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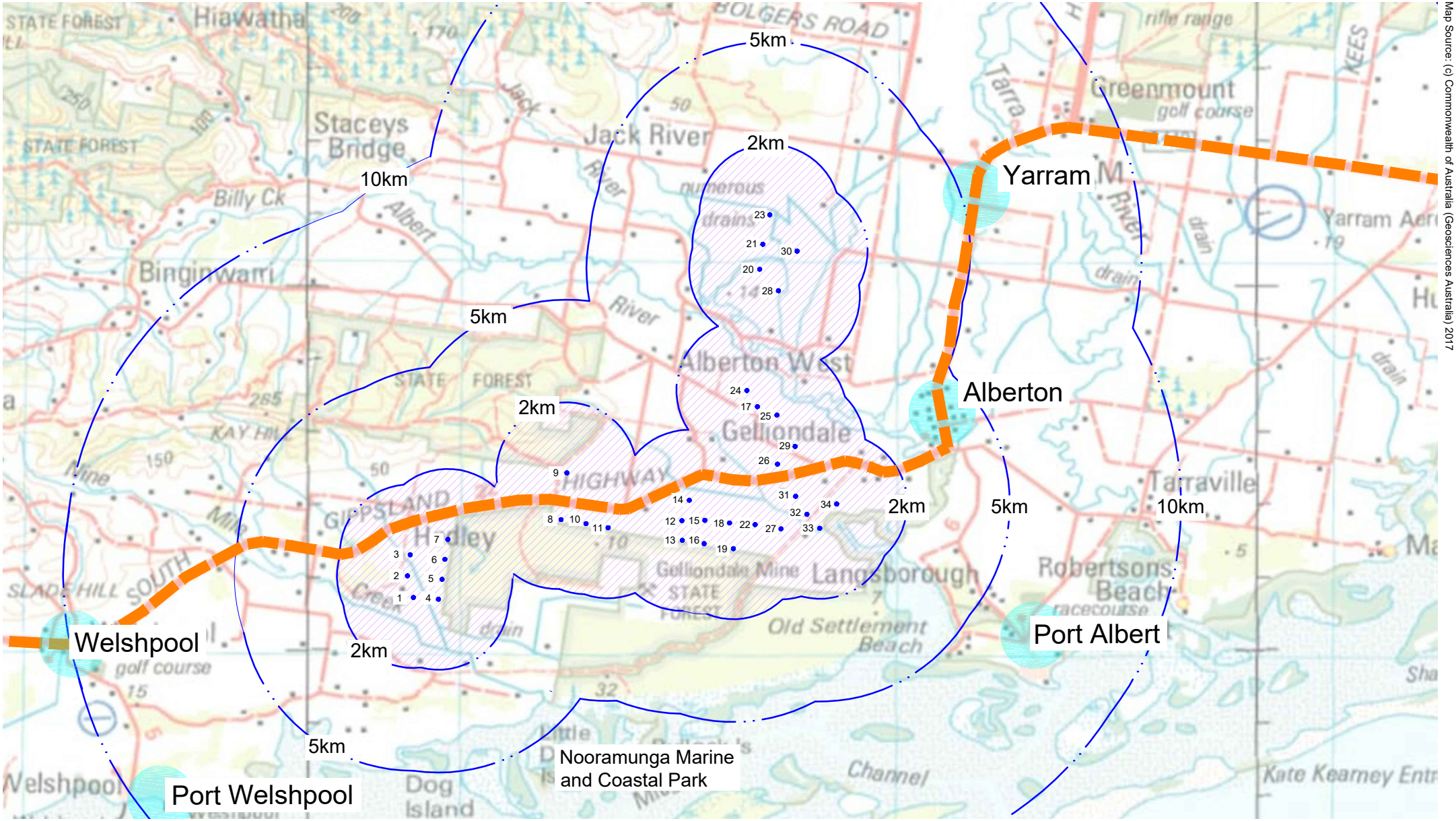

Legend

- Proposed wind turbine
- 2 km viewshed
- South Gippsland Highway
- Distance from turbine
- Township

Figure 2
Project locality and site layout

0m 5km

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Alberton Wind Farm

Landscape and Visual Impact Assessment

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 Alberton Wind Farm project. These include:

Planning Policies

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

Planning Controls

- Particular Provisions – relevant Clauses 52.32
- Zoning and Overlays

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 - Wellington Shire Council Planning Scheme

The Local Planning Policy Framework for Wellington Shire Council is set out in Clause 21 and Clause 22 of the Planning Schemes. Clause 21 sets out the Municipal Strategic Statements (MSS) and Clause 22 the Local Planning Policies particular to Wellington Shire Council. The Wellington Planning Scheme reference numerous Clauses in relation to objectives, strategies and policy guidelines to address Councils strategic planning objectives. Those with specific relevance to the Alberton Wind Farm project include:

Clause 21.01-2 of the Wellington Shire Council City Planning Scheme MSS identifies the Alberton Wind Farm project site within *Planning Unit 8: Coastal* and states that:

'The Coastal Planning Unit covers the full length of the narrow primary dune system and associated lakes and lagoons at the western end of the Unit. The sensitive and fragile coastal sand dune environment is an integral component of Ninety Mile Beach. Sand dunes along the coastline are highly vulnerable to wind erosion and the Unit is also particularly susceptible to the impacts of sea level changes. The agricultural strategic importance of the Unit is very low as the land is not particularly suitable for agricultural uses'.

Clause 21.02-2 of the Wellington Shire Council City Planning Scheme MSS identifies Environmental and Landscape Values:

- *The Shire's ecological and landscape features are important State and national assets.*
- *The Shire's coastal and riverine environments are sensitive to inappropriate development and can be easily and irreversibly damaged.*
- *The Shire's coastal landscapes are highly sensitive to visible changes, such as inappropriately scaled or sited built form or changes to the existing vegetation patterns.*
- *The Shire has areas of high value biodiversity habitat.*

Clause 21.13-1 of the Wellington Shire Council City Planning Scheme MSS identifies Rural and Natural Landscape objectives to recognise the visual, landscape and recreational importance of the Gippsland Lakes and coastal environment to the region and strategies to:

- *Protect locally significant views and vistas that contribute to the character of coastal and coastal hinterland areas.*
- *Minimise the visual effect of signage and infrastructure, particularly adjacent to the Gippsland Lakes or Ninety Mile Beach or areas of high visibility.*

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

The proposed Alberton Wind Farm is wholly located within the Rural Farming Zone (FZ) as defined in Clause 35.07 of the Planning Schemes. Wind energy facilities are a permissible use subject to the wind energy project meeting the requirements of the State Planning Policy Clause 52.32 Wind Energy Facility. The Alberton Wind Farm project site abuts Public Conservation and Resource Zones (PCRZ) covering State Forest land to the north west and south of the project site.

There are a number of Overlays within the proposed Alberton Wind Farm 5 km viewshed. The Wellington Shire Planning Scheme identifies these as:

- Environmental Significance Overlay
  - ESO1 Coastal and Gippsland Lake Environs
  - ESO2 Wetlands
- Heritage Overlay
  - HO81 Gelliondale Briquette Plant
- Design and Development Overlay
  - DD01 Industrial Areas
- Land Subject to Inundation Overlay (LSIO)

- WMO (Bushfire Management Overlay)
- State Resource Overlay
    - SR01 Gippsland Brown Coalfields

4.5 Particular provisions

Particular Provisions Clause 52.32, Wind Energy Facility sets out a framework which includes the preparation of a design response to assess the visual impact of the proposal on the surrounding landscape. The Wellington Shire Council Planning Scheme outlines application requirements for wind energy facilities under Clause 52.32. In broad terms the application information with specific regard to landscape and visual includes:

- Direction and distances to nearby dwellings, townships, urban areas, significant conservation and recreation areas, water features, tourist routes and walking tracks, major roads, airports, aerodromes and existing and proposed wind energy facilities;
- Views to and from the site, including views from existing dwellings and key vantage points including major roads, walking tracks, tourist routes and regional population growth corridors;
- 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; and
- 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, January 2016 (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.

The Victorian Guidelines outline the key criteria for evaluation of the planning merits of a wind energy facility. Section 3.3.1 State environmental assessment notes that *'The Minister for Planning will require a preliminary landscape assessment to accompany a referral of a proposed wind energy facility. Should an EES be required,*

then it must include an independently peer-reviewed visual impact assessment by a suitably qualified and experienced person'.

Section 5.1.3 Landscape and visual amenity identifies a number of considerations with regard to the degree of visual impact caused by wind farm developments; however, a number of these considerations are not directly applicable to the level of detail associated with a preliminary study, but should be addressed within the context of a detailed planning application.

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;
- Preliminary landscape character and significance analysis;
- Preliminary view analysis;
- Preliminary 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 low density development scattered throughout the landscape character area with small 'lifestyle' settlements on the coast (Port Welshpool and Port Albert). Medium sized rural towns (Yarram) are located in the east of the landscape character area. The LVIA also notes a number of smaller towns located along the South Gippsland Highway within the landscape character area (Toora, Welshpool and Alberton).

The Coastal Spaces Landscape Assessment Study identifies the Nooramunga Marine and Coastal Park as being a State Significant landscape area and valued by the community for panoramic 'out views' of Wilsons Promontory, particularly from Snake Island. The park is noted as being visually significant and is generally located between 3 and 5 kilometres from the closest Alberton Wind Farm turbine. The park is characterised as a chain of small islands, barriers and spits of sand, mudflats and mangroves.

4.9 Planning considerations

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

- The Wellington Shire Council Planning Scheme applies Overlays across landscape features within the municipality which are proximate to the Alberton Wind Farm site, including the Nooramunga Marine National Park and Gelliondale State Forest.
- The Alberton Wind Farm site is located within land designated as Farming Zone within the Wellington Shire Council Planning Scheme.
- The Wellington Shire Council Planning Scheme identifies no Significant Landscape Overlays (SLO) immediately within or adjoining the wind farm site.
- There are Environmental Significance Overlays (generally ESO1 Coastal and Gippsland Environs and ESO2 Wetlands) within the wind farm viewshed.
- There are a small number of Townships or urban settlements within the wind farm viewshed, and are located beyond 2 km from the wind farm turbines.
- The Victorian Guidelines (January 2016) 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.

Viewshed

Section 5

5.1 Viewshed

For the purpose of this LVIA the viewshed is defined as the area of land surrounding and beyond the project area which may be potentially affected by the wind farm. In essence, the viewshed defines this LVIA study area. The overall regional viewshed for the proposed Alberton Wind Farm has been illustrated at a distance of 20 kilometres extending across the landscape away from the wind turbines. The 20 kilometre viewshed illustrates the location of the Toora Wind Farm site to the west as well as the northern portion of Wilsons Promontory to the south west of the Alberton Wind Farm site.

Subsets of the 20 kilometre viewshed have also been illustrated at 2 kilometres, 3 kilometres, 5 kilometres and 10-kilometre intervals on various figures within this LVIA. The distance of the viewshed can vary between wind farm projects, and may be influenced and informed by a number of criteria including the height of the wind turbines together with the nature, location and height of landform that may limit and influence the extent of wind farm visibility.

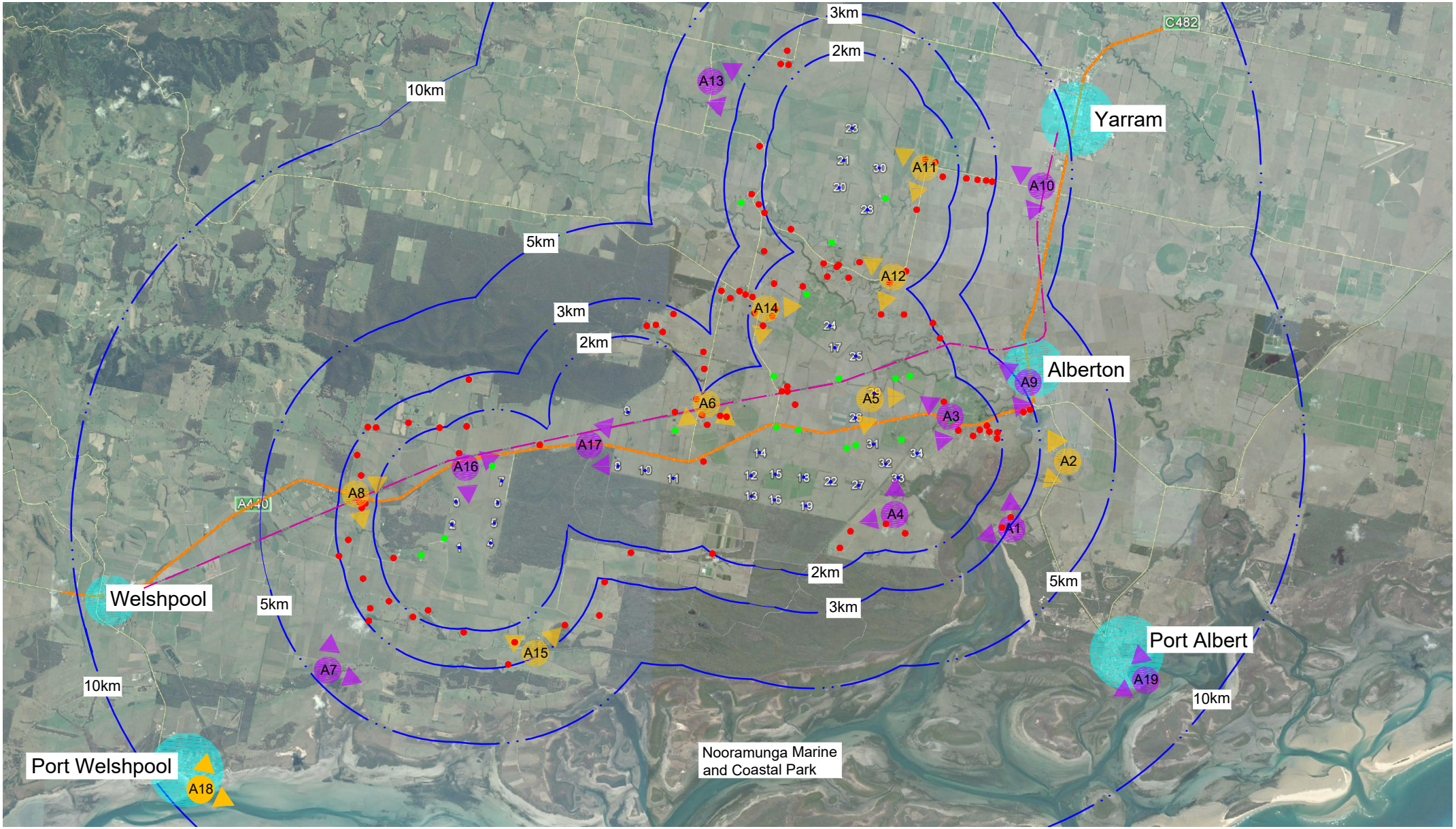
It is important to note that the wind turbines would be visible from some areas of the landscape beyond the 20 kilometre viewshed; however, within the general parameters of normal human vision, a wind turbine at a maximum height of 200 metres to the tip of the rotor blade would occupy a relatively small proportion of a person's field of view from distances in excess of 20 kilometres and result in a relatively low level of perceived visual significance. The relationship between the proposed Alberton Wind Farm viewshed and existing dwellings is illustrated in **Figure 16**.

Panoramic photographs

6.1 Panoramic photographs

A series of individual and panorama digital photographs were taken during the course of the fieldwork to illustrate existing views in the vicinity of the project site and to give a sense of the overall site in its setting. The panorama photographs 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 panoramic photograph locations are illustrated in **Figure 3**, and the panoramic photographs illustrated in **Figures 4** to **12**.



Map Source: Google Earth Pro 2017

Legend

- Proposed wind turbine (indicative location)
- Approximate distance from wind turbine
- Panorama photo location
- Panorama photo and photomontage location
- South Gippsland Highway
- Rail line (closed)
- Township
- Associated dwelling
- Non associated dwelling

Figure 3
Panorama photo and photomontage locations

0m 2km

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Alberton Wind Farm

Landscape and Visual Impact Assessment

Views toward the wind farm site are largely screened and/or filtered by tree cover north of the caravan park

Viewpoint A1 - View north/north west from the Seabank Caravan Park

Viewpoint A2 - View west/north from Yarram-Port Albert Road

Figure 4
Panorama photo locations
A1 and A2

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Viewpoint A3 - View south west/west from S Gippsland Hwy and Ti Tree Road intersection

Viewpoint A4 - View south west/west from Dawsons Road

Figure 5
Panorama photo locations
A3 and A4

Viewpoint A5 - View south east/south from Old Alberton West Road

Viewpoint A6 - View south from Lanes Road

Figure 6
Panorama photo locations
A5 and A6

Viewpoint A7 - View north east/east from Mcphails Road

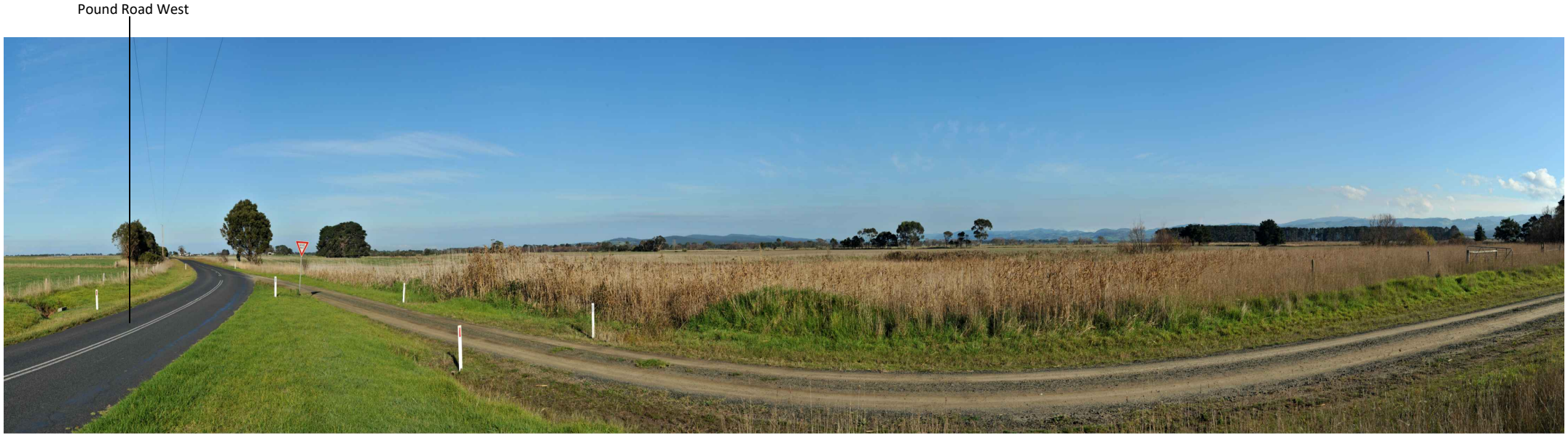
Viewpoint A8 - View south/south east from Hodgsons Road

Figure 7
Panorama photo locations
A7 and A8

Viewpoint A9 - View west from Thomson Street, Alberton

Viewpoint A10 - View west from Pound Road West

Figure 8
Panorama photo locations
A9 and A10



Viewpoint A11 - View south west/west from Pound Road West

Viewpoint A12 - View south west/west from Pound Road West

Figure 9
Panorama photo locations
A11 and A12

Viewpoint A13 - View south/south east from Lower Jack Road

Viewpoint A14 - View south east from Old Alberton Road W/Gelliondale Road intersection

Figure 10
Panorama photo locations
A13 and A14

Viewpoint A15 - View north from Telegraph Road

Viewpoint A16 - View east to south from S Gippsland Hwy and James Road N intersection

Figure 11
Panorama photo locations
A15 and A16

Viewpoint A17 - View east/south east from S Gippsland Hwy (west of Pearsons Road)

Viewpoint A18 - View east/south from Port Welshpool Foreshore Reserve

Figure 12
Panorama photo locations
A17 and A18

Landscape character assessment

Section 7

7.1 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.

For the purposed of this LVIA, the landscape character surrounding the wind farm site has been determined as a singular landscape unit which generally occurs within the 5 kilometre viewshed of the proposed Alberton Wind Farm site. The landscape unit represents an area that is relatively recognisable in terms of its key landscape elements and physical attributes; which include a combination of topography/landform, vegetation/landcover, land use and built structures (including settlements and local road corridors).

Whilst the landscape character surrounding the wind farm has been defined as a singular landscape unit, this LVIA recognises that localised and specific characteristics can occur within the landscape unit, including:

- landscape areas associated with the Gelliondale State Forest
- modified agricultural land including dairy and cropping
- Nooramunga Marine and Coastal Park and
- South Gippsland Highway corridor.

For the purpose of this LVIA the predominant landscape unit within and surrounding the project site has been identified as a level to very gently inclined and modified agricultural land interspersed with extensive tree cover within State Forests.

7.2 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:	• Large scale landform • Simple • Featureless • Absence of strong topographical variety	↔	• Small scale landform • Distinctive and complex • Human scale indicators • Presence of strong topographical variety
Landcover: patterns, complexity and consistency	• Simple • Predictable • Smooth, regular and uniform	↔	• Complex • Unpredictable • Rugged and irregular
Settlement and human influence	• Concentrated settlement pattern • Presence of contemporary structures (e.g. utility, infrastructure or industrial elements)	↔	• Dispersed settlement pattern • Absence of modern development, presence of small scale, historic or vernacular settlement
Movement	• Prominent movement, busy	↔	• No evident movement, still
Rarity	• Common or widely distributed example of landscape character area within a regional context	↔	• Unique or limited example of landscape character area within a regional context
Intervisibility with adjacent landscapes	• Limited views into or out of landscape • Neighbouring landscapes of low sensitivity • Weak connections, self-contained area and views • Simple large-scale backdrops	↔	• 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 4** 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 **Table 4** 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**.

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.

Table 4 – Landscape character area

	Lower Sensitivity		↔		Higher Sensitivity
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
Landform and Scale		2			
	The level to very gently inclined agricultural land within, and neighbouring, the project site forms a very small portion of the east Gippsland regional landscape, located in rural south-eastern Victoria. Gippsland covers a climatically temperate landscape partially defined by agricultural, mining and power				

Table 4 – Landscape character area

	Lower Sensitivity		↔		Higher Sensitivity
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
	generation land uses. The landform and morphology of the landscape within and surrounding the project site is relatively level, although areas of gentle to moderately inclined landform extends to the west and north of the project site toward ridgelines and hills extending to Mount Fatigue at around 580 metres AHD to the north of Toora. There is an overall moderate to small scale to the landscape defined by field patterns being more moderate in scale. Landscape features and stronger topographical elements occur beyond the project, including views which extend toward Wilsons Promontory from more elevated locations surrounding the project site.				
Landcover			3		
	Within the project site landcover is relatively simple and predictable across the together with that of the immediate surrounding landscape. European settlement established an agricultural presence and defines much of the contemporary dairy and cropping areas across the project site and beyond. Cropping and pastoral fields create a regular and uniform appearance throughout the seasonal and repetitive operations associated with agricultural production. However, some level of landcover complexity is noted beyond the site including shoreline mudflats and mangroves associated with the Nooramunga Marine and Coastal Park to the south of the project site as well as forested areas contrasting with the agricultural landscape.				
Settlement and human influence			**3**		
	Settlement is generally dispersed throughout the project site and surrounding landscape and consists largely of farmsteads and individual dwellings. There are some examples of small scale, historic or vernacular structures within the landscape. Townships are located to the east, south east and west of the project site, either along the South Gippsland Highway (Toora, Welshpool, Alberton and Yarram) or in coastal locations (Port Welshpool and Port Albert).				
Movement		**2**			

Table 4 – Landscape character area

	Lower Sensitivity		↔		Higher Sensitivity
	Low	Low to Med	Medium	Med to High	High
Rating	1	2	3	4	5
	Movement within the project site is generally restricted to local vehicular movements, including cars and trucks travelling along the South Gippsland Highway. Occasional agricultural vehicles are seen within fields, with movement and activity increasing during more intense periods such as harvesting.				
Rarity Rarity		**2**			
	The project site and adjoining landscape are considered to be a relatively common landscape type within a regional context extending across the east Gippsland district.				
Intervisibility			**3**		
	The project site does not generally allow for far distant and regional scale views and offers no specific elevated viewpoints. Whilst views can, depending on prevailing climatic conditions, extend toward portions of landscapes with a high visual sensitivity (such as Wilsons Promontory), the level of visibility is generally restricted to landform silhouettes. Whilst the Alberton Wind Farm wind turbines would be visible from some elevated areas, the distance between wind farm and elevated receiver locations would tend to render the wind turbines as generally noticeable, but not dominant features which occupy a relatively small portion of the overall available view.				
Overall Sensitivity Rating	**Score 15 out of 30** In consideration of the existing landscape characteristics, the 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.				

Zone of Visual Influence and Visibility

Section 8

8.1 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 Alberton Wind Farm may be visible from surrounding areas within the viewshed.

The tip of blade and hub height ZVI diagrams have been prepared by DNV-GL Pty Ltd using industry best practice methods. The ZVI diagrams includes the Alberton Wind Farm turbines visible from tip of blade and hub height.

8.2 ZVI Methodology

The ZVI methodology is a purely geometric assessment where the visibility of the proposed Alberton Wind Farm is determined from carrying out calculations based on a digital terrain model of the 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 wind farm 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 proposed wind turbines.#

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

A diagram illustrating the tip of blade and hub height visibility and the ZVI diagrams are shown in **Figures 13**, **14** and **15**.

Both tip of blade and hub height ZVI diagrams illustrate similar areas of potential visibility and highlight the extent and influence of hills and ridgeline landform to the west, north and north east of the Alberton Wind Farm site.

8.3 Visibility

The level of wind turbine visibility within the Alberton Wind Farm 10 kilometre viewshed can result from a number of factors including, but not limited to:

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 15a**.

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.

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.

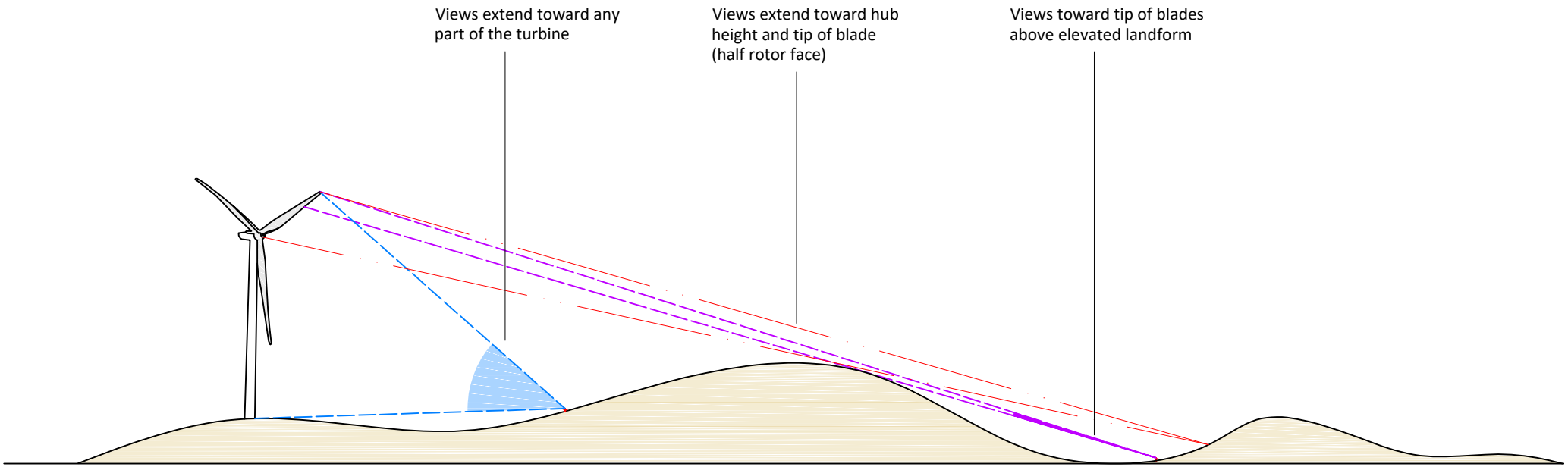
8.4 Climatic and Atmospheric Conditions

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

Rainfall would tend to reduce the level of visibility toward the proposed Alberton 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 Alberton Wind Farm may be visible, and potentially decrease the duration of time spent at a particular public view location with a view toward the Alberton Wind Farm.

Cloud cover would also tend to reduce the level of visibility of the proposed Alberton 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 effect on the degree of visibility of the proposed Alberton Wind Farm. The degree of effect 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.



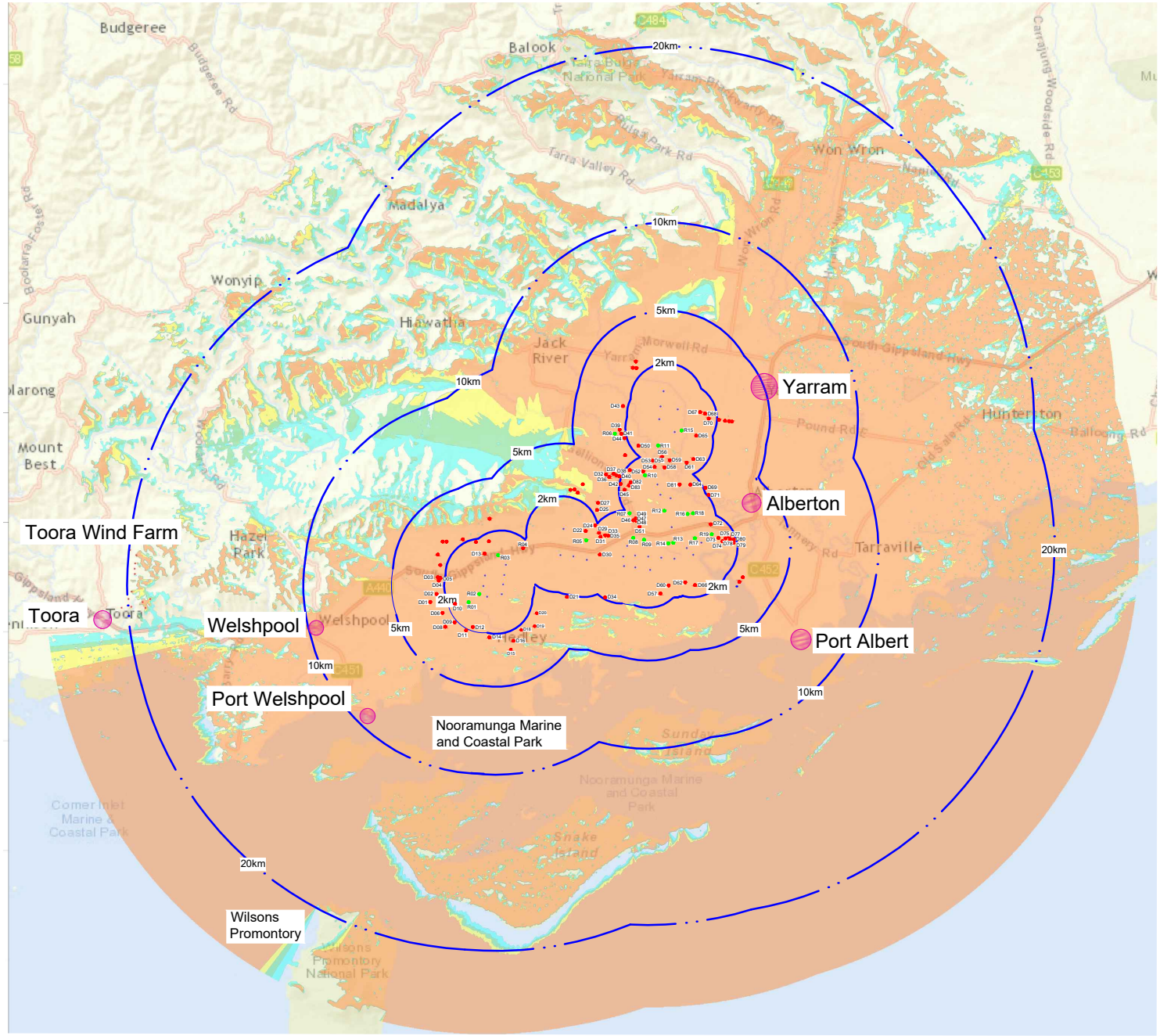
'Tip of blade'

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.

Figure 13
ZVI visibility



Wind turbine tips visible

1 9 17 25

Legend

- Proposed wind turbine
- Distance from turbine
- Township
- R12 Associated dwelling
- D30 Non associated dwelling

Figure 14
ZVI Diagram - tip of blade

0m 5km

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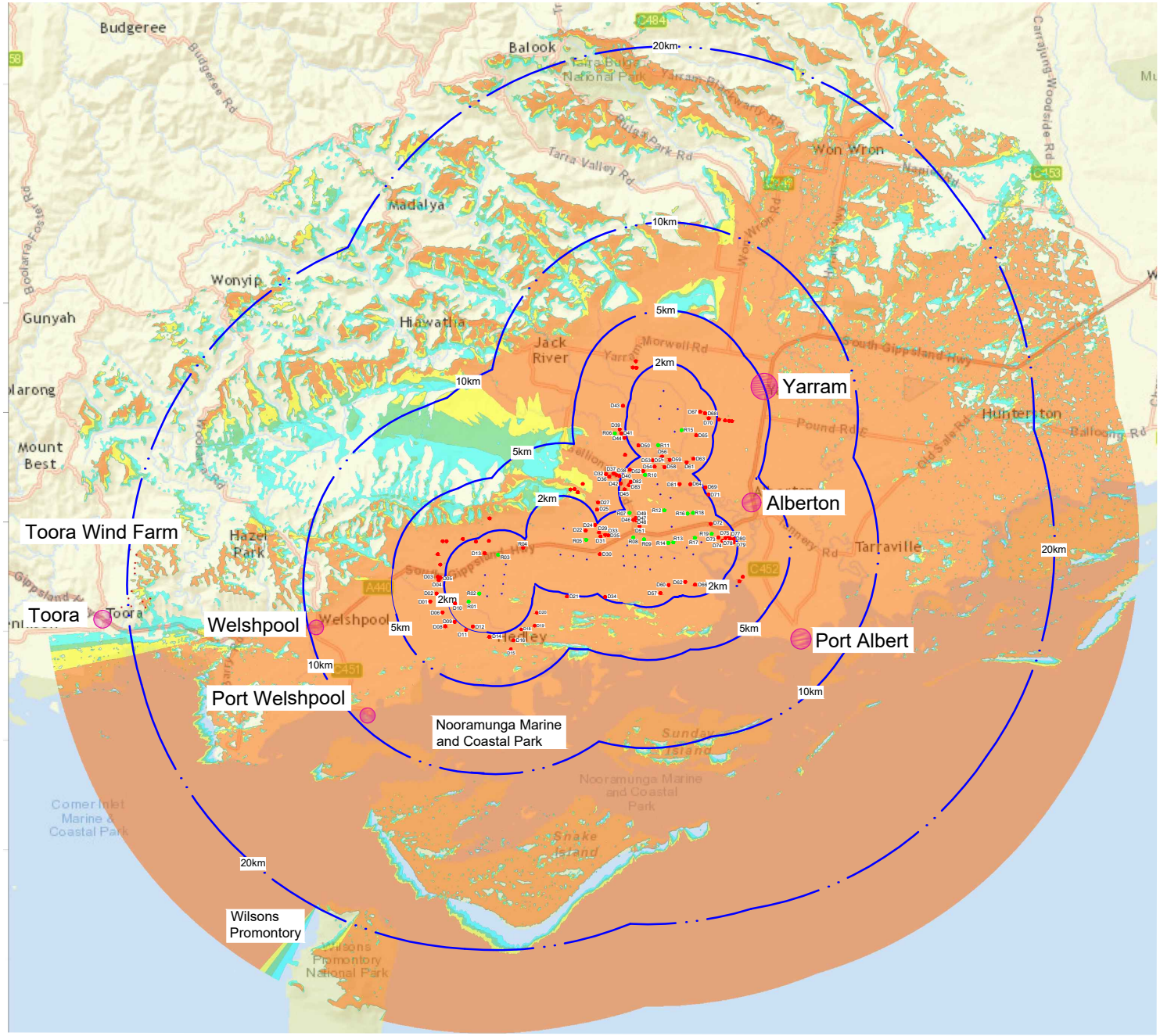

Wind turbine hubs visible

1 9 17 25

Legend

- Proposed wind turbine
- Distance from turbine
- Township
- R12 Associated dwelling
- D30 Non associated dwelling

Base map source: © OpenStreetMap contributors 2017

Figure 15
ZVI Diagram - hub height

0m 5km

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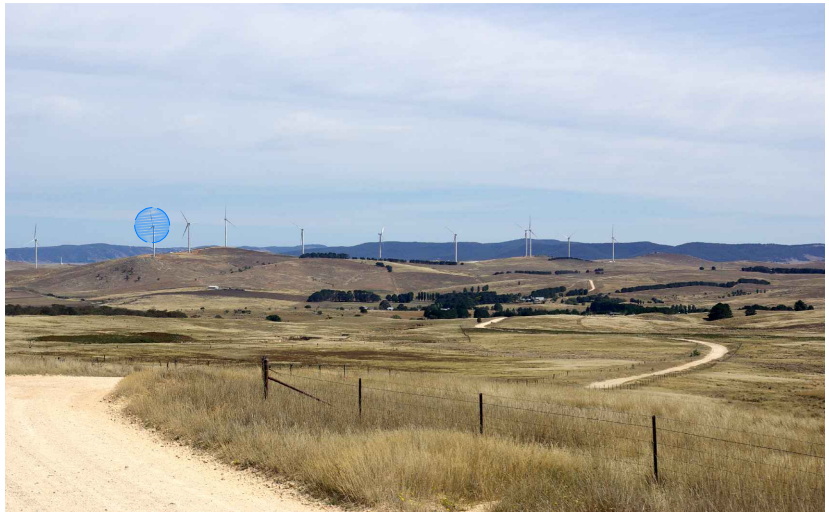
Alberton Wind Farm

Landscape and Visual Impact Assessment

Capital Wind Farm - View distance 1.5 km



Capital Wind Farm - View distance 4 km

Capital Wind Farm - View distance 7 km

Capital Wind Farm - View distance 10 km

Capital Wind Farm turbines: Suzlon88, 80 m hub height, 88 m rotor diameter. Photographs: Pentax K10D, 50mm lens

Figure 15a
Wind turbine visibility

Key views and visual effects

Section 9

9.1 Introduction

The overall determination of visual effects resulting from the construction and operation of the Alberton 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 5 and **6** 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 7** sets out the relative visual impact grading values which combines issues of sensitivity and magnitude for the Alberton Wind Farm project.

Table 5 – 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 6 – 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 effect grading matrix in **Table 7** below. The levels of sensitivity and magnitude of visual effects outlined in **Table 7** are **used as a guide** to determine levels of visual effect and are not absolute.

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

The location of the associated and non-associated residential dwellings is illustrated in **Figure 16**. Associated residential dwellings and non-residential structures, such as agricultural sheds, within 5 km of the Alberton Wind Farm turbines have not been assessed.

Table 7 Visual effect 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 recessing 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 settlements

Regional Cities, Townships and Localities within the landscape surrounding the Alberton Wind Farm include:

- Yarram (around 4 km north east of the wind farm)
- Port Albert/Langsborough (around 5.6 km north west of the wind farm)
- Alberton (around 2.75 km south west of the wind farm)
- Welshpool (around 7.8 km west of the wind farm) and
- Port Welshpool (around 7.1 km south west of the wind farm).

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

Table 8 Visual effect grading

Sensitivity of visual receiver	High
Magnitude of visual effects	Moderate low
Visual effect	**Moderate low**

9.5 Views from the Nooramunga Marine and Coastal Park

The Coastal Spaces Landscape Assessment Study identifies the Nooramunga Marine and Coastal Park as being a State Significant landscape area and valued by the community for panoramic 'out views' of Wilsons Promontory, particularly from Snake Island. The park is noted as being visually significant and is generally located between 3 and 5 kilometres from the closest Alberton Wind Farm turbine. The park is characterised as a chain of small islands, barriers and spits of sand, mudflats and mangroves. There do not appear to be any permanent residential dwellings located on the majority of low lying sandy islands; however, Sunday Island is a privately-owned island and game reserve operated for seasonal hunting. Views toward the wind turbines would be partially screened by coastal vegetation and tree cover between the park and the project site. Wind turbines would not be visible within the general extent of 'out view' from either Sunday Island or Snake Island to the west.

Table 9 Visual effect grading

Sensitivity of visual receiver	High moderate
Magnitude of visual effects	Moderate low
Visual effect	**Moderate**

9.6 Views from highways and local roads

The South Gippsland Highway extends for approximately 13 kilometres alongside the Alberton Wind Farm project site. Wind turbines will be visible and proximate in view whilst travelling in both approximate east and west directions. Wind turbines will also be visible from a number of local roads which also extend alongside the project site. 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; however, views from local roads are likely to offer proximate and direct views toward the wind turbines from vehicles making regular trips to and from surrounding dwellings. As the sensitivity of receivers travelling along highways and local roads tends to be low, in combination with the generally short duration of views, the overall visual effect from roads is likely to be moderate low.

Table 10 Visual effect grading (highways)

Sensitivity of visual receiver	Moderate low
Magnitude of visual effects	Moderate
Visual effect	**Moderate low**

Table 11 Visual effect grading (local roads)

Sensitivity of visual receiver	Moderate
Magnitude of visual effects	Moderate
Visual effect	**Moderate**

9.7 Views from agricultural land

GBD acknowledge that the proposed Alberton Wind Farm may have the potential to effect people engaged in predominantly farming activities, where views toward wind turbines occur from surrounding and non-associated

agricultural areas. Ultimately the level of effect 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 12 Visual effect grading

Sensitivity of visual receiver	Low
Magnitude of visual effects	Moderate
Visual effect	**Moderate-low**

9.8 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 urban localities, where the influence of both distance and existing vegetative cover is likely to screen any potential views toward the Alberton Wind Farm site.

Table 13 Visual effect grading

Sensitivity of visual receiver	Moderate
Magnitude of visual effects	Moderate low
Visual effect	**Moderate-low**

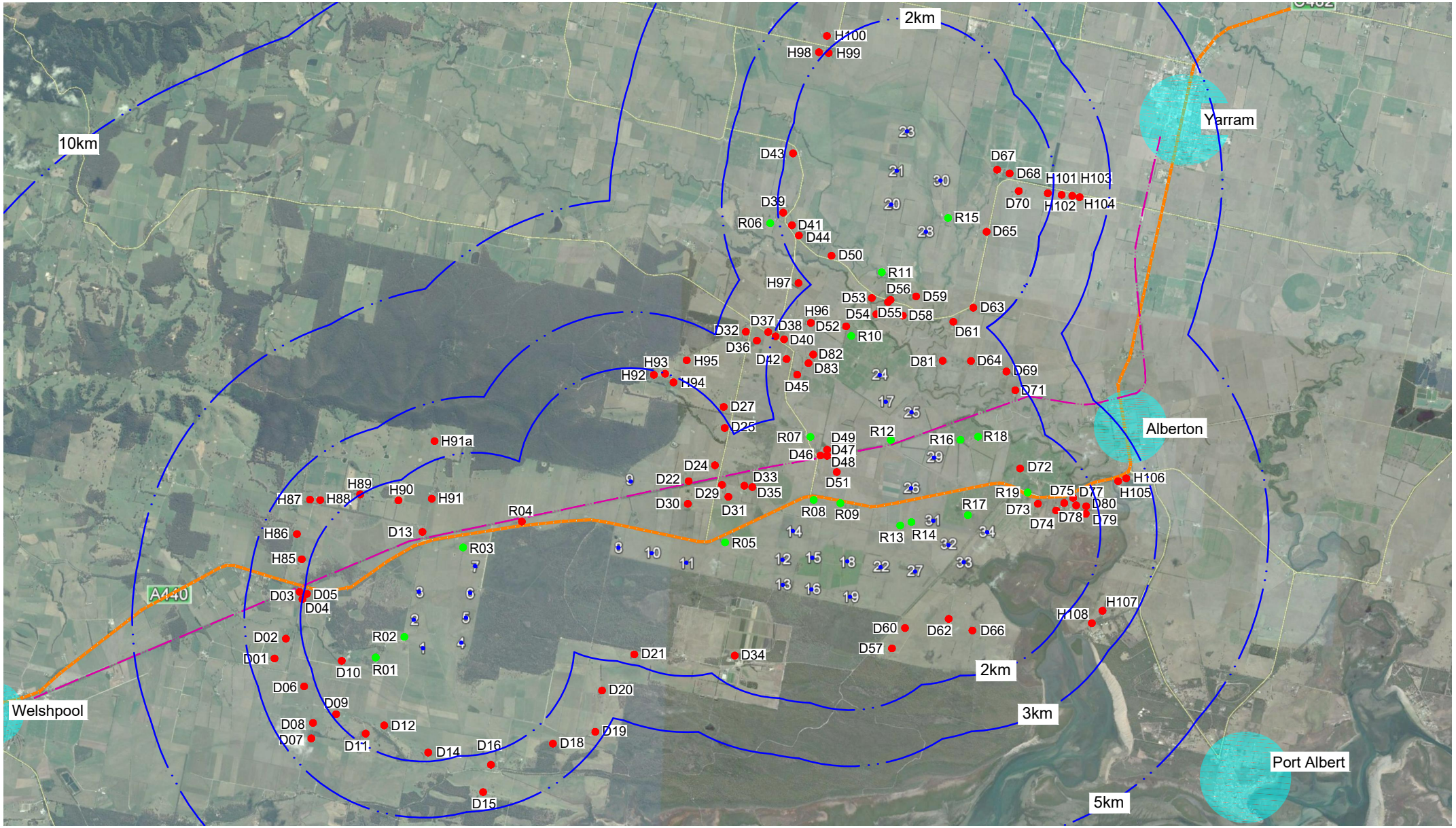
9.9 Views from residential dwellings

Existing residential dwellings are illustrated in **Figure 16** and include dwellings on properties that are not associated with the proposed Alberton Wind Farm development as well as those that are.

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 Alberton 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 14** have been assessed within the 2km and the 2km to 3km offset distances. The residential dwellings are not in numerical order where assessed in groups.



Map Source: Google Earth Pro 2017

Legend

- Proposed wind turbine (indicative location)
- Approximate distance from wind turbine
- South Gippsland Highway
- Rail line (closed)
- Township
- Associated dwelling
- Non associated dwelling

Figure 16
Dwelling view locations to 3km

0m 2km

Alberton Wind Farm

Landscape and Visual Impact Assessment

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Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
Residential dwellings within 2km of an Alberton Wind Farm turbine							
D04 and D05	**Non-associated landowner** Residential dwellings Sensitivity: High	Short 2,000 metres	High	High	High	Short distance and direct views would extend from the dwelling and curtilage in an east direction toward wind turbines within the west portion of the Alberton Wind Farm project site. Views are likely to be restricted to upper portions of the turbine structures (nacelle and blades) by tree cover east of Todds Road. Degree of existing screening at dwelling: Low	High moderate
D09	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,947 metres	High	High	High	Short distance and direct views would extend from the dwelling and curtilage in a north-east direction toward wind turbines within the west portion of the Alberton Wind Farm project site. Degree of existing screening at dwelling: Low	High
D10	**Non-associated landowner**	Short 1,470 metres	High	High	High	Short distance and direct views would extend from the dwelling and curtilage in a north-east direction	High

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Residential dwelling Sensitivity: High					toward wind turbines within the west portion of the Alberton Wind Farm project site. Degree of existing screening at dwelling: Moderate	
D11	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 1,820 metres	High	High	High	Short distance views toward wind turbines within the western portion of the project site will be largely screened and/or filtered by tree cover surrounding the dwelling. Degree of screening at dwelling: High to moderate	Moderate
D12	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 1,516 metres	High	High	High	Short distance views toward wind turbines within the western portion of the project site will be partially screened and/or filtered by tree cover surrounding the dwelling; however, opportunities to view turbines will extend through gaps in planting. Degree of screening at dwelling: High to moderate	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
D13	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,030 metres	High	High	High	Short distance and direct views would extend south to south east toward wind turbines within the west portion of the project area. Tree cover surrounding and to the south of the dwelling would provide some filtering of views. Degree of screening at dwelling: Moderate	High moderate
D14	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 1,834 metres	High	High	High	Short distance views toward wind turbines within the western portion of the project site will be partially screened and/or filtered by tree cover surrounding the dwelling; however, opportunities to view turbines will extend through gaps in planting. Degree of screening at dwelling: Moderate	High moderate
H90	**Non-associated landowner** Residential dwelling	Short 1,637 metres	High	High	High	Short distance and direct views would extend south east toward wind turbines within the west portion of the project area. Tree cover surrounding, and to the south of the dwelling	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Sensitivity: High					would provide some filtering of views toward the lower sections of the wind turbine structures. Degree of screening at dwelling: Moderate	
H91	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,410 metres	High	High	High	Short distance and direct views would extend south east directly toward wind turbines within the west portion of the project area. Tree cover surrounding, and to the south of the dwelling would provide some filtering of views. Degree of screening at dwelling: Moderate	High moderate
H92, H93 and H94	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 1,939 metres	High	High	High	Short distance and direct views would extend south to east directly toward wind turbines within the eastern and central portion of the project area. The dwellings, situated on a low spur/ridgeline may also have elevated views toward upper sections of wind turbines within the western portion of the project area. Degree of screening at dwelling: Low	High

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
R04	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,120 metres	High	High	High	Short distance views would extend south west directly toward wind turbines within the west portion of the project area. Tree and shrub cover beyond the dwelling would provide some filtering of views. Degree of screening at dwelling: High to moderate	Moderate
D22 and D24	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 1,400 metres	High	High	High	Short distance views would extend south to south east directly toward wind turbines within the central portion of the project area. Tree and shrub cover beyond the dwellings, and alongside the former rail line, would provide some filtering of views. Degree of screening at dwelling: High to moderate	Moderate
D25	**Non-associated landowner** Residential dwelling	Short 1,798 metres	High	High	High	Short distance views would extend south to south east directly toward wind turbines within the central portion of the project area. Tree and shrub	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Sensitivity: High					cover beyond the dwelling would provide some filtering of views. Degree of screening at dwelling: Low to moderate	
D29, D31, D33 and D35	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 1,060 metres	High	High	High	Short distance views would extend south to south east and south west directly toward wind turbines within the central portion of the project area. Degree of screening at dwelling: Low	High
D30	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,070 metres	High	High	High	Short distance views would extend through east to south west toward wind turbines within the central and eastern portion of the project area with some filtering of views by existing planting. Degree of screening at dwelling: Moderate	High moderate
D46, D47, D48, D49 and D51	**Non-associated landowners**	Short 1,420 metres	High	High	High	Short distance views would extend north east to south directly toward wind turbines within the central portion of the project area.	High

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
Gelliondale	Residential dwellings Sensitivity: High					Degree of screening at dwelling: Low to moderate	
D38, D40, D42, D45, D82, D83, H96 Alberton West	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 1,310 metres	High	High	High	Short distance views would extend south east to south directly toward wind turbines within the central portion of the project area. Degree of screening at dwelling: Low to moderate	High moderate
D52	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,069 metres	High	High	High	Short distance views would extend south to south east directly toward wind turbines within the central portion of the project area. Tree and shrub cover beyond the dwelling would provide some filtering of views. Degree of screening at dwelling: Low to moderate	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
D53, D54, D55, D56, and D58	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 1,076 metres (south)	High	High	High	Short distance views would extend north east and south directly toward wind turbines within the central and north portion of the project area. Tree planting alongside riparian corridors will provide some screening and filtering of views toward wind turbines. Degree of screening at dwelling: Low to moderate	High moderate
D59	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,152 metres (north)	High	High	High	Short distance views would extend north directly toward wind turbines within the north portion of the project area. Tree planting beyond the dwelling will provide some screening and filtering of views toward wind turbines. Degree of screening at dwelling: Low to moderate	Moderate
D50	**Non-associated landowner** Residential dwelling	Short 1,356 metres (north)	High	High	High	Short distance views would extend north east directly toward wind turbines within the north portion of the project area.	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Sensitivity: High					Degree of screening at dwelling: Low	
D39, D41 and D44	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 1,720 metres	High	High	High	Short distance views would extend north east directly toward wind turbines within the north portion of the project area. Degree of screening at dwelling: Low moderate	High moderate
D43	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,835 metres	High	High	High	Short distance views would extend east directly toward wind turbines within the north portion of the project area. Tree planting surrounding and beyond the dwelling will provide some degree of screening and filtering of views. Degree of screening at dwelling: Moderate	Moderate
H99	**Non-associated landowner** Residential dwelling	Short 1,963 metres	High	High	High	Short distance views would extend south east directly toward wind turbines within the north portion of the project area. Scattered tree planting	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Sensitivity: High					surrounding and beyond the dwelling will provide some degree of screening and filtering of views. Degree of screening at dwelling: Moderate	
D67, D68, D70 and H101	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 1,045 metres	High	High	High	Short distance views would extend west to south west directly toward wind turbines within the north portion of the project area. Degree of screening at dwelling: Moderate	Moderate
D65	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,072 metres	High	High	High	Short distance views would extend west to north west directly toward wind turbines within the north portion of the project area. Degree of screening at dwelling: Moderate	High moderate
D61 and D63	**Non-associated landowners**	Short 1,563 metres	High	High	High	Short distance views would extend north west directly toward wind turbines within the north portion of the project area.	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Residential dwellings Sensitivity: High					Degree of screening at dwelling: Low moderate	
D64	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1, metres	High	High	High	Short distance views would extend west to north west directly toward wind turbines within the north portion of the project area. Degree of screening at dwelling: Moderate	High moderate
D81	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,016 metres	High	High	High	Short distance views would extend south to south west directly toward wind turbines within the central portion of the project area. Degree of screening at dwelling: Low	High
D69 and D71	**Non-associated landowners** Residential dwellings	Short 1,806 metres	High	High	High	Short distance views would extend south west directly toward wind turbines within the central portion of the project area.	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Sensitivity: High					Degree of screening at dwelling: Low moderate	
D72	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,243 metres	High	High	High	Short distance views would extend south west to west directly toward wind turbines within the eastern portion of the project area. Degree of screening at dwelling: Low	High
D73, D74, D75, D77, D78, D79, D80	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 1,038 metres	High	High	High	Short distance views would extend south west to west directly toward wind turbines within the eastern and central portion of the project area. Degree of screening at dwelling: Low moderate	High moderate
D62 and D66	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 1,038 metres	High	High	High	Short distance views would extend south west to west directly toward wind turbines within the eastern and central portion of the project area. Degree of screening at dwelling: Low moderate	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
D60	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,104 metres	High	High	High	Short distance views would extend north west to north east directly toward wind turbines within the eastern portion of the project area. Degree of screening at dwelling: Low moderate	High
D57	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,015 metres	High	High	High	Short distance views would extend north east directly toward wind turbines within the eastern portion of the project area. Vegetation beyond the dwelling will provide some degree of screening toward wind turbines to the north and north west of the dwelling. Degree of screening at dwelling: Moderate	High moderate
D34	**Non-associated landowner** Residential dwelling	Short 1,486 metres	High	High	High	Short distance views would extend north west to north east directly toward wind turbines within the eastern portion of the project area. Vegetation beyond the dwelling will provide some degree of screening toward lower portions of wind turbine	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Sensitivity: High					structures; however, upper portions of towers, nacelles and rotors are likely to be visible above and beyond the tree nursery. Degree of screening at dwelling: Low moderate	
D21	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 1,761 metres	High	High	High	Short distance views toward wind turbines will be largely screened by existing tree cover to the north and west of the dwelling. Potential views (around 3km) may extend toward the upper sections of a small number of wind turbines within the western portion of the project site Degree of screening at dwelling: High moderate	Moderate low
Residential dwellings between 2km and 3km of an Alberton Wind Farm turbine							
D01 and D02	**Non-associated landowners** Residential dwellings	Short 2.254 metres	High	High	High	Short distance views toward wind turbines will be partially screened by existing tree cover either surrounding or beyond the dwellings. Potential views may extend toward the upper sections of a	Moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Sensitivity: High					small number of wind turbines within the western portion of the project site Degree of screening at dwelling: Moderate	
D03	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 2,121 metres	High	High	High	Short distance views toward wind turbines will be largely screened and/or filtered by tree cover to the east of the dwelling alongside the Rossiters Road corridor. Degree of screening at dwelling: High moderate	Low
D06	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 2,215 metres	High	High	High	Short distance views toward wind turbines will be partially filtered by tree cover to the north and north east of the dwelling; however direct views would extend toward wind turbines within the western portion of the broader dwelling curtilage. Degree of screening at dwelling: Moderate	Moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
D07	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 2,533 metres	High	High	High	Short distance views toward wind turbines will be largely screened by tree cover to the north and north east of the dwelling. Degree of screening at dwelling: High	Negligible
D08	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 2,359 metres	High	High	High	Short distance views toward wind turbines will be partially filtered by tree cover to the north and north east of the dwelling; however direct views would extend toward wind turbines within the western portion of the broader dwelling curtilage. Degree of screening at dwelling: Moderate	Moderate
H85 and H86	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 2,184 metres	High	High	High	Short distance views toward wind turbines will be partially filtered by tree cover beyond the dwellings; however, direct views may extend toward the upper sections of wind turbines for H86 above existing tree cover.	Moderate low

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
						Degree of screening at dwelling: Moderate	
H87, H88 and H89	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 2,372 metres	High	High	High	Short distance views toward wind turbines will be partially screened and/or filtered by tree cover beyond the dwellings. Dwelling H88 has been assessed but is considered to be a potentially non-residential structure. Degree of screening at dwelling: High moderate	Moderate low
H91a	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 2,345 metres	High	High	High	Short distance views would extend toward wind turbines within the western portion of the project area, as well as more distant views (in excess of 3km) toward wind turbines within the eastern portion of the project site. Degree of screening at dwelling: Moderate	High moderate
H95	**Non-associated landowner** Residential dwelling	Short 2,323 metres	High	High	High	Short distance views would extend toward wind turbines within the eastern portion of the project area. A low ridgeline landform would screen views	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Sensitivity: High					toward proximate wind turbines to the south west of the dwelling. Degree of screening at dwelling: Moderate	
D27	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 2,071 metres	High	High	High	Short distance views would be partially screened and/or filtered by scattered tree cover surrounding the dwelling, and extending alongside the Wests Road corridor. Degree of screening at dwelling: Moderate	Moderate low
D32 and D37	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 2,106 metres	High	High	High	Short distance views would be partially screened and/or filtered by scattered tree cover surrounding the dwellings. Degree of screening at dwelling: Moderate	Moderate
D36	**Non-associated landowner**	Short 2,292 metres	High	High	High	Short distance views would extend toward wind turbines within the eastern portion of the wind farm project area, with some partial screening	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Residential dwelling Sensitivity: High					and/or filtering of views provided by tree cover to the south of the dwelling. Degree of screening at dwelling: Low	
H98 and H100	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 2,061 metres	High	High	High	Short distance and direct views would extend toward wind turbines within the northern portion of the project area. Degree of screening at dwelling: Low (for H100) Moderate (for H98)	High moderate
H102, H103 and H104	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 2,152 metres	High	High	High	Short distance and direct views would extend toward wind turbines within the northern portion of the project area. Degree of screening at dwelling: Moderate low	Moderate
H105 and H106	**Non-associated landowners**	Short 2,152 metres	High	High	High	Short distance and direct views would extend toward wind turbines within the eastern portion of the project area. Tree cover surrounding and	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Residential dwellings Sensitivity: High					beyond H106 may provide some partial filtering of views toward wind turbines from H106. Degree of screening at dwelling: Moderate low	
H107 and H108	**Non-associated landowners** Residential dwellings Sensitivity: High	Short 2,426 metres	High	High	High	Short distance and direct views would extend toward wind turbines within the eastern portion of the project area. Degree of screening at dwelling: Low	High moderate
D15	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 2,630 metres	High	High	High	Short distance views would extend toward wind turbines within the western portion of the wind farm project area, with some partial screening and/or filtering of views provided by tree cover north of the dwelling. Degree of screening at dwelling: Low	High moderate
D16	**Non-associated landowner**	Short 2,205 metres	High	High	High	Short distance views would extend toward wind turbines within the western portion of the wind	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
	Residential dwelling Sensitivity: High					farm project area, with some partial screening and/or filtering of views provided by tree cover north of the dwelling. Degree of screening at dwelling: Moderate	
D18	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 2,205 metres	High	High	High	Short distance views would extend toward wind turbines within the western portion of the wind farm project area, as well as more distant views toward wind turbines above existing tree cover to the north and north east of the dwelling. Degree of screening at dwelling: Low	High moderate
D19	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 2,785 metres	High	High	High	Short distance views would extend toward wind turbines within the western portion of the wind farm project area, as well as more distant views (around 3,5km) toward wind turbines above existing tree cover to the north and north east of the dwelling. Degree of screening at dwelling: Low	High moderate

Table 14 – Residential visual effect matrix (Refer **Figure 16** for residential receiver locations)

	SENSITIVITY	MAGNITUDE					
Receiver location	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	Degree of visibility and screening	Visual effect
D20	**Non-associated landowner** Residential dwelling Sensitivity: High	Short 2,591 metres	High	High	High	Short distance views may extend toward wind turbines within the western portion of the wind farm project area, as well as toward wind turbines above existing tree cover to the north and north east of the dwelling. Degree of screening at dwelling: Moderate	Moderate

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

This LVIA identified a combined total of 103 non-associated residential dwellings within the Alberton Wind Farm 3 km viewshed.

An assessment of residential dwellings determined:

- 18 of the 103 residential dwelling locations would have a high visual effect
- 56 of the 103 residential dwelling locations would have a high moderate visual effect
- 20 of the 103 residential dwelling locations would have a moderate visual effect
- 7 of the 103 residential dwelling locations would have a moderate low visual effect
- 1 of the 103 residential dwelling locations would have a low visual effect and
- 1 of the 103 residential dwelling locations would have a negligible 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.

9.11 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 effect on the extent and nature of views beyond the 3 km to 5 km and wider viewshed. Similar to some residential dwellings located within 3 km of the wind turbines, residential dwellings beyond 3 km 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 winds 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.

An assessment and determination of cumulative visual impact notes that one proposed wind farm, the operational Toora Wind Farm, is located within a 20-kilometre radius of wind turbines within the west portion of the Alberton Wind Farm site. The Toora Wind Farm is located on a ridgeline/hill system to the north of the Toora township. Views from the Toora Wind Farm site, and access road from the South Gippsland Highway, extend south to south east across the coastal fringe and toward Wilsons Promontory. Views toward the proposed Alberton Wind Farm will be partially screened by landform below the Toora Wind Farm.

The operational Toora Wind Farm project would be located around 20 kilometres to the west of the Alberton Wind Farm site and includes twelve wind turbines. Any significant direct and indirect cumulative impacts would be unlikely due to the distance between the two wind farm sites and sequential impacts limited for the majority of journeys along main roads and highways between populated areas.

Photomontages

Section 11

11.1 Photomontages

Photomontages have been prepared by DNV-GL Pty Ltd to illustrate the general appearance of the proposed Alberton Wind Farm turbines following construction. Ten locations were selected to illustrate the proposed Alberton 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 photomontages are presented as 110 degrees and 60-degree view angles. The 110-degree photomontage includes an extended panorama view to provide context within the photomontage. The 60-degree view angle photomontage illustrates a view within the human central cone of binocular vision and provides a greater level of detail.

The photomontages locations are illustrated in **Figure 3** and photomontages presented in the following figures:

- **Figure 17** Photomontage A1 110 degrees, from Seabank Caravan Park
- **Figure 18** Photomontage A1 60 degrees, from Seabank Caravan Park
- **Figure 19** Photomontage A3 110 degrees, from South Gippsland Highway and Ti Tree Road intersection
- **Figure 20** Photomontage A3 60 degrees, from South Gippsland Highway and Ti Tree Road intersection
- **Figure 21** Photomontage A4 110 degrees, from Dawsons Road
- **Figure 22** Photomontage A4 60 degrees, from Dawsons Road
- **Figure 23** Photomontage A7 110, from Mcphails Road
- **Figure 24** Photomontage A7 60 degrees, Mcphails Road
- **Figure 25** Photomontage A9 110 degrees, from Thompson Street, Alberton
- **Figure 26** Photomontage A9 60 degrees, from Thompson Street, Alberton
- **Figure 27** Photomontage A10 110 degrees, from Pound Street West
- **Figure 28** Photomontage A10 60 degrees, from Pound Street West
- **Figure 29** Photomontage A13 110 degrees, from Lower Jack Road
- **Figure 30** Photomontage A13 60 degrees, from Lower Jack Road
- **Figure 31** Photomontage A16 110 degrees, from South Gippsland Highway
- **Figure 32** Photomontage A16 60 degrees, from South Gippsland Highway
- **Figure 33** Photomontage A17 110 degrees, from South Gippsland Highway

- **Figure 34** Photomontage A17 60 degrees, from South Gippsland Highway
- **Figure 35** Photomontage A19 60 degrees, from Alberton

Each photomontage was generated through the following steps:

- A digital terrain model (DTM) of the proposed Alberton 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.

Viewpoint A1 - Existing view west south west to north north west from Seabank Caravan Park

Viewpoint A1 - Proposed view west south west to north north west from Seabank Caravan Park
Distance to closest wind turbine (T33) approximately 3.18 kilometres.

Figure 17
Viewpoint A1 - Photomontage
110 degree field of view

GREEN BEAN DESIGN
landscape architects

Viewpoint A1 - Proposed view west south west to north north west from Seabank Caravan Park
Distance to closest wind turbine (T33) approximately 3.18 kilometres.

Figure 18
Viewpoint A1 - Photomontage
60 degree field of view

Viewpoint A3 - Existing view south to west north west from South Gippsland Hwy and Ti Tree Road intersection

Viewpoint A3 - Proposed view south to west north west from South Gippsland Hwy and Ti Tree Road intersection

Figure 19
Viewpoint A3 - Photomontage
110 degree field of view

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Viewpoint A3 - Proposed view south west/west from S Gippsland Hwy and Ti Tree Road intersection
Distance to closest wind turbine (T34) around 920 metres

Figure 20
Viewpoint A3 - Photomontage
60 degree field of view

Viewpoint A4 - Existing view west north west to north east from Dawsons Road

Viewpoint A4 - Proposed view west north west to north east from Dawsons Road
Distance to closest wind turbine (T27) 1.13 kilometres

Figure 21
Viewpoint A4 - Photomontage
110 degree field of view

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Viewpoint A4 - Proposed view north west to north north east from Dawsons Road
Distance to closest visible wind turbine T27 around 870 metres

Figure 22
Viewpoint A4 - Photomontage
60 degree field of view

Viewpoint A7 - Existing view east north east to south south east from Mcphails Road

Viewpoint A7 - Proposed view east north east to south south east from Mcphails Road
Distance to closest wind turbine (T01) 4.81 kilometres

Figure 23
Viewpoint A7 - Photomontage
110 degree field of view

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Viewpoint A7 - Proposed view east north east to south east from Mcphails Road
Distance to closest visible wind turbine (T01) around 4.81 kilometres

Figure 24
Viewpoint A7 - Photomontage
60 degree field of view

Viewpoint A9 - Existing view south to west north west from Thomson Street

Viewpoint A9 - Proposed view south to west north west from Thomson Street
Distance to closest wind turbine (T34) 3.37 kilometres

Figure 25
Viewpoint A9 - Photomontage
110 degree field of view

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Viewpoint A9 - Proposed view south to west north west from Thomson Street
Distance to closest wind turbine (T34) 3.37 kilometres

Figure 26
Viewpoint A9 - Photomontage
60 degree field of view

Viewpoint A10 - Existing view south south west to west north west from Pound Street West

Viewpoint A10 - Proposed view south south west to west north west from Pound Street West
Distance to closest wind turbine (T30) 4.33 kilometres

Figure 27
Viewpoint A10 - Photomontage
110 degree field of view

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Viewpoint A10 - Proposed view south south west to west south west from Pound Street West
Distance to closest wind turbine (T30) 4.33 kilometres

Figure 28
Viewpoint A10 - Photomontage
60 degree field of view

Viewpoint A13 - Existing view north east to south south east from Lower Jack Road

Viewpoint A13 - Proposed view north east to south south east from Lower Jack Road
Distance to closest wind turbine (T23) 3.86 kilometres

Figure 29
Viewpoint A13 - Photomontage
110 degree field of view

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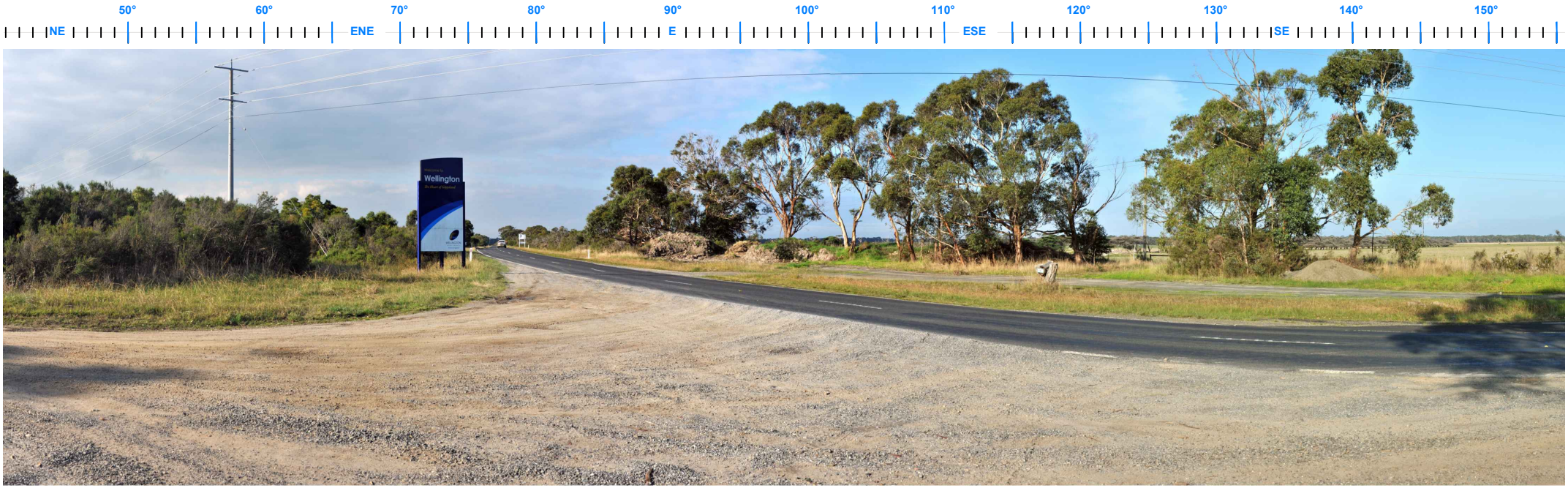
Viewpoint A13 - Proposed view east north east to east south east from Lower Jack Road
Distance to closest wind turbine (T23) 3.86 kilometres

Figure 30
Viewpoint A13 - Photomontage
60 degree field of view



Viewpoint A16 - Existing view north east to south south east from South Gippsland Highway

Viewpoint A16 - Proposed view north east to south south east from South Gippsland Highway
Distance to closest wind turbine (T07) 1.33 kilometres

Figure 31
Viewpoint A16 - Photomontage
110 degree field of view

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Viewpoint A16 - Proposed view east south east to south east from South Gippsland Highway
Distance to closest wind turbine (T07) 1.33 kilometres

Figure 32
Viewpoint A16 - Photomontage
60 degree field of view

Viewpoint A17 - Existing view east north east to south south east from South Gippsland Highway

Viewpoint A17 - Proposed view east north east to south south east from South Gippsaland Highway
Distance to closest wind turbine (T10) 1.14 kilometres

Figure 33
Viewpoint A17 - Photomontage
110 degree field of view

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Viewpoint A17 - Proposed view east to south east from South Gippsland Highway
Distance to closest wind turbine (T10) 1.14 kilometres

Figure 34
Viewpoint A17 - Photomontage
60 degree field of view

Viewpoint A19 - Proposed view west to north west from Christopher Robin Walking Track, Port Albert
Distance to closest wind turbine (T33) 8.37 kilometres

Figure 35
Viewpoint A19 - Photomontage
60 degree field of view

Pre-construction and construction

Section 12

12.1 Potential visual effects

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 18 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 effect for their duration and temporary nature. The following images illustrate typical construction activities during preparation and installation of wind turbines:




(Image source: WPR Pty Ltd)

Mitigation measures

Section 13

13.1 Mitigation measures

The British Landscape Institute states '*the purpose of mitigation is to avoid, reduce, or where possible remedy or offset any significant negative (adverse) effects on the environment arising from the proposed development'* (2012). In general mitigation measures would reduce the potential visual effect 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:

- further refinement in the design and layout which may assist in the mitigation of bulk and height of proposed structures;
- 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.

Conclusion

Section 14

14.1 Conclusion

The key findings of the Alberton Wind Farm LVIA are summarised below:

- the Alberton Wind Farm landscape character type, identified and described in this LVIA, is generally well represented throughout the Wellington Shire Council area and more generally within the eastern portion of the Gippsland landscape.
- this LVIA determined the overall landscape character sensitivity to be medium and notes that 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.
- views toward the proposed Alberton Wind Farm from local roads and highways will offer a range of transitory views which will be subject to direction of travel and potential screening influence of vegetation alongside road corridors.
- the proposed Alberton Wind Farm is unlikely to have a significant visual effect on the character of surrounding Townships, where views toward the wind farm from the majority of residential and/or commercial view locations would be screened by adjoining buildings or structures and/ or surrounding tree cover.
- a number of residential dwellings surrounding the wind farm maintain privacy and/or shelter planting around dwellings. The extent of planting reduces the potential visibility of the wind farm from a number of residential view locations within the surrounding viewshed.
- this LVIA identified around 103 residential dwellings within 3 kilometres of the Alberton Wind Farm turbines and determined that around 18% would experience a high visual effect and 54% would experience a high moderate visual effect.
- the proposed Alberton Wind Farm would be located around 30 kilometres from prominent landscape features including Wilsons Promontory. Given that distance is one key determinant for establishing degrees of visual effect, the proposed Alberton Wind Farm turbines are unlikely to dominate or significantly detract from the existing views from this location.

Limitations

GBD has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Synergy Pty Ltd. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the GBD Proposal dated 11th April 2017.

The methodology adopted and sources of information used are outlined in this report. GBD has made no independent verification of this information beyond the agreed scope of works and GBD assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to GBD was false.

This report was prepared between April and September 2017 and is based on the conditions encountered and information reviewed at the time of preparation. GBD disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.