WILLATOOK WIND FARM

Planning Application Report

Appendix K Landscape and visual

Willatook Wind Farm

Landscape and Visual Impact Assessment

| REV 5.0

1 June 2022

Wind Prospect

Willatook Wind Farm EES

L A N D F O R M
ARCHITECTS

Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
1.0	26/01/2022	Working Draft – Willatook Wind Farm LVIA 59 Turbine Layout	AE	HB	HB	HB
2.0	01/03/2022	Response to comments received	AE	HB	HB	HB
3.0	01/04/2022	Residential assessment section	AE	HB	HB	HB
4.0	20/04/2022	Response to comments	AE	HB	HB	HB
5.0	01/06/2022	Removal of assessed dwellings	HB	HB	HB	HB

Contents

Index of acronyms used within this report **5**

Executive summary **6**

1. Introduction **10**

1.1 Purpose of this report 10

1.2 Previous studies 10

1.3 Glossary of terms 11

1.4 EES evaluation objectives 12

2. Assessment methodology **14**

2.1 Project description 14

2.2 The visual study area 14

2.3 Legislation, policy, and planning 15

2.4 Landscape character units and sensitivity 15

2.5 Seen Area Analysis and Zone of Visual Influence 15

2.6 Viewpoint selection and assessment of publicly accessible viewpoints 16

2.7 The scale of effects – criteria 17

2.8 Photomontages 18

2.9 Cumulative considerations 20

2.10 Aviation obstacle lighting 20

2.11 Residential impacts 20

2.12 Landscape mitigation 21

3. Project description **22**

3.1 Wind farm location 22

3.2 Project site and turbine layout 23

3.3 Wind turbines 23

3.4 Aviation obstacle lighting 24

3.5 Grid connection and onsite electrical infrastructure 24

3.6 Operations facility 26

3.7 Wind monitoring masts 27

3.8 Internal access tracks and site access 27

3.9 Construction 27

3.10 Rehabilitation 29

4. Visual study area **30**

4.1 Zone of Visual Influence 31

5. Legislation, guidelines, policy, and planning review **34**

5.1 State legislation 34

5.2 Planning Policy Framework (PPF) 35

5.3 Particular provisions – Clause 52.32 (Wind Energy Facility) 35

5.4 Local Planning Policy Framework (LPPF) 36

5.5 Zones and overlays 39

5.6 Landscape assessment studies 46

5.7 Planning implications 55

6. Existing conditions: landscape character and sensitivity 56

6.1 Topography and geomorphology 57

6.2 Vegetation 62

6.3 Land use 70

6.4 Intangible cultural heritage 71

6.5 Landscape units 72

6.6 Landscape character mapping 80

6.7 Landscape sensitivity 81

7. Seen Area Analysis 84

8. Publicly accessible viewpoints 87

8.1 Significant landscapes and vantage points 88

8.2 Townships 105

8.3 Major roads (highways) and connector roads 119

8.4 Local roads 154

8.5 Construction Impacts 165

9. Cumulative visual impacts 166

9.1 Operating or approved wind farms 166

9.2 Existing high-voltage transmission infrastructure 170

9.3 Power stations 170

9.4 Cumulative impacts summary 171

10. Lighting impacts 175

10.1 Aviation obstacle lighting 175

10.2 Aviation obstacle lighting: precedents 175

10.3 Aviation obstacle lighting: visual description 175

10.4 Visual impact from roads 176

10.5 Visual impact from urban settings 176

10.6 Visual impact from residences in rural areas 176

10.7 Other lighting 177

11. Mitigation Measures 178

11.1 Placement and screening 178

11.2 Vegetation heights 179

11.3 Bushfire considerations 180

11.4 Summary of Mitigation Measures 180

12. Residential viewpoints 181

12.1 Dwelling Selection 181

12.2 Dwelling D11 187

12.3 Dwelling D17 190

12.4 Dwelling D22 192

12.5 Dwelling D24 194

12.6 Dwelling D25 196

12.7 Dwelling D27 198
12.8 Dwelling D33 200
12.9 Dwelling D42 202
12.10 Dwelling D45 204
12.11 Dwelling D47 206
12.12 Dwelling D48 208
12.13 Dwelling D97 210
12.14 Dwelling D109 212
12.15 Dwelling D382 214
12.16 Summary of Residential Viewpoints 216
13. Conclusion 219
13.1 Significant landscapes and vantage points 219
13.3 Major roads (highways) and connector roads 219

Appendix A. Seen Area Analysis 222
Appendix B. Photomontages 223

Index of acronyms used within this report

Acronym	Definition
BMO	Bushfire Management Overlay
CASA	Civil Aviation Safety Authority
CFA	Country Fire Authority
CSLAS	Coastal Spaces Landscape Assessment Study
DELWP	Department of Environment, Land, Water and Planning
EES	Environment Effects Statement
ESO	Environmental Significance Overlay
EVC	Ecological Vegetation Class
FZ	Farming Zone
GIS	Geographic Information System
HO	Heritage Overlay
LCU	Landscape Character Unit
LDRZ	Low Density Residential Zone
LGA	Local Government Area
LPPF	Local Planning Policy Framework
LVIA	Landscape and Visual Impact Assessment
MNES	Matters of National Environmental Significance
PCRZ	Public Conservation and Resources Zone
PCU's	Power Conversion Units
PLVIA	Preliminary Landscape and Visual Assessment
PPF	Planning Policy Framework
PPRZ	Public Park and Recreation Zone
RDZ	Road Zone
RLZ	Rural Living Zone
SAA	Seen Area Analysis
SLO	Significant Landscape Overlay
SWVLAS	South West Victoria Landscape Assessment Study
UNESCO	United Nations Educational, Scientific and Cultural Organization
VIC	Victoria
VP	Viewpoint
ZVI	Zones of Visual Influence

Executive summary

Landform Architects have been engaged to prepare the Landscape and Visual Impact Assessment (LVIA) for the proposed Willatook Wind Farm (the Project) and has undertaken a quantitative and qualitative assessment of the potential visual and landscape amenity impacts that may be brought about by the Project.

The analysis within this LVIA demonstrates that the Project is situated in a broad-acre rural landscape that has been altered over time. These changes have been brought about through a range of activities including farming and grazing, timber plantations and utilities. These uses and the land on which they occur are not sensitive or rare.

The Moyne Planning Scheme places limited significance on the majority of the landscape within the study area, recognising that these areas and uses as having the potential for off-site amenity impacts. Landscapes and areas set aside as parks or for recreation are areas with greater topographical variation and areas that were not cleared for farming. It is these areas that are recognised as having a higher sensitivity, however, the vegetation also in these areas screen most views over the region and to the Project. These features are generally at such a distance that, even where visible, they would not be impacted appreciably by the Project.

Accordingly, it is considered that the landscape surrounding the Project is of low sensitivity to the changes proposed by the Project and one that can accommodate the proposed levels of visual change. The report has demonstrated that the Project can achieve the draft landscape and visual evaluation criteria from the scoping requirements "*To minimise and manage potential adverse effects for the community with regard to landscape and visual amenity".*

Visual elements of the project

The proposed wind turbines would be up to 250 m in height and be the most visually prominent features of the Project. Other features include the on-site substation, on-site quarry, concrete batching plants, access roads, and construction activities. These are much lower in height and generally less visually noticeable over distance. The aviation risk assessment has determined that aviation obstacle lighting is not required. Aviation obstacle lighting has been assessed within this LVIA should it become a requirement for the Project in the future.

Methodology

The assessment of landscape and visual impacts is a study that is considered to be somewhat subjective and one that is based solely on professional judgement. The methodology adopted for the assessment of the landscape and visual impacts of the Project is based upon quantitative and qualitative assessment tasks. Quantitative assessment tasks identify and consider key aspects of visual impact assessment that are not subjective, can be readily defined and support the qualitative assessment.

Quantitative assessment tasks include defining the extent of the visual study area based on the scale of Project infrastructure, identifying the significance and protection of the landscape and its features within planning policy and strategic documents, sensitive uses, patterns of Project visibility, likely viewer numbers and similar Projects. These tasks assist with the selection of representative viewing locations to be included in the qualitative assessment of the Project.

The qualitative assessment considers the impact of the Project from representative viewpoints by discussing the key assessment criteria of visibility, distance and scale, landscape sensitivity and viewer numbers to determine the overall visual impact of the Project.

The methodology applied to this LVIA of the Project has been applied to many wind farm projects in Victoria and several that have been assessed as part of an EES. The methodology aligns with the requirements for landscape and visual impact assessments set out in the *Policy and planning guidelines for development of wind energy facilities in Victoria* (July 2021) (Wind Farm Guidelines).

Existing conditions

The Project is located in agricultural land, part of which is located within the Mount Rouse lava flows. More broadly, the lava flows have created an undulating landscape that includes scattered native trees, limited windbreaks, and a mosaic of wetlands. The primary use of the land within the lava flows is farming. Other obvious uses in the lava flow landscape

relevant to this assessment include the operating Macarthur Wind Farm to the north, the approved Ryan Corner Wind Farm to the south and utility infrastructure. The balance of the land within and adjacent to the Project is generally flat to undulating farmland. The predominant use of these flatter areas includes farming and timber plantations. The areas outside the lava flows include larger areas of roadside vegetation, windbreaks, and hedgerows. Dwellings attached to farming properties also tend to be located in these areas.

Other uses in proximity to the Project include the Tarrone Terminal Station and associated areas set aside for future gas-fired power stations, high voltage transmission lines, operating and approved wind farms and timber plantations.

Elevated vantage points and landscape features are located generally towards the outer extent of the visual study area and include volcanos, national parks and state forests, coastal areas, and culturally significant areas such as Budj Bim National Park and Lake Condah.

Visual impact from public locations

Views from elevated vantage points and landscape features such as the former volcanos, national parks and state forests, coastal areas, and recognised culturally significant locations of Budj Bim National Park and Lake Condah would not be altered in any appreciable way by the Project. This is due partly to distance, screening afforded by topography and vegetation and the viewing direction. The visual impact from these locations would be **Nil** through to **Negligible**.

The overall visual impact from publicly accessible areas has considered a range of viewing locations, distances, and settings from locations along highways, local roads, and recreation reserves. Locations were selected from areas where locals would go about their daily lives or locations that would be frequented by visitors to the region.

The greatest overall visual impact from the locations assessed was **Low**. A low level of visual impact described within the assessment methodology is a visual impact that would be noticeable but would not cause any significant adverse impacts.

Project visibility and apparent turbine scale would increase noticeably from the locations along the public roads from areas within 3.0 km of the Project, and where topography and vegetation allow views across the landscape. Opportunities to view the proposed turbines, and their apparent visual scale will decrease with distance.

Visual impact from urban, townships and localities

Urban areas and local townships are typically of a higher sensitivity to visual change. For this Project, the urban areas of Port Fairy and Penshurst are situated at a considerable distance from the nearest wind turbines. The representative views from the nearby local townships of Hawkesdale and Macarthur demonstrated that the Project turbines would be at a distance where topography, vegetation and structures would screen or filter most views to the Project. Dwellings located on the edges of these towns may have fewer areas of intervening vegetation, topography, or structures screening views to the turbines. From both townships, these views would already include the turbines within the operating Macarthur Wind Farm.

The localities of Orford and Broadwater are within or close to 3.0 km of the nearest proposed turbines. Views from Broadwater would be over farmland permitting clear views towards the Project. Views from Orford would be over timber plantations; however, these areas are setback at such a distance that views of the rotors and nacelles of several turbines would be possible.

Although there would be views from some dwellings in townships and localities, these would be few in number. If required, most views could be mitigated by landscape screening. The overall visual impact from the urban areas, townships and localities is assessed as **Negligible-Nil** for townships and **Low** for localities.

Visual impact from residential dwellings

Many of existing dwellings include vegetation of the height and scale that would partially screen or filter views of the proposed turbines. Where screening is not present, existing vegetation in private and public realm areas indicated that landscape screening will be effective if required.

This assessment has ground-truthed 16 neighbouring dwellings within 1.5 and 3.0 km and 9 dwellings within 3.0 and 6.0 km of the Project turbines. Of the dwellings assessed, 5 of the 25 dwellings were assessed as having the potential for a **High** level of visual impact from key views in proximity to the dwelling and 3 of the 25 dwellings as having the potential for a **Moderate-High** level of visual impact. Only one dwelling, dwelling ID 124 was challenging to mitigate views of the Project or where mitigation may also remove views that are considered to be desirable.

All dwellings assessed in this section demonstrated that views from the majority dwellings within 6.0 km of the Project would be partially screened or filtered by existing vegetation or partially screened by topography.

Further, there were no views identified or assessed from dwellings that were in the key views to protected features or landscapes that would require a redesign or removal or turbines.

It is recommended that landscape screening be offered for residential dwellings within 6.0 km where there are views of a wind turbine. This distance is consistent with recent approvals where landscaping has been required to be offered to all residential dwellings within the distance at which a turbine up to 250 m high will be *"Highly visible and will usually dominate the landscape".* It is noted that this recommendation in recent projects was to be offered to a distance of 5.0 km. This distance was for projects with turbine heights of up to 220 – 230 m in height.

Cumulative visual impact

There are other operating and approved wind farms in western Victoria and within the Project study area. The addition of Willatook into this rural landscape and an area where views wind farms are not unfamiliar, would not significantly change the character of the area. It is recognised, however, that there will be some people who do not like the appearance of wind turbines. For these people, the visual and cumulative visual impact would always be high.

Cumulative impacts to highways would be **Negligible**, as the highways present within the study area are situated on the outskirts of the study area. Views from these areas would be from such a distance that the Project would not be a dominant element in views, or views would be through either existing or approved wind farms. Being closer to the view, these nearby projects would be the more dominant element, with the Project turbines receding into the background. Local and connector roads surrounding the Project would experience cumulative impacts, however, these roads experience low viewer numbers, and views to the Project would be transient.

For these reasons, the cumulative impact of the Project is assessed as **Negligible-Low**.

Aviation obstacle lighting

The proponent is not proposing to operate night-time aviation hazard lighting. However, the proponent has requested an assessment of the impacts of aviation hazard lighting should it be a planning permit condition. The assessment shows that this is an area with few light sources, which is also indicative of a low number of potential viewers. In urban areas, where viewer numbers are greater, so too are other existing light sources.

The proposed lighting, if installed would be activated only when aircraft are within the area triggering the activation of the lighting. As such, lighting would be intermittent only, with lighting events being short in duration.

For these reasons, the visual impact of the proposed aviation hazard lighting is assessed as **Low**.

Proposed temporary quarry

The quarry location is situated well away from townships and dwellings and is over 3 km from the nearest connector or paved local road. The proposed quarry would be temporary only and for the construction of the wind farm. On completion of construction activities, the quarry would be rehabilitated restoring the site to a condition suitable to the host landholder.

For these reasons, the visual impact of the proposed quarry is assessed as **Negligible**.

Draft evaluation objective

The EES Scoping Requirements sets out the draft evaluation objective for the assessment of the Landscape and Visual Amenity impacts of the Project:

To minimise and manage potential adverse effects for the community with regard to landscape and visual amenity.

The Project location is in an area that is generally of low sensitivity to visual change. The Project is set back from highways and tourist routes and natural features such as Budj Bim National Park, Tower Hill and Mt Rouse which attract many visitors to the region. The Project is also set back from regional centres and urban areas.

The Project will have minimal impact on landscape features that are protected in the planning scheme, areas and features identified in the SWVLAS and those landscapes that are required to be considered by the Victorian Windfarm Guidelines, due to setbacks from these features and areas.

An existing 500 kV transmission line with localised sections of 132 kV transmission lines connecting operating wind farms to the grid. Through co-location and siting amongst approved and existing windfarms, the Project will infill, reducing the geographic extent of windfarms in the region, and concentrating them in locations that are distant from urban areas, key landscape features, highways, and tourist routes as well as protected landscapes. The Project location minimises the potential for cumulative visual impacts in the region.

1. Introduction

Willatook Wind Farm Pty Ltd is seeking approval to develop the Willatook Wind Farm (the Project). The Project is located approximately 22 km to the north of Port Fairy, between Penhurst-Warrnambool Road and Hamilton-Port Fairy Road. The site of the Project covers approximately 4,154 hectares of private and public land located within the Moyne Shire district, in south-western Victoria. Refer to Figure 3-1 and Figure 3-2 for the location of the Project.

The Project would include:

- up to 59 wind turbines, with a height of 250 m (to blade tip), and related infrastructure
- site access tracks
- onsite substation
- Battery Energy Storage System (BESS)
- facilities buildings
- three (3) wind monitoring masts
- grid connecting infrastructure
- temporary construction infrastructure, including an ancillary on-site quarry and laydown areas.

The Project was referred to the Minister for Planning, who determined that the Project requires assessment under the *Environment Effects Act 1978* before it can proceed.

1.1 Purpose of this report

The purpose of this report is to assess the Landscape and Visual Impacts of the Project.

The Landscape and Visual Impact Assessment (LVIA) will include:

- a description of the Project and establishment of the visual study area
- analysis of the existing conditions of landscape character, sensitivity, visibility, likely viewpoint locations, and cumulative impact considerations
- a review of relevant legislation, strategy, and policy
- assessment of the Project against EES objectives
- appropriate mitigation options
- evaluation of the Project's visual impact on the surrounding context.

1.2 Previous studies

A preliminary LVIA (PLVIA) was undertaken in 2018 by Green Bean Design. This report discussed the:

- key features of the Project
- landscape character of the site and surrounding areas. Including landform, vegetation patterns land use, and other notable features
- location of nearby dwellings, townships, major roads, and elevated vantage points.
- considerations for cumulative visual impacts
- a brief review of the South West Victoria Landscape Assessment Study (SWVLAS) and the Coastal Spaces Landscape Assessment Study (CSLAS).

1.3 Glossary of terms

Term	Definition
The Project	The proposed Willatook Wind Farm.
Project Area	The areas within the Project boundary (site extent).
Landscape and Visual Impact Assessment (LVIA)	This report is the Landscape and Visual Impact Assessment (LVIA) of the Project and addresses matters of landscape and visual impact regarding the proposed wind farm development.
Preliminary Landscape and Visual Impact Assessment (PLVIA)	The Preliminary Landscape and Visual Impact Assessment (PLVIA) has been undertaken by Green Bean at an earlier stage of the Project development. It contains some findings that are relevant to this assessment but may be based upon superseded project design details.
Amenity and Visual Amenity	Amenity refers to the attractive or valued aspects of an environment. Visual amenity refers to the visual experience of the environment and landscapes, such as valued views across a landscape.
Visual Impacts	Visual impact is somewhat subjective. There are some people that perceive renewable energy projects and wind farms as having a positive contribution to views. The primary focus of the EES and this assessment is to consider the potential for negative impacts on the surrounding community. The scale of the negative impact is defined in the scale of effects. Visual impacts refer to a change in visual amenity that is perceived as having a negative result on visual amenity. The level of visual impact ratings are defined within the Scale of Effects.
Scale of Effects	The scale of visual effect ranges from Negligible to High and recognises that a visual change may have no (Nil) impact. The scale of effects is defined in detail in Section 2.
Visual Study Area	The Visual Study Area is considered as the distance at which the visual changes brought about by the Project may no longer contribute to views in a meaningful way based on parameters of the human vision. The study area for the Project is established in Section 4.
Zones of Visual Influence	Zones of Visual Influence (ZVI) is a method of categorising the likely dominance of vertical infrastructure based upon the height of the infrastructure, distance from the viewing location, and the parameters of the human vision. These are defined in greater detail in Section 4.1.
Photomontage	A photomontage is a technically and perceptually accurate visual representation of proposed infrastructure. A photomontage demonstrates the likely 'as-built' view of the Project by imposing a 3D model of the Project within a panoramic view.
Landscape Character Unit	Landscape Character Units (LCU) are classes of landscapes that contain similar features, including topography, vegetation, built form and land use. They provide a benchmark to apply when determining the sensitivity of viewpoints.

Sensitivity	Landscape sensitivity is the ability of a landscape to absorb visual change based on attributes of a particular landscape, including the location, features within the landscape, rarity of the landscape and viewer numbers.
Viewpoint	Viewpoints (VPs) are locations from the surrounding landscape that are selected to be representative of views from the local area, points of interest or are representative of key landscape character units within the study area.

1.4 EES evaluation objectives

The evaluation objectives identify the desired outcomes in the context of potential Project effects and are specified in the Scoping Requirements issued by the Minister for Planning (*Scoping Requirements for Willatook Wind Farm Environment Effects Statement, August 2019*).

The evaluation objectives provide a framework to guide an integrated assessment of environmental effects of the Project, in accordance with the *Ministerial Guidelines for assessment of environmental effects under the Environment Effects Act 1978, Seventh edition, 2006*.

The objectives and key issues relevant to landscape and visual impact are stated below.

Draft Evaluation Objective

- *To minimise and manage potential adverse effects on the community with regard to landscape and visual amenity.*

Key Issues

- *Potential for nearby residents / communities to be exposed to significant effects to the visual amenity, including blade glint and shadow flicker, from project infrastructure.*
- *Potential effects on landscape, including significant volcanic and other landforms, through removal or covering of features or reshaping of surfaces.*
- *Potential cumulative impacts of other operating and approved wind farms on landscape values of the region.*

1.4.1 EES scoping requirements

Table 1 outlines extracts from the Draft Scoping Requirements for the Project, issued by the Minister for Planning, which are relevant to the LVIA.

Table 1 LVIA scoping requirements

Aspect	Relevant Sections
Existing Environment	
▪ *Characterise the landscape character, features, and values of the project area.*	The existing environment is characterised in Section 6.
▪ *Identify public and private view sheds to and from the project area and characterise visual values of the area, including dark skies.*	Public viewing locations are addressed in Section 8. Lighting impacts (on dark skies) is addressed in Section 10. Private viewing locations (residential dwellings) are addressed in Section 11.
▪ *Identify existing built features within the landscape (e.g., Macarthur wind farm and 500 kV powerlines) and their impact on the existing landscape and visual setting.*	Existing wind farms and transmission infrastructure is addressed in Section 9.
▪ *Identify the components of the project that may result in a significant visual amenity*	Components of the Project that may result in visual impacts are addressed and described in Section 3.

Aspect	Relevant Sections
effect including turbines, powerlines, and on-site quarry.	
Likely Effects	
▪ *Assess the landscape and visual effects of the project, including on public and private views, and effects of blade glint and shadow flicker on neighbouring dwellings and communities. Use photomontages and other visual techniques to support the assessment.*	The assessment of publicly accessible viewpoints is addressed in Section 8. The assessment of private views is addressed in Section 11. Blade glint and shadow flicker are considered in a separate report.
▪ *Assess the potential for cumulative impacts associated with the development of the project in the context of existing built infrastructures and nearby proposed/approved wind farm developments.*	Potential cumulative impacts are addressed within Section 9 and throughout Section 8.
Design and Mitigation Measures	
▪ *Outline and evaluate any potential design and siting options that could avoid and minimise potential effects on landscape and visual amenity of neighbouring residences and communities and additional management strategies that may further minimise potential effects.*	Design and mitigation measures are addressed in Section 11.
Performance Objectives	
▪ *Describe proposed measures to manage residual effects on landscape and visual amenity values, including in the context of potential rehabilitation and restoration work following decommissioning.*	Design and mitigation measures are addressed in Section 11. Rehabilitation and restoration are addressed in Section 3.10.

2. Assessment methodology

The aim of the LVIA is to determine the potential effects and impacts of the Project on the surrounding context. Impacts may include physical changes to the landscape as well as perceptual changes in the character of the landscape. This understanding will inform mitigation measures and strategies to eliminate, remedy, or reduce identified potential adverse effects for the community with regard to landscape and visual amenity.

The methodology applied to this LVIA of the Project has been applied to many wind farm projects in Victoria and several that have been assessed as part of an EES. The methodology aligns with the requirements for landscape and visual impact assessments set out in the *Policy and planning guidelines for development of wind energy facilities in Victoria* (July 2021) (Wind Farm Guidelines). To demonstrate this, the section of the Wind Farm Guidelines relevant to each element of the methodology is extracted below.

The methodology used within this LVIA of the Project includes the following steps.

2.1 Project description

Describing the key visual components of the Project. These include, but are not limited to, the wind turbines, substations and access roads, electrical connections to the grid, and the proposed on-site quarry. The major visual component of a wind farm project will be the wind turbines, which will be the focus of this LVIA.

Relevance to Wind Farm Guidelines

Section 5.1.3 — 'The degree of visual impact of a wind energy facility depends on the extent of the change to the landscape caused by the development, taking into account … the visibility of the development (including all components: turbines, office compound, construction compound(s), substation(s) and power lines to connect to the electricity network)'

2.2 The visual study area

Defining the visual study area of the Project is based upon the proposed height of the wind turbines, the parameters of human vision, and the turbine layout.

Relevance to Wind Farm Guidelines

Section 5.1.3 — 'The degree of visual impact of a wind energy facility depends on the extent of the change to the landscape caused by the development, taking into account … the locations and distances from which the development can be viewed'

2.3 Legislation, policy, and planning

Describe the planning policies and provisions that apply to the areas within the study area and that are relevant to views, amenity, and landscape character.

Relevance to Wind Farm Guidelines

Section 5.1.3 — 'The degree of visual impact of a wind energy facility depends on the extent of the change to the landscape caused by the development, taking into account …

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

The visual impact of the development relates to … proximity to sensitive areas'

2.4 Landscape character units and sensitivity

Landscape Character Units are based on physical and natural attributes of the area within the study area. Characteristics that assist in defining the landscape units include geology, topography, vegetation, and drainage patterns as well as modifications and the use of land. These Landscape Character Units will provide the characterisation of the existing conditions of the Project visual study area.

Landscape sensitivity for each landscape unit is determined through consideration of the existing use of the area and the degree to which the particular landscape can accommodate change.

Typically, the greater the extent of modifications the lesser the landscape's sensitivity to further change.

Relevance to Wind Farm Guidelines

Section 5.1.3 — 'The degree of visual impact of a wind energy facility depends on the extent of the change to the landscape caused by the development, taking into account …

- *the significance of the landscape as described in the planning scheme (including in an overlay, a relevant strategic study or landscape features referenced in the planning scheme) …*
- *the sensitivity of the landscape features to change.*
- *The features of the landscape include …the topography of the land*
- *the amount and type of vegetation*
- *natural features such as waterways, cliffs, escarpments, hills, gullies, and valleys …*
- *the type, pattern, built form, scale and character of development, including roads and walking tracks'*

2.5 Seen Area Analysis and Zone of Visual Influence

Geographical Information Systems (GIS) map the visibility of key Project components within the local context of the study area. This is known as a 'Seen Area Analysis' (SAA). This assessment maps areas that would offer

views of the Project if vegetation and/or buildings were not in the way of the view and is particularly useful in landscapes that are undulating or topographically diverse.

Recognising that visual scale diminishes as distance increases, defining and mapping a Zone of Visual Influence (ZVI) (through radial distance bands) provides guidance on the potential visual scale (of key project infrastructure over distance) for consideration of likely or potential visual impact.

Relevance to Wind Farm Guidelines

Section 5.1.3 — 'The degree of visual impact of a wind energy facility depends on the extent of the change to the landscape caused by the development, taking into account … the locations and distances from which the development can be viewed… The features of the landscape include … the topography of the land'

2.6 Viewpoint selection and assessment of publicly accessible viewpoints

Assessing the potential visual impact of the Project from representative and key viewing locations within the public domain assists to consider the range of views and likely visual impacts of the Project.

The assessment considers four key criteria for each location: visibility, distance, landscape character, and viewer sensitivity and viewer numbers to arrive at an overall visual impact from each location. Time or likely duration to dwell is also considered. This last consideration is not always easily quantified as it may vary from fleeting or transitory views to stationary views of varying duration depending on the individual, purpose of the stop, and the setting. The scale of visual effect ranges from Negligible to High and recognises that a visual change may have a Nil impact.

A more detailed description of the four criteria and their influence in determining the assessment of the overall visual impact from the public domain are set out below. The relationship of each criteria to the overall visual impact and scale of effects is shown in Figure 2-1:

- **Visibility**: Visibility refers to the ability to see or perceive the Project. The visibility of the Project elements can be affected by topography, vegetation, built form, and weather conditions.
- **Distance:** Infrastructure visibility and dominance will decrease with distance. The Zones of Visual Impact (ZVI) provides an indication of visual dominance and potential impact based on distance. This criterion is one of several to be considered when assessing the overall visual impact of the Project from any location.
- **Landscape character and sensitivity:** Landscape character of an area is based upon visual features such as topography, vegetation, and land use, the naturalness of the area, and planning provisions. Sensitivity may also be influenced by specific landscape studies and assessments within the Project study area. Typically, a modified landscape that is prevalent within the study area or the region is less sensitive than one that is ostensibly natural or protected for its environmental, ecological, or cultural values.

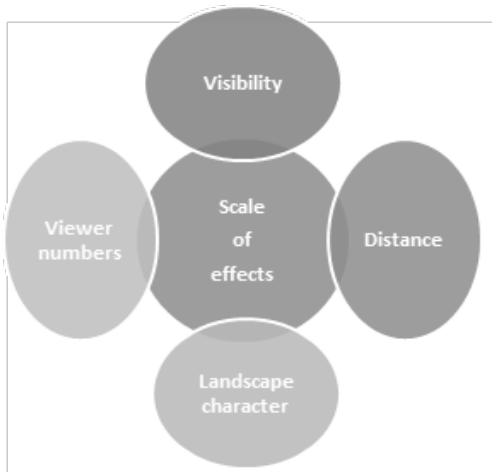


Figure 2-1 Scale of effects

- **Viewer numbers:** The overall level of visual impact, which considers these four criteria, will decrease where there are fewer people able to view the Project. Conversely, the level of visual impact may also increase where the viewing location is a recognised vantage point or tourist route. Viewer numbers from these locations would be rated as 'high'.

The overall visual impact is not numerically based alone, rather it is the outcome of the above quantitative criteria (that can be measured) balanced by a discussion of the qualitative aspects from each viewpoint.

Qualitative considerations are discussed at each viewpoint. This approach, which is the basis of the qualitative discussion rather than the quantitative metric-based approach and table, is considered to be a more meaningful and useful assessment.

This approach is discussed at length in Guidelines for Landscape and Visual Impact Assessment 3rd Edition (GLV3), specifically at Section 2.23, 3.35 and 3.36 below.

2.23 Professional judgement is a very important part of LVIA. While there is some scope for quantitative measurement of some relatively objective matters, such as the number of trees lost to construction of a new mine for example, much of the assessment must rely on qualitative *judgments, for example about what effect the introduction of a new development of land use change may have on visual amenity or about the significance of change in the character of the landscape and whether it is positive or negative.*

3.35 In reporting on the significance *of the identified effects the main aim should be to draw out the key issues and ensure that the significance of the effects and the scope for reducing any negative/adverse effects are properly understood by the public and the competent authority before it makes its decision. This requires clear and accessible explanations. The potential pitfalls are:*

- *over reliance on matrices or tabular summaries of effects which may not be accompanied by clear narrative descriptions.*
- *failure to distinguish between the significant effects that are likely to influence the eventual decision and those of lesser concern.*
- *losing sight of the most glaringly obvious significant effects because of the complexity of the assessment.*

3.36 To overcome these potential problems, there should be more emphasis on narrative text describing the landscape and visual effects and the *judgments made about their significance. If well-written this is likely to be most helpful to non-experts in aiding understanding of the issues. It is also good practice to include a final statement summarising the significant effects. Tables and matrices should be used to support and summarise descriptive text, not to replace it.*

The key considerations are discussed and described within the qualitative assessment at each viewpoint which are partly supported by quantitative criteria to arrive at an overall visual impact. The overall visual effect will range from Nil to High. The definition for each ranking is discussed below.

2.7 The scale of effects – criteria

The following scale of effects provides a ranking system for the magnitude of change:

Nil – The Project will be screened by topography, vegetation, or buildings and structures.

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

Low Visual Impact – visual impacts that are noticeable but that will not cause any significant adverse impacts. The assessment of a low level of visual impact can be derived where several of the four criteria, which includes visibility, distance, viewer numbers, and landscape sensitivity, is assessed as **Low**.

Therefore, a wind farm in a landscape that is modified, or contains other structures or vertical elements may be rated as a low level of visual impact. Similarly, if the distance from which it is viewed means that its scale is similar to other elements in the landscape it would also be assessed as a low level of visual impact.

Medium Visual Impact – A medium visual impact occurs when several of the four assessment criteria are considered as higher than low or the visual effects can be mitigated/remedied from an initial rating of High. This will be moderated by the context of the existing view and the modifications within the landscape.

High Visual Impact– significant adverse effects that cannot be avoided, remedied, or mitigated. The assessment of a high effect from a publicly accessible viewpoint requires the assessment of all criteria to be high. For example, a highly sensitive landscape, viewed by many people, with the Project in close proximity and visible to those people, would lead to an assessment of a high adverse effect.

Positive Visual Impact – is a visual change that improves the outlook or view. For renewable energy projects, a positive visual impact may be experienced where the individual viewer appreciates the view of wind turbines in the landscape or the link to renewable energy. This positive reaction is supported by the findings in numerous community perceptions surveys undertaken within Australia and globally.

Relevance to Wind Farm Guidelines

Viewpoints are selected to assist with the assessment of a project in the context of the following matters set out in Section 5.1.3 of the Wind Farm Guidelines, identified as relevant to determining the degree of visual impact of a wind energy facility:

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

2.8 Photomontages

The following section describes the methodology for the preparation of photomontages included in this assessment. This sets out the technical accuracy aspects of the imagery and how to achieve perceptual accuracy.

2.8.1 Lens size and photos used within the photomontages

Photomontages are prepared to show the change in a fixed view of 60□ horizontal and either 10□ or 15□□in the vertical field of view. The 60□ horizontal field of view represents the central cone of view in which symbol recognition and colour discrimination can occur. By using a standard field of view (60□ horizontal and 10□ or 15□ vertical) the photomontages can also assist to portray the scale of the proposed wind turbines when viewed over various distances. The 60□ horizontal field of view is important to demonstrate the context and scale of the Project in views.

The vertical field of view assists to represent the central field of view of human vision as shown in Figure 2-2.

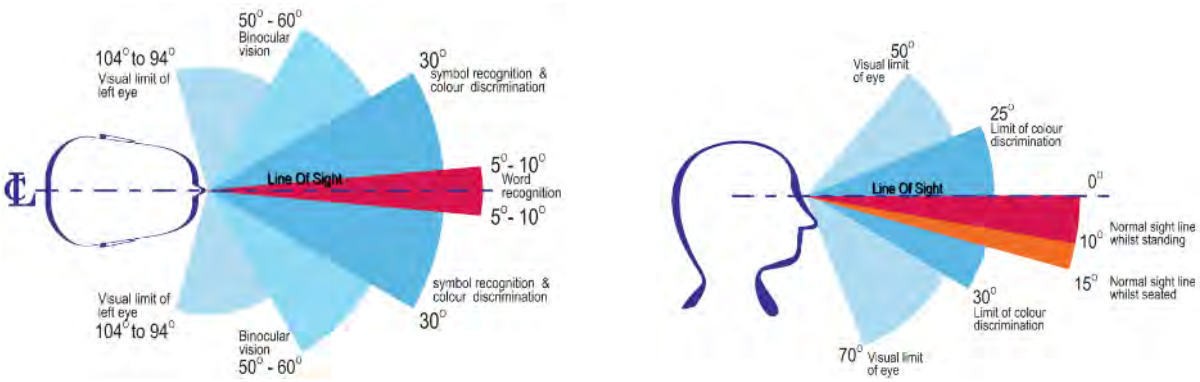


Figure 2-2: Horizontal and Vertical field of view (Human Dimension and Interior Space, Julius Panero & Martin Zellnik, Witney Library of Design,1979)

Similar data can be found in the more recent publication entitled 'The Measure of Man and Woman, Current Edition', Henry Dreyfuss Associates, John Whiley & Sons, 2012.

The A3 photomontages, which are appended to this report in Appendix B, provide a better size in which to view the images in the context of the report and the assessment.

For verification purposes, each photomontage included in the appendices includes:

- The existing view
- A photomontage of the Project superimposed into the view
- 60° horizontal field of view of the existing view and photomontage: and
- a wireframe view of the computer model accompanied by a numbered turbine layout.

The wireframe view provides relevant technical information on the construction of photomontages. In these views vertical 'poles' or cylinders located features such as trees, towers or buildings and a 'mesh' models the existing topography into the view. These features allow the computer model (prepared in 3D Studio Max) and the photograph to be accurately aligned before preparing the final renderings.

This ensures that the proposed wind farm is accurately located within the photograph and then the rest of the model is removed, and the wind farm is rendered into the image. This is explained further in Section 2.8.2.

2.8.2 Photographs

A 70 mm lens on a Nikon D850 digital camera has a picture angle of 26.5° and a horizontal angle of view of approximately 21.3°. https://imaging.nikon.com/lineup/dslr/basics/19/01.htm.

Four photographs overlapped 1/3 to create an image approximately the same as the central cone of view of human vision, i.e., 50-60° horizontal and 15° vertical. Figure 2-2 demonstrates this theory.

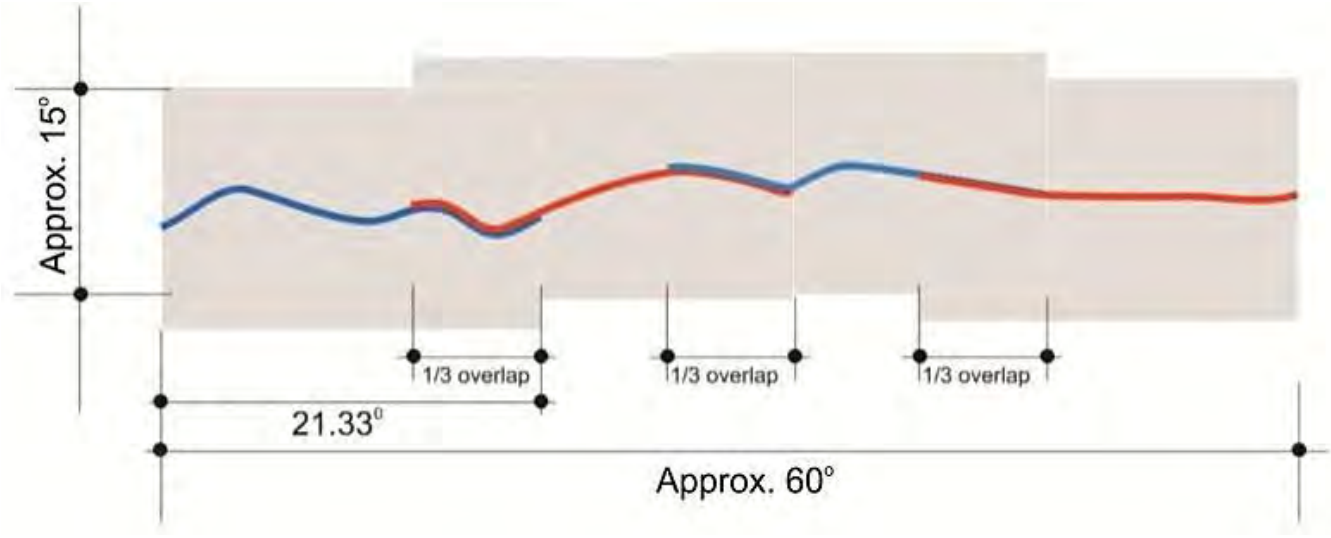


Figure 2-3: Photomontage layout

2.8.3 Computer modelling and the wireframe model

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

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

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

Photomontages are prepared with a 60° field of view, which follows the parameters of human vision. Wider panoramas are also used to indicate the full extent of the proposed wind farm facilities where appropriate.

2.8.4 GPS Coordinates and distance to the wind farm

The Nikon D850 camera also records the GPS coordinates as part of the metadata. GPS coordinates are also taken based on a separate hand-held GPS and the locations from which the photographs were taken is also marked on a digital map at the location of each photograph.

2.8.5 Imagery locations

Photomontages have been prepared from five locations. The photomontages assist to show the range of viewing locations, viewing angles and distances towards the Project. The photomontages have been included in the assessment of views at viewpoints H2, H5, H8, H13 and T2.

These photomontages are appended to this report (Refer Appendix B for A3 size photomontages with a 60° field of view).

It is recognised that the small photographs and the A3 photomontages included in this assessment are not indicative of the actual visual impact. The A3 images, which are appended to this report (Appendix B), are clearer than the smaller images in the text.

However, to view the photomontages in a way that they appear perceptually accurate, they need to be printed and viewed on A0 sized sheets and held at arms' length. When viewed at A0 the photomontages are representative of the level of visual alteration.

2.9 Cumulative considerations

The visual assessment of the Project is also required to consider the cumulative visual impacts of the Project in addition to other constructed and approved wind farms in the area. This assessment is based on both sequential views and simultaneous views.

The cumulative impact considers key routes such as highways and local roads from which sequential views may take in a number of wind farms along a journey to assess the impact that the Project would have on viewer's perception of the landscape in which they travel. Simultaneous views are locations where a viewer may see two or more wind farms at a specific location. These can be in the same or opposing directions.

2.10 Aviation obstacle lighting

The proponent is not proposing to operate night-time aviation obstacle lighting. However, the proponent has requested an assessment of the impacts of lighting should it be a planning permit condition.

2.11 Residential impacts

The proximity of nearby towns, residential clusters, and dwellings are recognised as forming part of the Project context. Assessment of the visual impact from residential locations is different from that undertaken from publicly accessible viewpoints in that visitor numbers are not applicable, and the sensitivity is always rated as 'high'. It is recognised that people feel strongly about the view from their home and attached outdoor living spaces.

For the purposes of this assessment a desktop assessment has been undertaken. Further assessment of impacts from residential dwellings will be undertaken as the Project progresses and Covid-19 restrictions allow.

2.12 Landscape mitigation

It is recognised that wind turbines are unavoidably visible and often contrast with the environments in which they are situated. The assessment process is required to consider the acceptability of impacts on landscape values, the amenity of communities and residential dwellings and the ability to mitigate these impacts.

Mitigation options available to manage the visual impact from locations that are significantly visually affected by a wind farm include:

- vegetation screening to filter or screen the proposed wind turbines from dwellings or areas of private open space.
- re-siting of turbines to locations where they will have less visual impact (or removal if necessary).

This LVIA will consider the ability for landscape screening to be effective at filtering or screening views towards the Project.

For public locations such as a lookout, interpretative location, or observation deck, where there is the potential for a significant visual impact from a location that cannot be mitigated through landscape screening or would alter the significance of the feature turbine removal or re-siting may be considered.

As stated above, it is typically a requirement for wind farm proponents to offer landscape screening where turbines reside in primary views from nearby residential dwellings rather than relocate or remove turbines. Another option available to wind farm projects is micro-siting of turbines, which can assist to position turbines behind existing features such as trees sheds or other structures. The improvement offered by micro-siting are often limited to turbines that are close to the affected view.

Examples of where a turbine might be recommended for relocation or removal may be where a turbine is proposed in a primary view from a dwelling, that is oriented towards a significant and recognised natural feature such as a volcanic cone or national park. For the Willatook Wind Farm, such features include the Budj Bim National Park, an area that is referenced in the Victorian Wind Farm Guidelines and Mount Rouse which is recognised by a significant landscape overlay.

3. Project description

This section will describe and locate the Project relative to nearby towns and features and identify key elements of the Project relevant to preparing an LVIA.

3.1 Wind farm location

The Project is located in southwest Victoria, within the Moyne Shire Council Local Government Area (LGA). The Project is approximately 22 km to the north of Port Fairy, and 45 km south of Hamilton. Figure 3-1 shows the Project location in a regional context, including nearby townships and features.

Within the region, predominant land uses include agriculture and forestry. Tourism along the Great Ocean Road and other coastal areas is also a key feature of the region. Several smaller townships, settlements, or residential clusters exist in proximity to the Project site. Land uses including townships and residential clusters are examined in greater detail in Section 10 of this report.

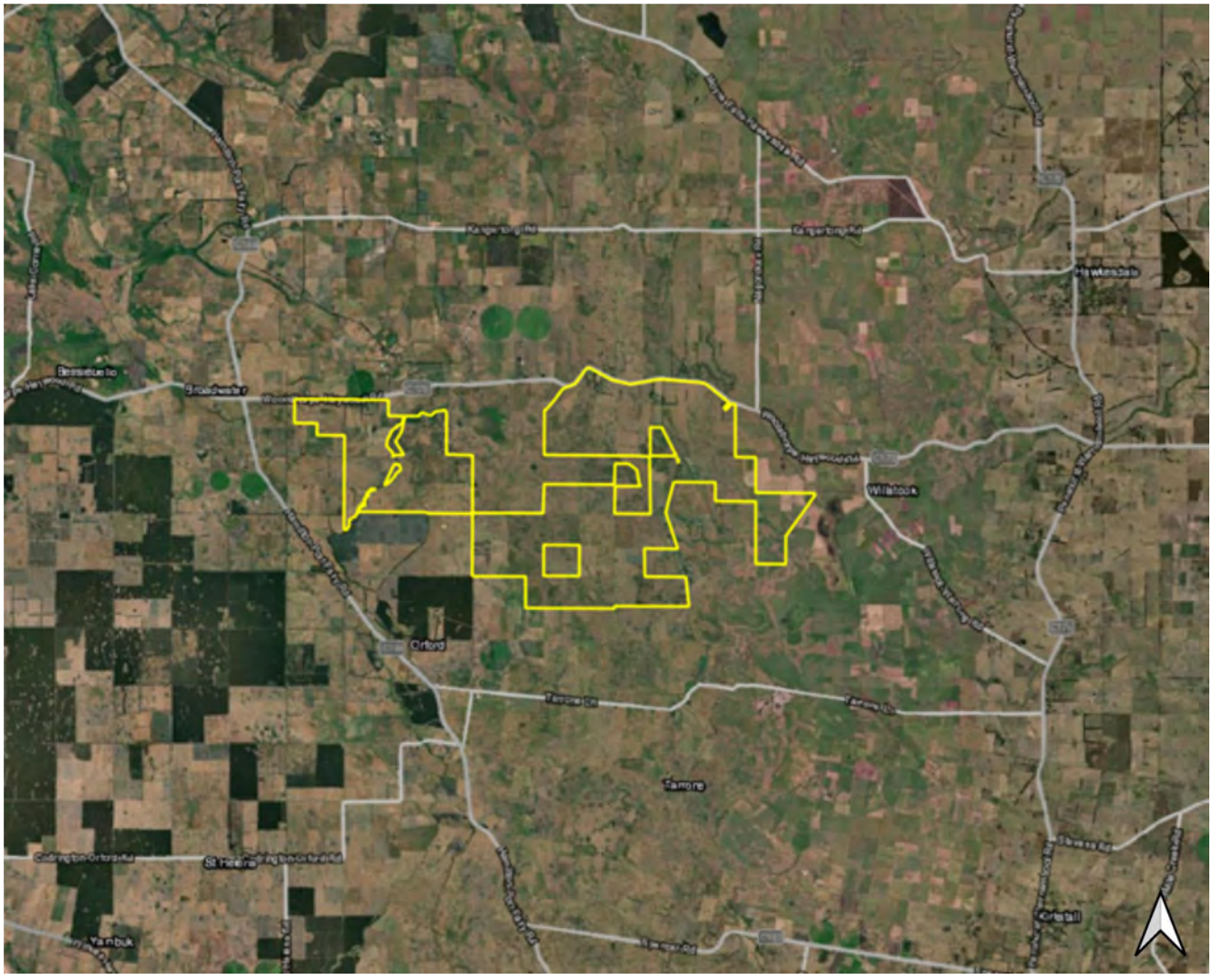


Figure 3-1 Project location: regional context

3.2 Project site and turbine layout

The Project extends up to the Woolsthorpe - Heywood Road, between Penhurst - Warrnambool Road and Hamilton - Port Fairy Road. The Project area covers approximately 4,154 hectares of mostly private land. The predominant land use within the Project Area is agricultural grazing. The existing Tarrone substation is located southeast of the Project boundary. The existing 500 kV Moorabool to Heywood and 132 kV Macarthur Wind Farm to Tarrone transmission lines exist within and beyond the Project site.

The Project comprises up to 59 wind turbines. Each turbine has a unique identifying number which is referenced where relevant in the assessment. The Project site layout, including the proposed turbine layout, is shown in Figure 3-2.

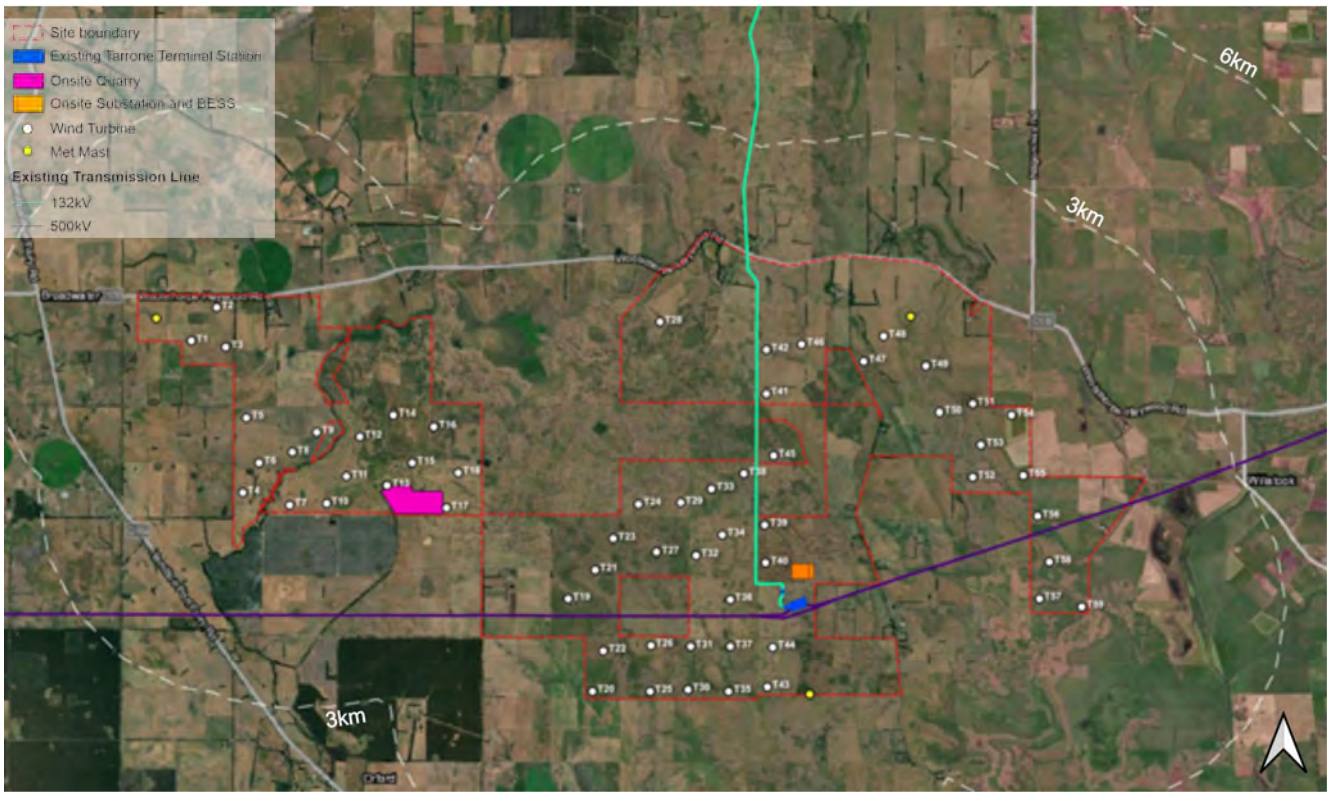


Figure 3-2 Project layout and key features

3.3 Wind turbines

The following attributes of a wind turbine are useful in assessing the visual impact of a proposed wind farm, these are the:

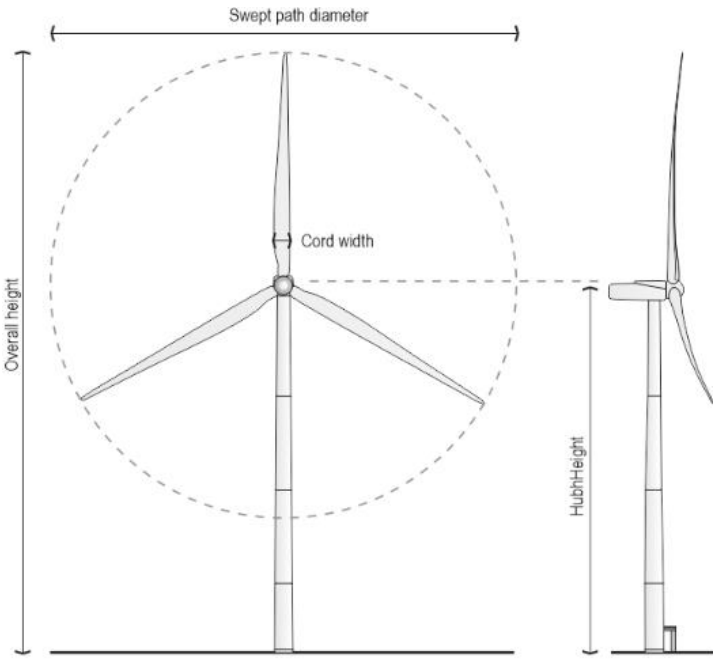
- overall turbine height - forms the basis of the extent of the visual study area
- rotor diameter - supports the preparation of the Seen Area Analysis or GIS studies
- nacelle or hub height, which is a static or constant element in views - the hub connects the blades to the nacelle, which contains the electrical and mechanical components of the turbine.

The final turbine specifications for the blade length and the nacelle height will be determined following approval of the Project and when a preferred turbine supplier has been selected. An assessment of possible component specifications and configurations will determine a suitable envelope for the turbines.

This assessment will adopt the following turbine attribute dimensions as the basis for the quantitative assessment tasks and mapping to determine the Project visual study area outlined in Table 2.

The Zone of Visual Influence will be calculated using the turbine dimensions and will assist to consider the visual prominence of the turbines over distance. The Seen Area Analysis will identify patterns or locations of theoretical turbine visibility by modelling visibility across four zones defined by the dimensions of the turbine base, swept path, nacelle height, and blade tip height.

Table 2 Turbine attribute dimensions



Item	Maximum specification for this LVIA
Overall height	Up to 250m above natural ground level
Hub height	Up to 169m above natural ground level
Swept path / Rotor diameter	Up to 190m
Cord width	Up to 5m
Number of turbines	Up to 59

It is recognised that the turbine height is not a fixed element and will vary depending on the blade position. To be conservative this assessment will be based on the overall height of up to 250 m above natural ground level. This height will be used to determine the extent of the visual study area and Zones of Visual Influence (ZVI).

Several recent Victorian wind farms have sought to increase their approved blade length and hub height configurations. Visual studies comprising comparative photomontages prepared in support of the varying turbine configurations have determined that there is little perceptible difference between the turbine configurations. These projects include Moorabool Wind Farm, Dundonnell Wind Farm, and Lal Lal Wind Farm.

This is relevant in considering the height of the Project turbines in the context of other operating and approved projects in proximity to the Project.

3.4 Aviation obstacle lighting

The assessment undertaken by Chiron Consulting (2021) determined that aviation obstacle lighting would not be required.

The assessment will still consider the potential impacts of aviation obstacle lighting, should lighting be a requirement in the future.

3.5 Grid connection and onsite electrical infrastructure

3.5.1 Terminal station

The Project would connect to the existing Tarrone Terminal Station—located in the southeast of the Project site, via a new on-site substation. A proposed BESS would be located alongside the proposed on-site substation. The location of these features is shown in Figure 3-3.

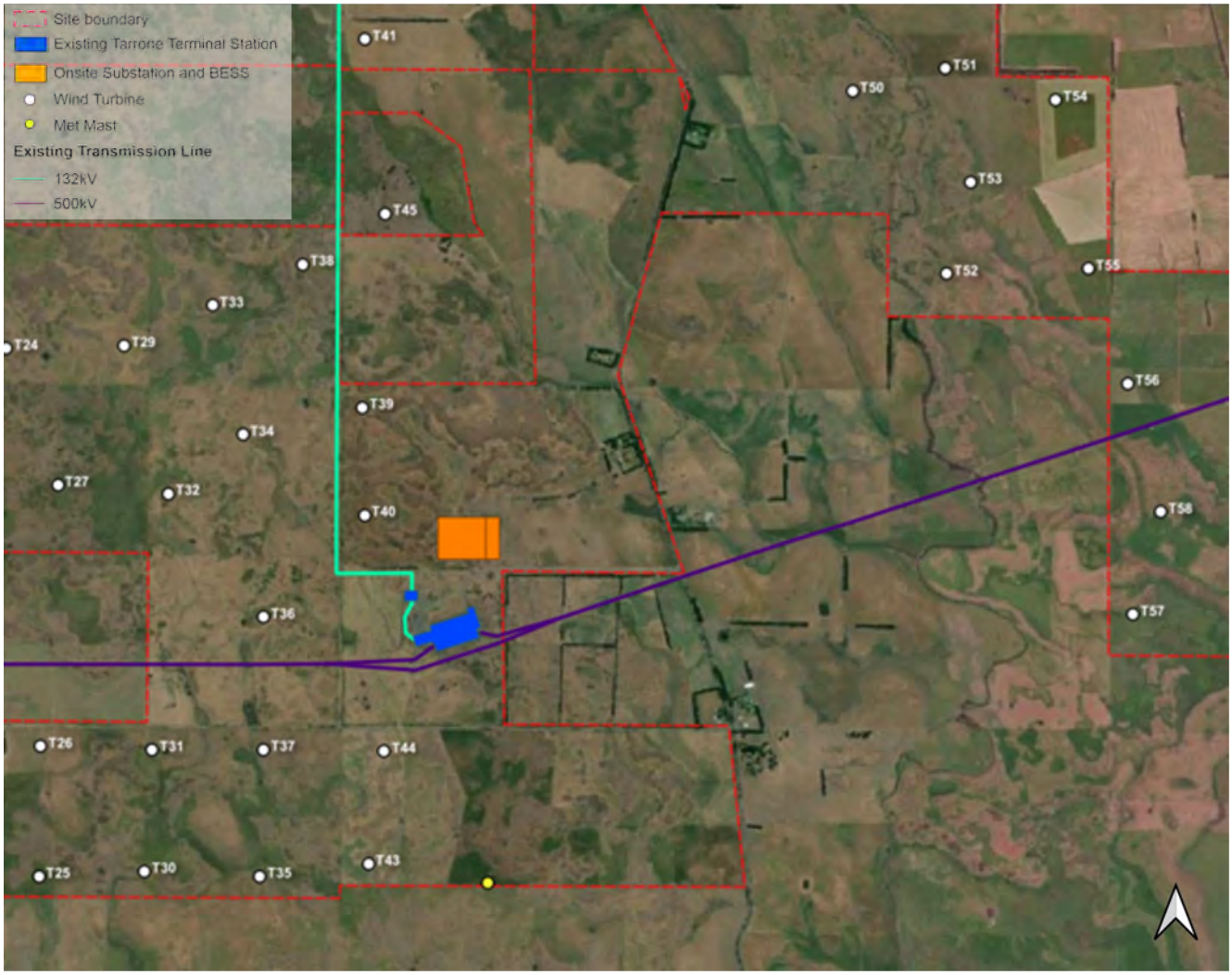


Figure 3-3 Existing and proposed substations

3.5.2 Battery energy storage system

A Battery Energy Storage System (BESS) would be located to the east of the on-site substation within the area shown in orange in Figure 3-3.

The BESS would be located within a fenced enclosure alongside the on-site substation. Key features of the BESS include:

- Power Conversion Units (PCU's)
- Battery Storage Modules
- Operational lighting and
- Fencing.

Figure 3-4 shows an example of a typical battery storage facility for a wind farm project.

Figure 3-4 Typical battery storage (Source: https://reneweconomy.com.au/tesla-big-battery-officially-switched-on-in-south-australia-55285/)

The location of the proposed battery storage area has been considered in views assessed within this report.

3.5.3 Powerlines and cabling

The majority of on-site transmission and control cabling works are proposed to be installed underground.

Where required, some electricity transmission would occur via on-site 132 kV overhead powerlines for approximately 300 m to connect the onsite substation to the existing Tarrone Terminal Station. The proposed structure of these powerlines is steel monopoles. The 132 kV Macarthur transmission lines exist on-site and are an example of monopole structures. These are shown in Figure 3-5.

Figure 3-5 Typical medium-voltage steel monopole transmission tower

3.6 Operations facility

New operations and maintenance buildings would be required for use by permanent employees of the Project.

3.7 Wind monitoring masts

Up to three (3) anemometry (i.e., wind monitoring) masts are proposed as part of the Project. These are located toward the boundary of the Project, to the north, east, south-east, south-west, and west.

Wind monitoring masts monitor wind speed and direction during the life of the project. Typically, wind monitoring masts comprise steel lattice or tubed steel structures with tensioning wires for support and stability. They would be installed to a height of no greater than 170m.

Figure 3-6 shows a typical steel lattice wind monitoring mast.

Figure 3-6 Typical met mast

3.8 Internal access tracks and site access

New access points would be required at several locations. This new access will allow for ongoing light-vehicle access, and heavy vehicle access for construction and transport of the wind farm components onto the site. These access points are located along Woolsthorpe – Heywood Road, Tarrone North Road, Riordans Road, and Old Dunmore Road.

Internal access tracks would be required for construction and ongoing maintenance access to each turbine, as well as to on-site staff facilities.

Access tracks would not be dissimilar to the many farm and forestry tracks seen in many areas within the study area.

3.9 Construction

Construction activities include the excavation and pouring of the turbine foundations, transportation and assembly of the various turbine components, construction of the substation and grid connecting infrastructure, upgrading and construction of new access tracks, and establishment of the operations and maintenance facilities.

Key pre-construction and construction activities include:

- site assessment and geotechnical investigations. Geotechnical assessments generally require the presence and operation of plant equipment on-site
- civil works for the construction of on-site access roads and access points
- temporary construction compounds and facilities, including demountable structures, compounds, and laydown areas
- presence of heavy-vehicle traffic, including the transport of Project components, cranes, and other construction vehicles and plant equipment
- excavation and earthworks
- construction activities, including the erection of wind turbines, masts, and works associated with electrical infrastructure including th`e on-site terminal station, on-site battery facility, cabling, and transmission infrastructure.

3.9.1 On-site batching quarry and plants

An on-site quarry would be located in the southwest portion of the site. Concrete batching plants would be located around the Project site and where required. These would be temporary and only and would be in place for a short time. The location of the proposed quarry is shown in Figure 3-7.

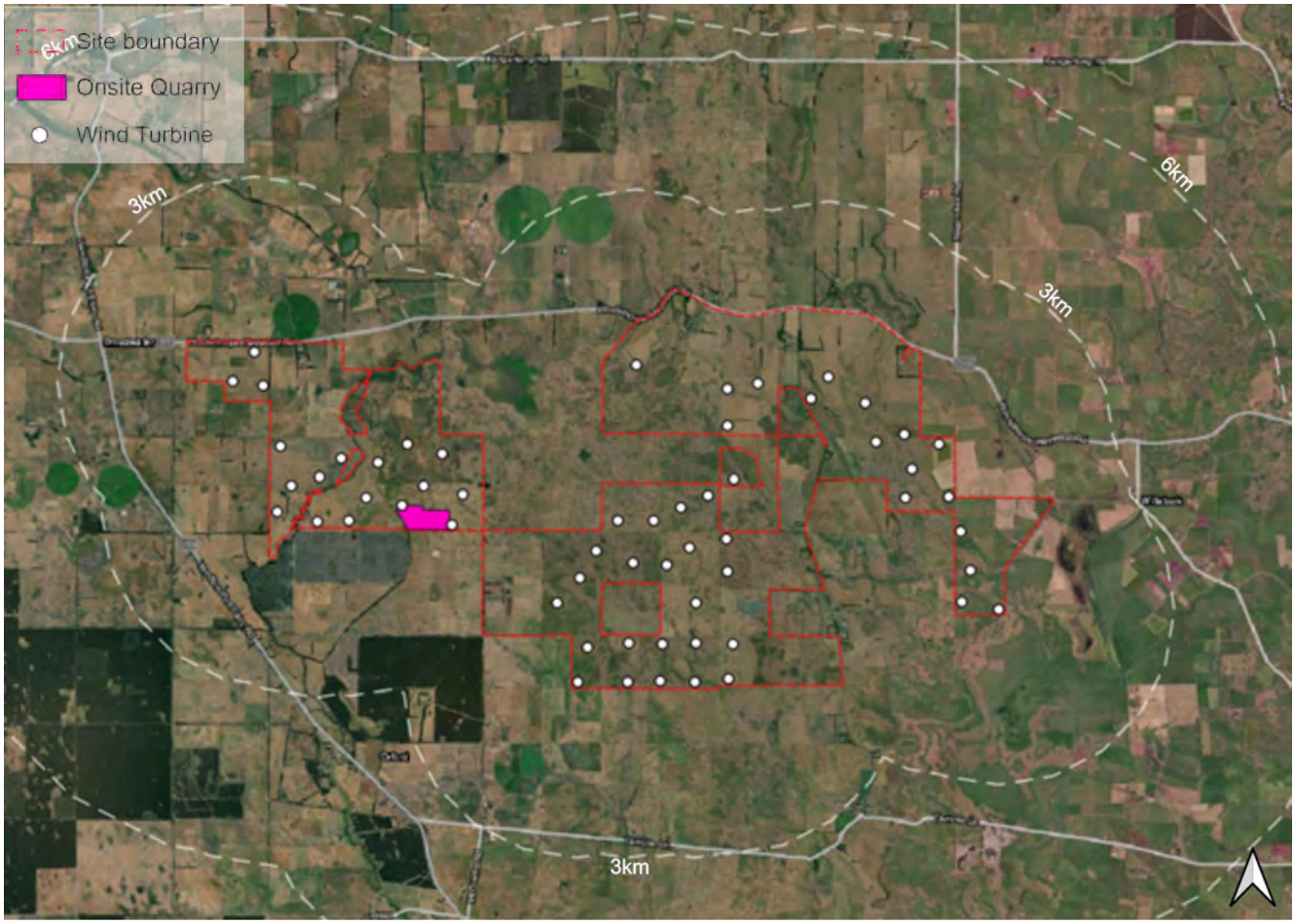


Figure 3-7 Project quarry area map

The Project would also include the establishment of temporary on-site concrete batching plants for the construction of the foundations for the wind turbines which, amongst other things, assisting to reduce concrete truck movements along local roads.

Figure 3-8 shows an example of a modular silo batching plant.

Figure 3-8 Portable batching plant

The extraction area would be approximately 10.5 Ha. Pit walls would have operational faces (extraction faces) up to 6-7 m in height with a minimum 20 m wide bench. Overburden and topsoil material would be stored for use in rehabilitation at the completion of quarrying activities.

Extracted material would be stored in a stockpile on the western side of the quarry pits. Some material may be transported to the concrete batching plant for processing and production of concrete for the construction of the Project. The majority of quarrying activities and extraction faces would be behind safety bunds, the 20 m landscape buffers, or below ground.

3.10 Rehabilitation

The temporary batching plants would be removed following the completion of the Project construction. Stockpiles and hardstand areas, including around the base of the turbines, would be rehabilitated and landscaped.

Rehabilitation of the quarry pit would result in a water filled excavation with all plant and infrastructure removed and batters and hardstand areas ripped, soiled, and returned to pasture. Rehabilitation batters would be at least 1V:3H batter to quarry floor level, and water allowed to recover to groundwater level. There would be a stock proof fence to the perimeter of the excavation, with the old quarry access road gated.

The primary objective of the rehabilitation plan is to leave the site in a safe and stable manner in a form that would both blend with the surrounding landscape and provide productive rural land for the landowner at the completion of quarrying activities. The final landform and vegetation would be developed in consultation with the landowner.

4. Visual study area

This section establishes a basis on which to determine the extent of the study area for visual impact, and the scale of the proposed up to 250 m high wind turbines when viewed at various distances.

The extent of the visual study area is the distance within which the proposed up to 250 m high wind turbines have the potential to be readily perceptible objects in views. This distance is established based upon the parameters of human vision and the height of the proposed turbines. It may still be possible to see wind turbines from areas beyond the study area; however, they would be at a distance where they would not be conspicuous.

The parameters of human vision include the vertical and horizontal fields of views as shown in Figure 4-1. These figures are based on data from '*Human Dimension and Interior Space*', *Julius Panero & Martin Zellnik, Witney Library of Design,1979*'. Similar data can be found in the more recent publication entitled '*The Measure of Man and Woman, Revised Edition', Henry Dreyfuss Associates, John Whiley & Sons, 2012*. This data forms the basis for determining the study area for the Project.

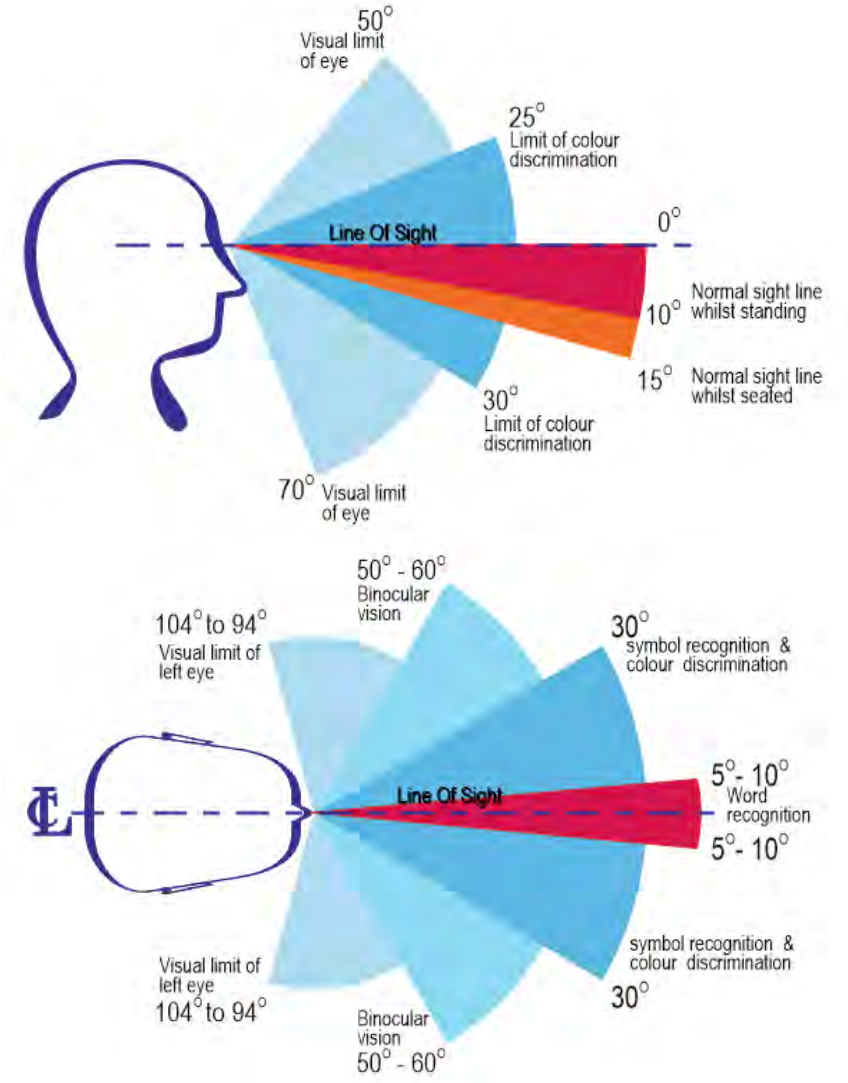


Figure 4-1 Parameters of human vision

The angle of the central field of vision is between 50º to 60º. This view angle is also relevant to the preparation and reproduction of perceptually accurate photomontages and printed reference imagery. By referencing a common benchmark, in this instance 60º, and utilising comparable camera specifications, the scale of the proposed turbines over varying distances can be reliably considered.

Figure 4-2 shows similar parameters for the vertical field of view.

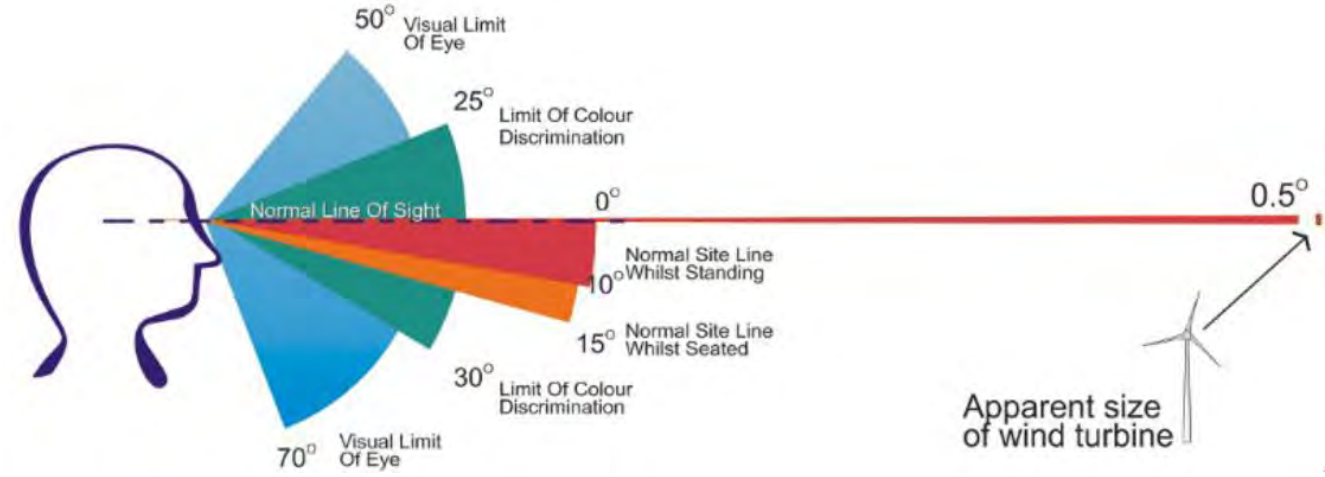


Figure 4-2 Vertical field of view

The 'Normal' vertical field of view of a person is between 10° - 15°. The theoretical extent of the study area is considered to be a distance at which the tallest component of the Project would take up less than 5% or 0.5° of the 'Normal' 10° of the vertical field of view.

With an overall height of up to 250 m, the proposed wind turbines are the largest element of the Project. The distance at which a 250 m high turbine would comprise 5% (0.5°) of the vertical field of view is 28.6 km.

The following section will describe the Zone of Visual Influence for the turbines.

4.1 Zone of Visual Influence

Zones of Visual Influence (ZVI) assist to assess the visible scale of the proposed turbines over varying distances. The same principles used to determine the study area assist to define visual scale based on the distance to a turbine. For example, when a viewing location is closer to a turbine, the turbine would take up a greater percentage of the vertical field of view. This forms one element of several criteria that contribute to determining the overall visual impact of a project from viewing locations.

The ZVI, which will form part of the visual impact assessment of the Project is also calculated based upon the parameters of the human vision are set out in Table 3.

Table 3 Zones of Visual Influence

Vertical angle of view	Zones of Visual Influence	Distance to turbine
<0.5	**Visually insignificant** – Extent of the Project study area A very small element in the study area, which is difficult to discern and will be invisible in some lighting or weather circumstances.	>28.60 km
0.5-1.0	**Noticeable**, but will not dominate the landscape The degree of visual intrusion will depend on the landscape sensitivity and the sensitivity of the viewer; however, the Project will not dominate the landscape.	14.5-28.6 km
1.0-2.5	**Noticeable and can dominate the landscape** The degree of visual intrusion will depend on the landscape sensitivity and the sensitivity of the viewer.	6.0-14.5 km
2.5-5.0	**Highly visible and will usually dominate the landscape** The degree of visual intrusion will depend on the Project's visibility in views from the landscape and factors such as foreground screening.	3.0-6.0 km
>5.0	**Will always be visually dominant in the landscape** Dominates the landscape in which it is sited.	<3.0 km

Figure 4-3 demonstrates the reducing scale of the Project relative to the Zones of Visual Influence are perceived in views across the landscape. That is, the further away a viewing location is from the Project, the smaller or lower the Project will appear in the vertical field of view.

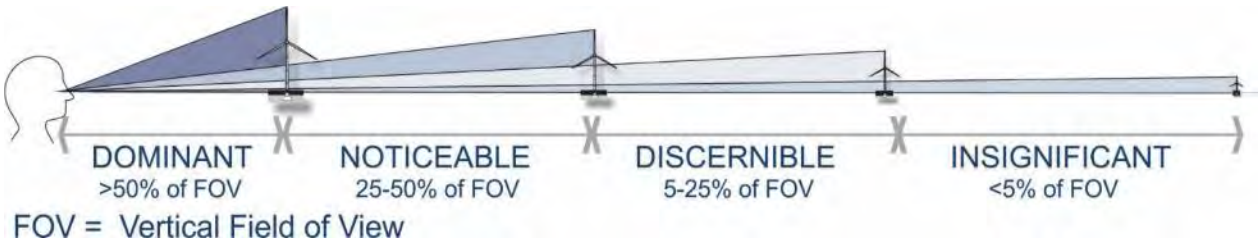


Figure 4-3 Zones of Visual Influence Diagram

The extent of the study area and the Zones of Visual Influence of the 75 turbines which are up to 250 m high proposed by the Project are shown in Figure 4-4.

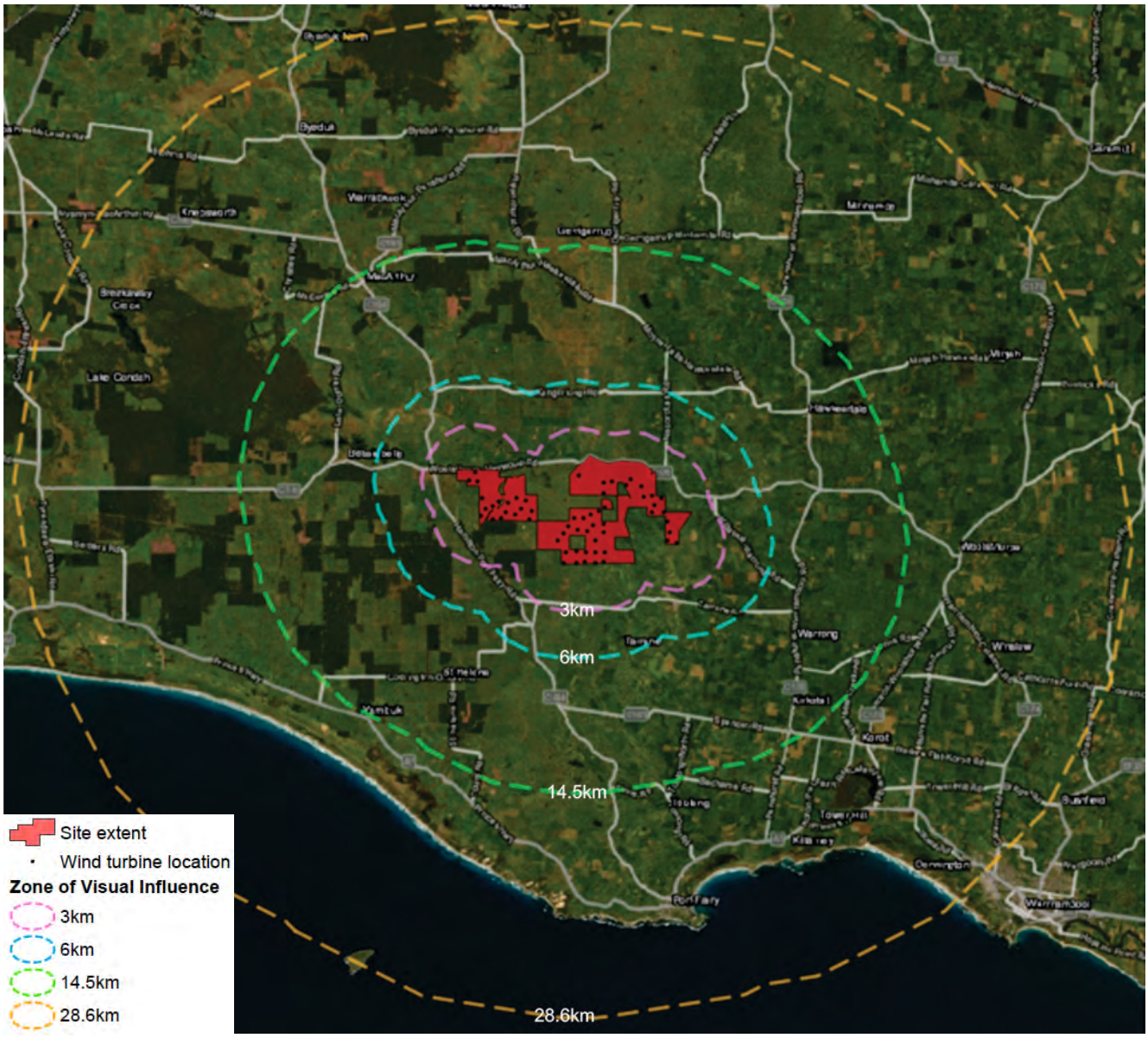


Figure 4-4 Study area and Zones of Visual Influence of the Project

ZVI's provide a guide to considering the visual scale of 250 m high wind turbines based on distance. The wind turbines would be visually noticeable out to a distance of 28.6 km on clear days with good visibility. The proposed wind turbines have the potential to be highly visible and potentially dominant features in views from distances within 6.0 km. It is recognised that the apparent size of the Project would not change dramatically when a viewer moves from one distance band to another, for example from 5.9 km to 6.1 km.

With the study area established at 28.6 km, the following chapters will:

- present a review of Planning Policies and Guidelines that apply to the assessment of landscape and visual impacts within the Project study area
- determine the landscape character, the types of landscape units that occur within this study area
- determine theoretical visibility through a Seen Area Analysis within the study area
- assess the visual impact from indicative viewpoints.

5. Legislation, guidelines, policy, and planning review

The scoping requirements for the EES (Section 4.2) set out the draft evaluation objective *"To minimise and manage potential adverse effects for the community with regard to landscape and visual amenity."* Two of the key issues to be addressed are to understand the significant landscape values of the region and to ascertain the visual amenity consequences for nearby residents and communities arising from the Project.

The planning scheme and strategic studies provide guidance and support for determining the landscape character within the study area, particularly with regards to identifying landscapes and places of significance, land use within the study area, and statutory protections relevant to landscapes and views. The characterisation of the existing landscape conditions will consider these planning and strategic documents alongside landscape features described in Section 6 to determine the landscape character units.

The Ministerial guidelines for assessment of environmental effects under the EE Act outline referral criteria could include potential extensive or major effects on landscape values of regional importance, especially where recognised by a planning scheme overlay or within or adjoining land reserved under the *National Parks Act 1975* and potential significant effects on the amenity of a substantial number of residents, due to extensive or major, long-term changes in visual, noise and traffic conditions. Landscape and visual amenity is also referred to within 'The Policy and planning guidelines - development of wind energy facilities in Victoria (Victorian Guidelines)'.

It is not the intention of this section to undertake a full and thorough review of the planning scheme. Rather, this review seeks to consider those sections that are relevant to landscape and visual impacts arising from the Project. Further, it is understood that the PPF is currently being consolidated. As such, sections of the planning scheme review may not be complete.

5.1 State legislation

The following Victorian legislation within Table 4 is of relevance to this assessment.

Table 4 State legislation

Legislation	Relevance to this assessment
Environment Effects Act 1978	
The *Environment Effects Act 1978* provides for the assessment of projects that are capable of having a significant effect on the environment by enabling the Minister administering the Act to decide that an EES should be prepared. An EES may be required where: • There is a likelihood of regionally or State significant adverse environmental effects • There is a need for an integrated assessment of the social and economic effects of a project or relevant alternatives • Normal statutory processes would not provide a sufficiently comprehensive, integrated, and transparent assessment. The process under the *Environment Effects Act 1978* is not an approval process in itself; rather it's an assessment process that enables statutory decision-makers to make decisions about whether a project with potentially significant environmental effects should proceed.	On 5 October 2018, the Minister for Planning decided that an Environmental Effects Statement (EES) was required for the Willatook Wind Farm Proposal. The scoping requirements for the EES include Section 4.3 Landscape and Visual and the draft evaluation objective "*To minimise and manage potential adverse effects for the community with regard to landscape and visual amenity*". This report has been prepared for inclusion within the EES.
Planning and Environment Act 1987	
The *Planning and Environment Act 1987* (PE Act) regulates the use and development of land in Victoria. The Act sets out the framework and procedures for preparing and amending planning schemes, obtaining planning permits, settling disputes, enforcing compliance with planning schemes, and other administrative procedures.	Section 4 of the P&E Act outlines the following objectives relevant to landscape and visual impacts: (c) to secure a pleasant, efficient, and safe working, living and recreational environment for all Victorians and visitors to Victoria.

Legislation	Relevance to this assessment
	(d) to conserve and enhance those buildings, areas, or other places which are of scientific, aesthetic, architectural or historical interest, or otherwise of special cultural value;

5.2 Planning Policy Framework (PPF)

The PPF sets out broad policy objectives to ensure uniform and consistent application of the planning scheme within Victoria.

5.2.1 Clause 12.05-2S Landscapes

The objective of this provision is to protect and enhance significant landscapes and open spaces that contribute to the character, identity, and sustainable environments. Key strategies include:

- *Ensure significant landscape areas such as (native) forests, the bays and coastlines are protected.*
- *Ensure development does not detract from the natural qualities of significant landscape areas.*
- *Improve the* landscape *qualities, open space linkages and environmental performance in significant landscapes and open spaces, including green wedges, conservation areas and non-urban areas.*
- *Recognise the* natural *landscape for its aesthetic value and as a fully functioning system; and*
- *Ensure important natural features are protected and enhanced*

Local content to this clause is provided in Section 5.4.

5.2.2 Clause 19.01-2S Renewable energy

Clause 19.01-2s seeks to promote the provision of renewable energy in a manner that ensures appropriate siting and design considerations are met. Key and relevant strategies include:

- *Facilitate* renewable *energy development in appropriate locations.*
- *Set aside suitable* land *for future energy infrastructure.*
- *Consider the economic and environmental benefits to the broader community of renewable energy generation while also considering the need to minimise the effects of a proposal on the local community and environment; and*
- *Recognise that economically viable wind energy facilities are dependent on locations with consistently strong winds over the year.*

5.3 Particular provisions – Clause 52.32 (Wind Energy Facility)

Clause 52.32 (Wind Energy Facility) applies to land used and developed or proposed to be used and developed for a Wind energy facility to establish or expand wind energy facilities, The clause seeks to ensure wind energy facilities are developed in locations that are appropriate or that will have minimal impact on the amenity of the area.

Section 4 requires an application to provide a site and context analysis including specific information relevant to landscape and visual impact.

- *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.*
- *National Parks, State* Parks*, Coastal Reserves, and other land subject to the National Parks Act 1975.*

The application should include an assessment of:

- *The visual impact of* the *proposal on the surrounding landscape.*
- *The visual impact on abutting land that is described in a schedule to the National Parks Act 1975 and Ramsar wetlands and coastal* areas.

Decision guidelines

Before deciding on an application, in addition to the decision guidelines of Clause 65, the responsible authority must consider, as appropriate:

- *The Municipal Planning* Strategy *and the Planning Policy Framework.*
- *The effect of the* proposal *on the surrounding area in terms of noise, blade glint, shadow flicker and electromagnetic interference.*
- *The impact of the* development *on significant views, including visual corridors and sightlines.*
- *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (Department of Environment, Land, Water and* Planning*, July 2021).*

5.3.1 Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (July 2021)

Policy and Planning Guidelines for *Development of Wind Energy Facilities in Victoria* (July 2021) (the Guidelines) is a reference document listed at Clause 52.32-6 - Decision guidelines. The guidelines provide operational performance standards to inform the assessment and operation of a wind energy facility.

Section 2.1.2 Significant landscape values of the Guidelines recognises community values for landscapes with significant visual amenity, environmental, social values, and the role that strategic planning plays in identifying and managing these landscapes.

The Guidelines direct specialists to Clause 12.05 of the VPP (Significant environments and landscapes) which includes Clause 12.05-1S Environmentally Sensitive Areas and Clause 1205-2S Landscapes. These clauses set out objectives and strategies to manage sensitive areas and their values.

The Guidelines state that:

"A responsible authority needs to determine whether or not the visual impact of a wind energy facility in the landscape is acceptable. In doing so, they should consider planning scheme objectives for the landscape, including whether the land is subject to an Environmental Significance Overlay, Vegetation Protection Overlay, Significant Landscape Overlay, or a relevant strategic study that is part of the relevant planning scheme. The visual impact of a proposal should have regard to relevant state and local government planning policy." (Clause 5.1.3).

The current Victorian Guidelines also recognise relevant strategic landscape studies. The relevant strategic landscape studies are discussed in Section 5.6.

A key requirement of the Guidelines is the consideration of the provisions within the local Planning Schemes and especially any provisions that relate to landscape significance or community values that apply to areas within the study area. These include views and visual impact from nearby dwellings, townships and urban areas, conservation and recreation areas, water features, tourist routes, and walking tracks, major roads.

Publicly accessible locations are assessed in Section 8.

The consideration of views and impacts from nearby dwellings are set out in Section 11.

5.4 Local Planning Policy Framework (LPPF)

The following clauses of the LPPF's are described within the Local Planning Schemes and are of relevance to this LVIA of the Project.

The Project and the majority of the area within the study area are located within the Moyne Shire Council. The northern part of the study area extends into the Southern Grampians Shire. Part of the northern and western areas of the study area include the Glenelg Shire and Warrnambool Shire. These local government area boundaries are shown in Figure 5-1.

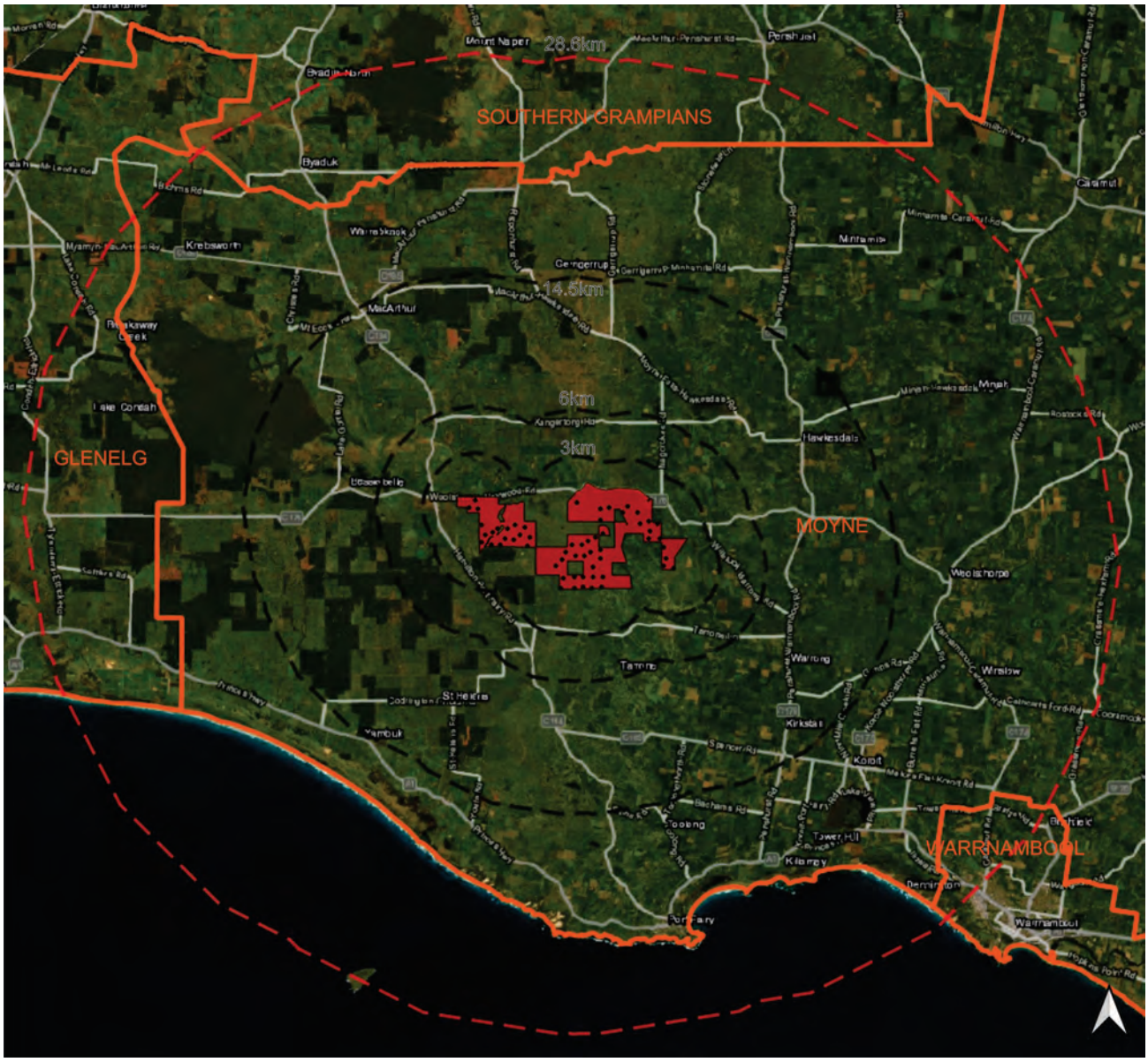


Figure 5-1 Local Government Area boundaries

5.4.1 Moyne Planning Scheme – Clause 21.06 Environment

Moyne Shire contains many natural areas of significance and environmental value. Areas include the Shire's coastlines, various rivers and streams, Tower Hill State Game Reserve and volcanic crater, and the lava landscapes in Budj Bim National Park.

This clause identified the following issues pertaining to the Shire's environment which are of relevance to the LVIA of the Project:

- *The importance of views of the landscape from road corridors, and the need to control and manage development that is highly visible from main road corridors and principal tourist routes.*
- *The need to retain the dominance of the landscape from key viewing locations throughout the Region, and*

- *The need to protect and enhance Tower Hill as a scenic landscape feature by retaining views.*

Several key viewing locations within Moyne Shire are frequented by tourists and visitors to the Region. It is a key focus of the shire to retain the dominance of natural features when viewing the landscape from these viewing locations, it is therefore important to ensure that any new development is assessed for its impact on the character of the landscape.

The following areas have been identified as having landscape character considered as significant along the Shire's coast:

- *Western Coastal Cliffs – National/State Significance, which is evident by the Bay of Islands area with its rugged coastal cliff formations* intermixed *with coastal heathland vegetation.*
- *Lake Yambuk to Port Fairy – Regional Significance, which is evident by the spectacular views of The Crags, around Lake Yambuk and its* wetlands *and out to sea towards Lady Julia Percy Island (Deen Maar).*
- *Port Fairy to Warrnambool Coast – Regional Significance, which is evident by the contrasting landscape views between the open* farming *areas and coastal edge at Killarney from Tower Hill and the Princes Highway encompassing the coastal dunes and creek lines; and*
- *Tower Hill and Environs – State Significance, which is evident by the visually stunning volcanic landscape with geological features* found *within an open volcanic plain.*

5.4.2 Southern Grampians Planning Scheme – Clause 02.03-2 Environmental and Landscape Values

This clause provides local content to support Clause 12 (Environmental and Landscape values) of the State Planning Policy Framework. The objectives are to:

- *Retain the* landscape *character of rural areas, particularly those associated with Red Gum plains, volcanic peaks, and the Grampians.*
- *Protect the* landscape *elements that contribute to lifestyle, tourism, and amenity.*
- *Ensure that* development *does not adversely impact the landscape, environmental setting, or presentation of the Shire.*
- *Preserve and* enhance *the values of the Wannon area, and particularly the environs of the falls; and*
- *Protect the setting, appearance and vistas of landscape and natural elements associated with volcanic peaks and features.*

5.4.3 Glenelg Planning Scheme – Clause 12.05-2L – Landscapes

This clause provides local content to support Clause 12 (Environmental and Landscape values) of the State Planning Policy Framework.

Strategies of this clause include:

- *Protect* significant *views and vistas, including:*
  - *Long and extensive views of the coastal and hinterland landscape from main roads.*
  - *Largely natural and unbuilt views of lakes and other water bodies from their edges.*
  - *Gateway views at topographic rises along roads, in particular those that terminate at the coast, walking tracks, recreational facilities, and formal scenic lookouts.*
- *Minimise visual clutter of the hinterland landscape with built development to retain open spaces that provide views to the coast, capes, and hinterland*
- *Retain the dominance of the pastoral landscape in the hinterland areas.*
- *Retain natural landforms and indigenous vegetation as an essential component of the character of the rural hinterland.*

5.4.4 Warrnambool Planning Scheme – Clause 02.03-2 Environmental and Landscape Values

This clause provides local content to support Clause 12 (Environmental and Landscape values) of the State Planning Policy Framework. The strategic directions are to:

- *Protect coastal areas, waterways, and sensitive ecosystems from the detrimental impacts of urban and rural development.*
- *Protect significant landscapes and landforms from inappropriate development.*

5.5 Zones and overlays

Planning zones and overlays describe permissible uses, identify areas of sensitivity, and protection of features that are special or unique to an area. Zones and overlays also provide protection to enable the continued use of areas and business against adverse amenity claims such as dust, noise, odour, or views.

Landscapes that exhibit special or unique features are typically found within a Significant Landscape Overlays (SLOs) or Environmental Significance Overlay (ESO) and include guidance on how these areas might be protected. Sensitive uses, such as residential areas or National Parks are often protected against adverse impacts that may be detrimental to the use and enjoyment of these areas from incompatible uses.

5.5.1 Project area zoning

The majority of the Project is within land designated Farming Zone (FZ). Two small portions of the southern part of the site are located within land zoned Special Use Zone 5 & 6 (SUZ5 & SUZ6). These zones are for the yet-to-be-built Shaw River Power Station and Tarrone Power Station. Further toward the northern part of the site, land zoned Road Zone 1 (RDZ1) runs along the alignment of Woolsthorpe-Heywood Road. Figure 5-2 shows the land-use zones within and surrounding the Project site.

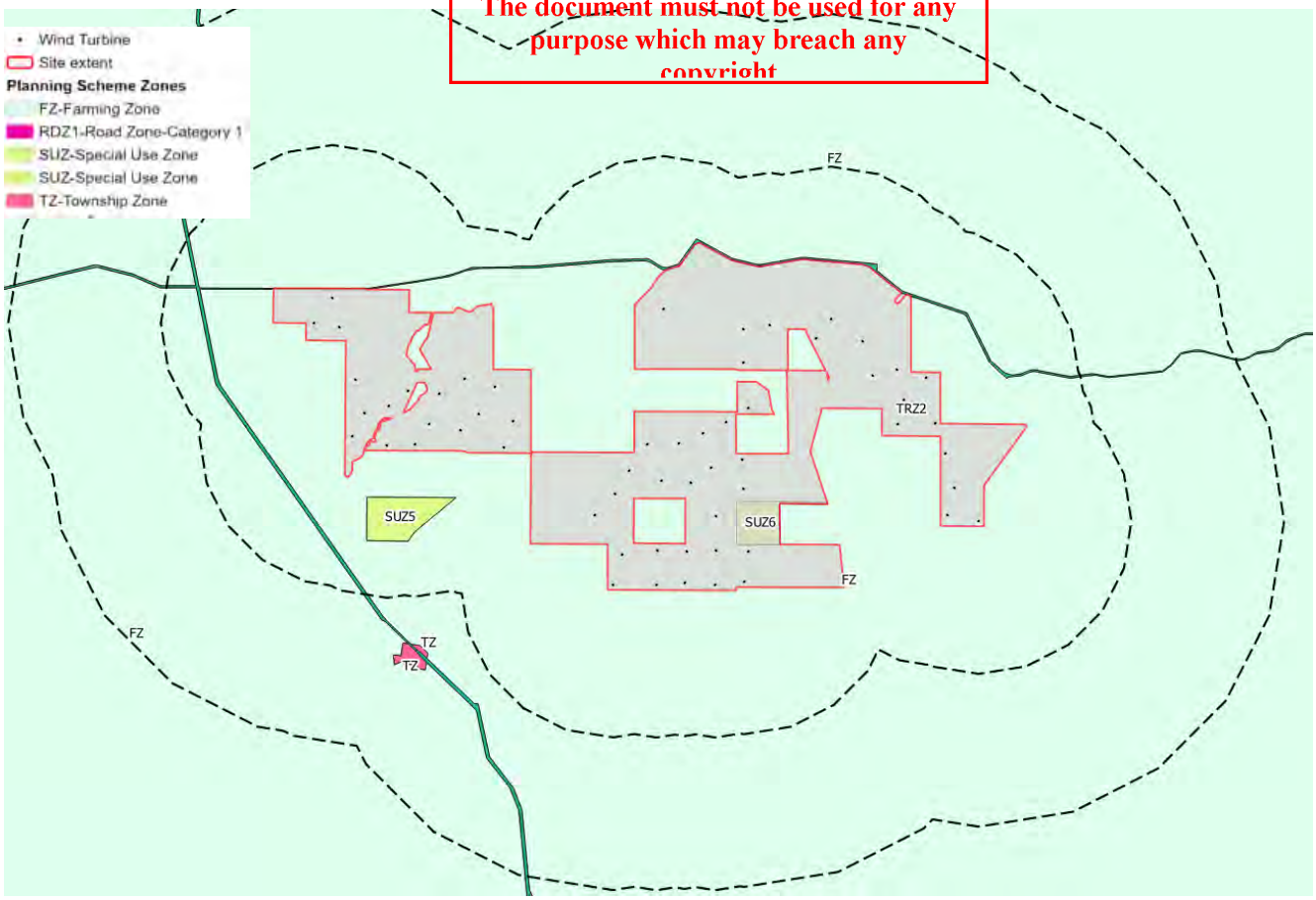


Figure 5-2 Zones within and surrounding the site

Farming Zone (FZ)

The purpose of the Farming Zone is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To provide for the use of land for agriculture.*
- *To encourage the retention of productive agricultural land.*
- *To ensure that non-agricultural uses, including dwellings, do not adversely affect the use of land for agriculture.*
- *To encourage the retention of employment and population to support rural communities.*
- *To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision; and*
- *To provide for the use and development of land for the specific purposes identified in a schedule to this zone.*

The Farming Zone contemplates that uses within these areas have the potential to impact the amenity of sensitive uses such as residential dwellings.

Special Use Zone (SUZ5 & SUZ6)

The purpose of the Special Use Zone is *to recognise or provide for the use and development of land for specific purposes as identified in the schedule to this zone.*

The purpose of SUZ5 – Shaw River Power Station and SUZ6 – Tarrone Power Station is:

- *To facilitate the development and use of a gas-fired power station; and*
- *To provide for electricity generation using natural gas as the energy source*

Road Zone 1 (RDZ1)

The purpose of the Road Zone is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To identify significant existing roads; and*
- *To identify land which has been acquired for a significant proposed road.*

5.5.2 Zones within the study area

Figure 5-3 shows the zones within the study area of the Project.

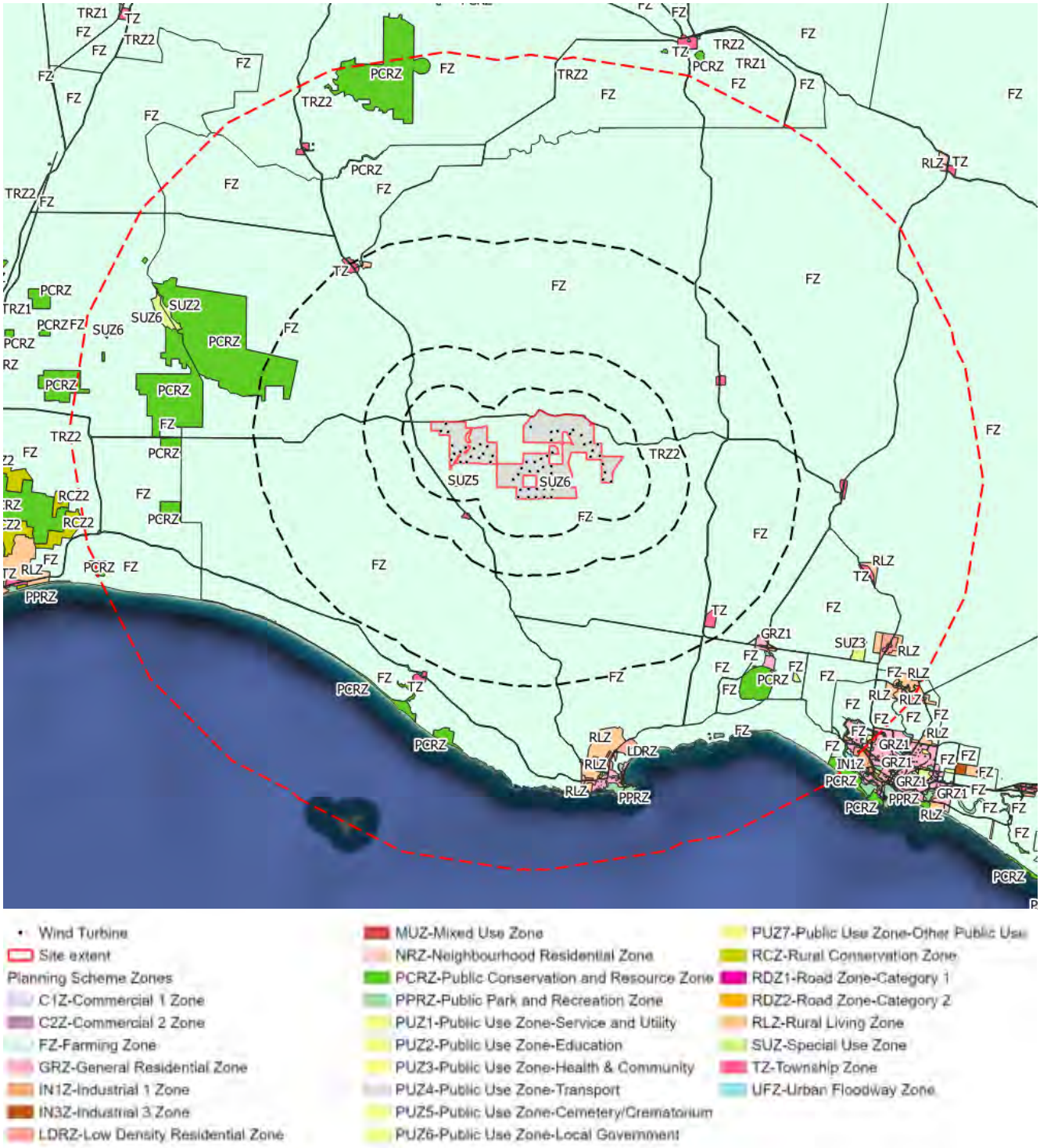


Figure 5-3 Zoning within study area

The majority of the land within the study area of the Project is Farming Zone (FZ). Additional zones within the study area include areas of Public Conservation and Recreation Zone (PCRZ) to the west of the Project site at Budj Bim National Park, North of the site at Mount Napier National Park, along the southern coastline at Belfast Coastal Reserve and Tower Hill Wildlife Reserve.

Various townships such as Orford (approximately 3 km from the Project site), Hawkesdale (approximately 10 km from the Project site), Yambuk and MacArthur comprise Township Zone (TZ), while Port Fairy, approximately 20 km from the Project site, comprises Low-Density Residential Zone (LDRZ) and Rural Living Zone (RLZ).

Land-use zones within the study area include:

- GRZ1 – General *Residential Zone*
- *LDRZ – Low-Density Residential Zone*
- *PCRZ – Public Conservation and Recreation Zone*
- *PPRZ – Public Park and Residential Zone*
- *PUZ5 – Public Use Zone 5: Shaw River Power Station*
- *PUZ6 – Public Use Zone 6: Tarrone Power Station*
- *RDZ1 – Road Zone 1*
- *RLZ – Rural Living Zone*
- *SUZ3 – Special Use Zone 3: Warrnambool Regional Airport*
- *TZ – Township Zone*

Public Conservation and Recreation Zone (PCRZ)

The purpose of the Public Conservation and Recreation Zone is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To protect and conserve the natural environment and natural processes for their historic, scientific, landscape, habitat, or cultural values.*
- *To provide facilities which assist in public education and interpretation of the natural environment with minimal degradation of the natural environment or natural processes; and*
- *To provide for appropriate resource-based uses.*

Township Zone (TZ)

The purpose of the Township Zone is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To provide for residential development and a range of commercial, industrial, and other uses in small towns.*
- *To encourage development that respects the neighbourhood character of the area; and*
- *To allow educational, recreational, religious, community and a limited range of other non-residential uses to serve local community needs in appropriate locations.*

5.5.3 Project area overlays

Overlays recognise landscape features that are special or unique, that are distinct to the areas that surround them. Figure 5-4 shows the overlays within and surrounding the Project site.

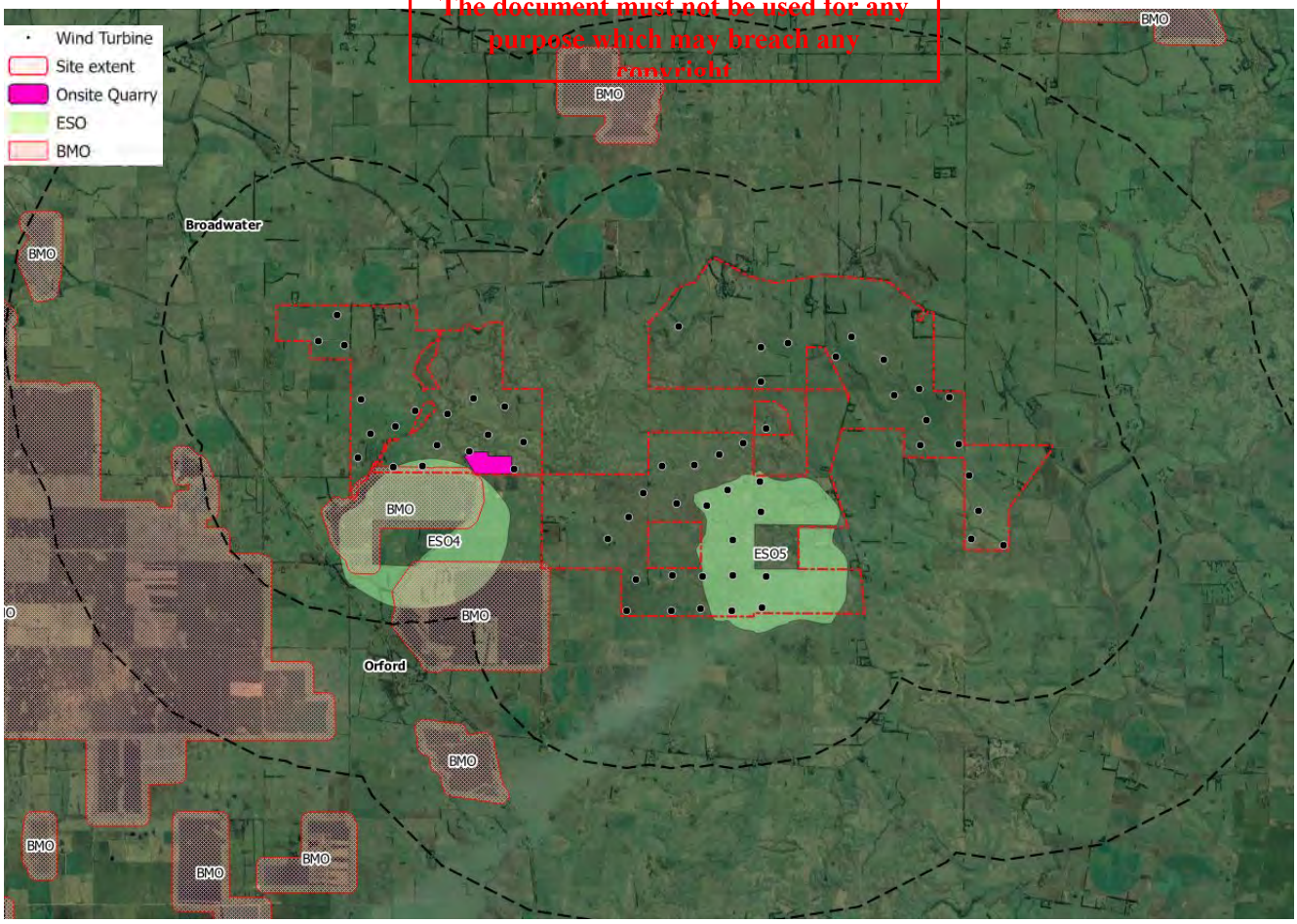


Figure 5-4 Overlays within and surrounding the Project site

Environmental Significance Overlays (ESO)

The purpose of Environmental Significance Overlays is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To identify areas where the development of land may be affected by environmental constraints; and*
- *To ensure that development is compatible with identified environmental values.*

Schedule 5 to clause 42.01 of the Moyne Planning Scheme (ESO5) relates to the Tarrone Power Station Environs. This schedule aims to ensure the development of the Tarrone Power station is not constrained by conflicting uses and developments nearby due to acoustic impacts of the power station.

Schedule 4 to clause 42.01 of the Moyne Planning Scheme (ESO6) relates to the Shaw River Power Station Environs. Like schedule 5, this schedule protects surrounding land uses and potential development from impacts of the power station.

Areas within ESO4 & 5 are not sensitive from a landscape and visual perspective.

Bushfire Management Overlay (BMO)

The purpose of the Bushfire Management Overlay is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.*

- *To identify areas where bushfire hazard warrants bushfire protection measures to be implemented; and*
- *To ensure development is only permitted where the risk to life and property from bushfire can be reduced to an acceptable level.*

These overlays are relevant to landscape and visual impact mitigation where landscape screening vegetation may be proposed within areas of bushfire sensitivity.

5.5.4 Overlays within the study area

Further to the overlays listed above in Section 5.5.3, the following section outlines relevant overlays which are present within the study area. These overlays are shown in Figure 5-5.

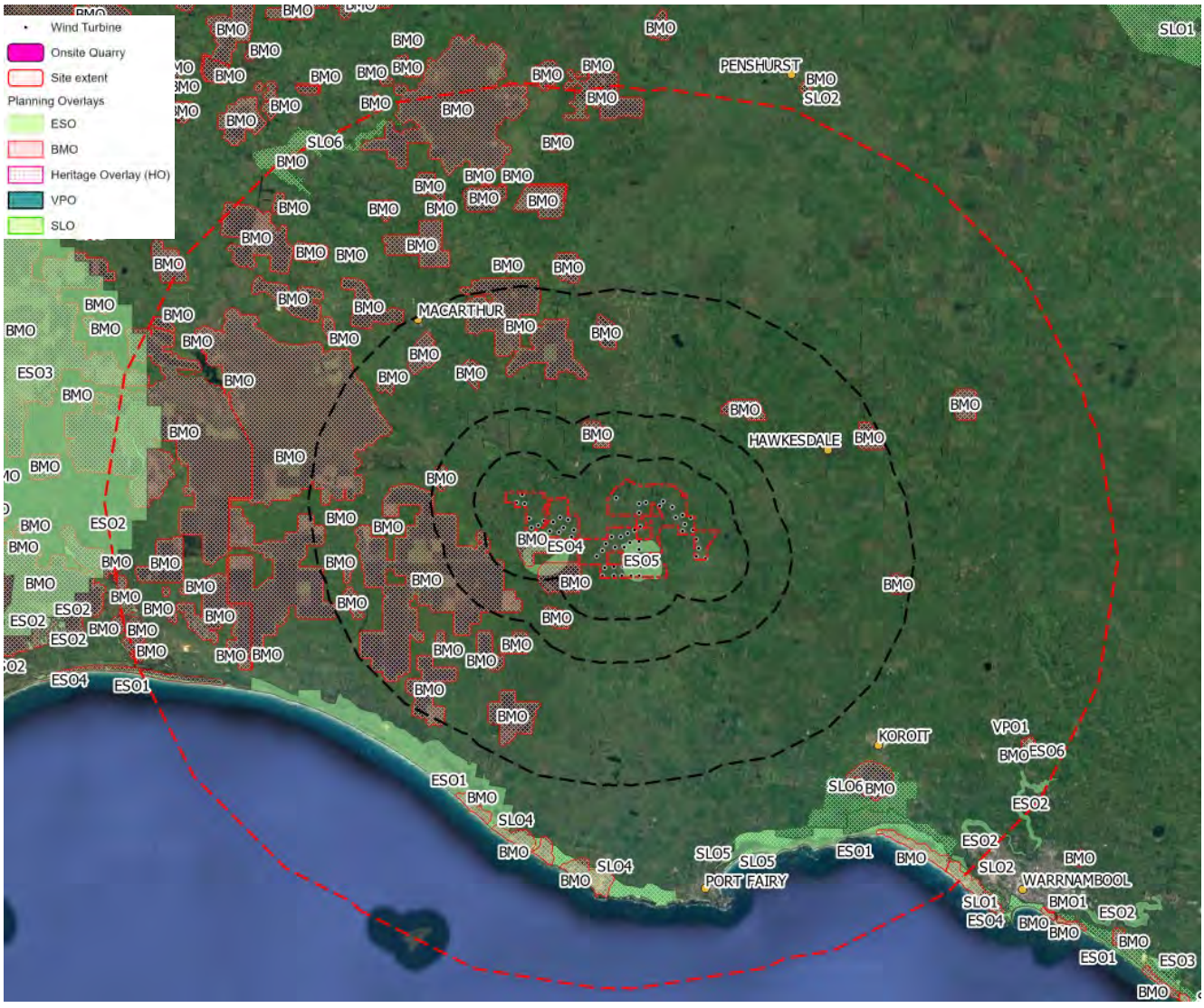


Figure 5-5 Relevant overlays within the study area

The following are Environmental Significance Overlays (ESO) within the study area

- ESO 1 – Coastal Areas *and Estuaries (Moyne)*
- *ESO4 – Shaw River Power Station Environs (Moyne)*
- *ESO 5 – Tarrone Power Station Environs (Moyne)*
- *ESO 6 – Remnant Vegetation and Habitat Protection Areas (Moyne)*
- *ESO 2 – Hopkins & Merri River Environs (Warrnambool)*

- *ESO 2 – Waterway, Wetland and Estuary Protection (Glenelg)*
- *ESO 3 – South-eastern Red-tailed* Black Cockatoo Habitat Areas (Glenelg)

Significant Landscape Overlays (SLO) are implemented to identify, conserve, and enhance the character of significant landscapes. There are six such overlays across three Local Planning Schemes within the study area.

- SLO2 – Mount Rouse *and Crater Reserve (Southern Grampians)*
- *SLO6 – Harmans Valley (Southern Grampians)*
- *SLO4 – Lake Yambuk to Port Fairy Coast (Moyne)*
- *SLO5 – Port Fairy to Warrnambool Coast (Moyne)*
- *SLO6 – Tower Hill and Environs (Moyne)*
- *SLO1 – Coastal Hinterland Landscape* Area (Warrnambool)

Heritage Overlays (HO) are implemented to conserve and enhance heritage places of natural or cultural significance and ensure that development does not adversely affect the significance of these places. There are 283 Heritage Overlays present within the study area. Only 2 of these overlays are within 14.5km of the Project, and include:

- HO38 – Bessiebelle *Sheetwashes' and Yards (Moyne)*
- *HO36 – Former Macarthur Courthouse* (Moyne)

The other 281 HOs apply to areas outside the 14.5km ZVI and are predominately located within the townships of Port Fairy and Penshurst and apply to buildings. HOs applying to these buildings are not of relevance to an LVIA of this Project.

5.6 Landscape assessment studies

Several landscape studies have been undertaken within the study area. The implications and relevance to this assessment are described below.

5.6.1 Coastal Spaces Landscape Assessment Study (2006)

The Coastal Spaces Landscape Assessment Study (CSLAS) undertaken by Planisphere seeks to guide the development and use of coastal regions in Victoria.

5.6.1.1 Landscapes of State and Regional Significance

The CSLAS identifies landscapes across the southern extent of the study area and includes landscapes that are considered significant. As such, the CSLAS are useful to consider landscape values, sensitive landscapes and to identify viewing locations to be included in the assessment of views and visual impact.

Those landscapes that are within the study area and relevant to this assessment are set out below. It is recommended to refer directly to the CSLAS for mapping these landscapes and features as the quality of the online report is not conducive to reproduction.

Port Fairy to Warrnambool Coast (Regional Significance)

- *Visually significant for its landscape of coastal dunes and rocky outcrops with inland creek lines*
- *Characterised by an uncluttered landscape where volcanic plains run into the sea*
- *Valued by the community for its diverse and rugged landscape and for its significance to Traditional Owners.*

Yambuk Lakes to Port Fairy Coast (Regional Significance)

- *Visually significant for the contrasting, rugged, rocky coastline and long sandy beaches and dunes*
- *Characterised by landscape features such as Lake Yambuk*

- *Valued by the community for its panoramic views, including to Lady Julia Percy Island*

Tower Hill and Environs (State Significance)

- *Visually significant as a volcanic landscape with geological features such as crater lakes, internal scoria cones and islands*
- *Characterised by a distinct volcanic form in an otherwise flat and featureless lava plain*
- *Valued by the community for its natural character and views to the coast from the crater rim*

Viewpoints from these areas are assessed within Section 8.1.

5.6.2 South West Victoria Landscape Assessment Study (2013)

The *South West Victorian Landscape Assessment Strategy 2013* (SWVLAS) seeks to understand the significance of the visual and landscape character across southwest Victoria. The SWVLAS is not an incorporated document in any of the planning schemes covered in the study area. It is understood that through this status, the guidelines carry little statutory weight.

The landscapes in the regions are diverse and include volcanic plains and cones that dominate much of the area, to the Great Dividing Range in the north and the Grampians in the central west. The SWVLAS study area excludes coastal areas that have been subject to earlier studies, such as the CSLAS.

Although the Victorian Guidelines acknowledge that strategic studies assist in the landscape and visual assessment, it is understood that the SWVLAS is not a reference document as it is not referenced in either the Moyne or Glenelg Shire Planning Scheme or the Victorian Guidelines.

The SWVLAS recognises and values the geological formations that occur within the landscape, and these contribute to an increased landscaping sensitivity. The SWVLAS also acknowledges the change that this landscape has undergone since European settlement and the anticipated increased level of development suggesting lower landscape sensitivity.

As such, the SWVLAS are useful to consider landscape values, sensitive landscapes and to identify viewing locations to be included in the assessment of views and visual impact.

5.6.2.1 Landscape Character Types and Areas

The SWVLAS identifies eight broad Landscape Character Types and more granular Landscape Character Areas within its study area.

Figure 5-6 shows the study area, Landscape Character Types, and key localities of the SWLVAS. The approximate location of the Project is also shown.

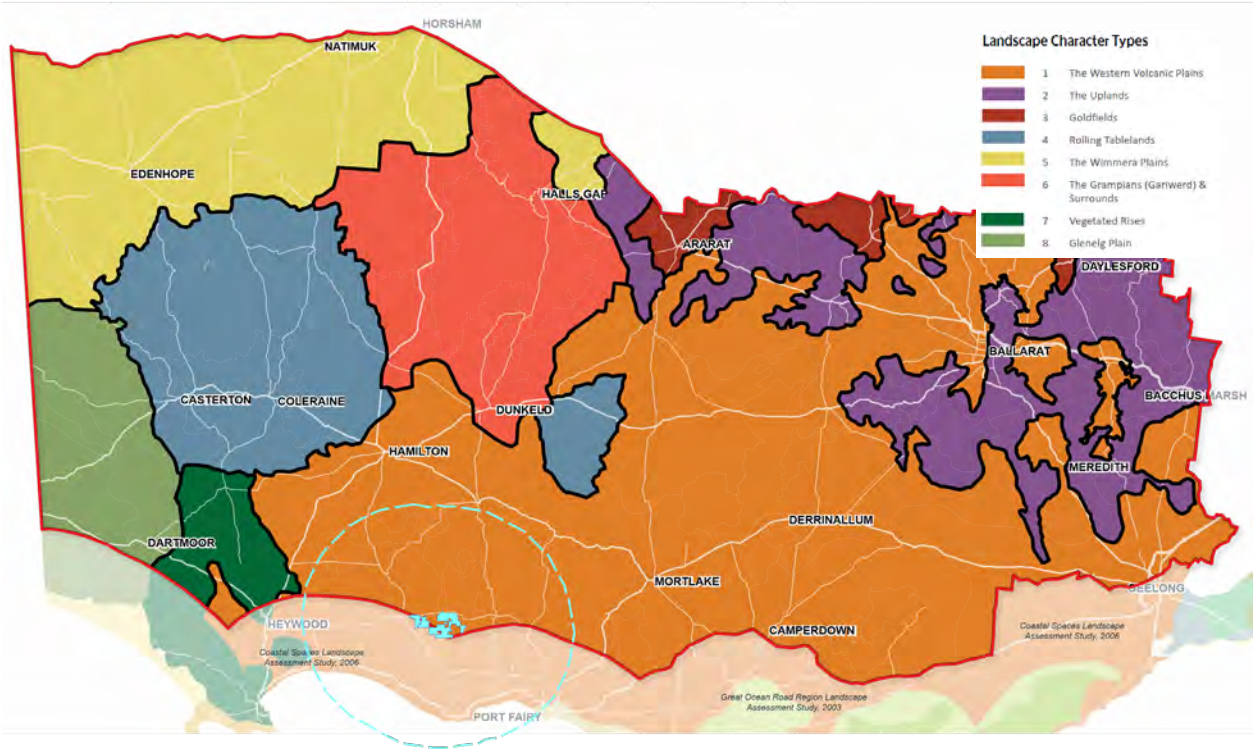


Figure 5-6 SWLVAS Study Area and Landscape Character Types of South West Victoria. Source: SWVLAS, Planisphere (Modified to show Project location and outline of study area in blue)

The study area falls entirely within the Western Volcanic Plains Landscape Character Type.

The Western Volcanic Plains is the most widespread landscape type across the SWVLAS study area. The description for this character type is:

Volcanic activity has shaped much of South West Victoria's landscape. This extensive Character Type is formed by a flat to undulating basaltic plain scattered with volcanic features including stony-rises, old lava flows, numerous volcanic cones and old eruption points which together create *a unique visual landscape.*

This is a place of big skies, long views with volcanic rises that punctuate the horizon. When the first European settlers arrived, they found the land primed for agriculture *as it contained very few trees. Shelterbelts of cypress and pine were planted to protect crops and livestock from the winds that sweep the plain and are now a defining characteristic of the Type.*

The area is dotted with many beautiful lakes *and wetlands that are generally broad and shallow and may contain either saline, brackish or fresh water. Some of the wetlands are RAMSAR listed and of international importance.*

Many paddocks and roadsides are edged with beautifully formed dry-stone walls that were created when early pastoralists cleared the land of rocks for agricultural *purposes, to contain stock and to control vermin*

Landscape Character Areas are a more granular subset of landscapes within the Landscape Character Types. These are shown in Figure 5-7. The approximate location of the Project is also shown.

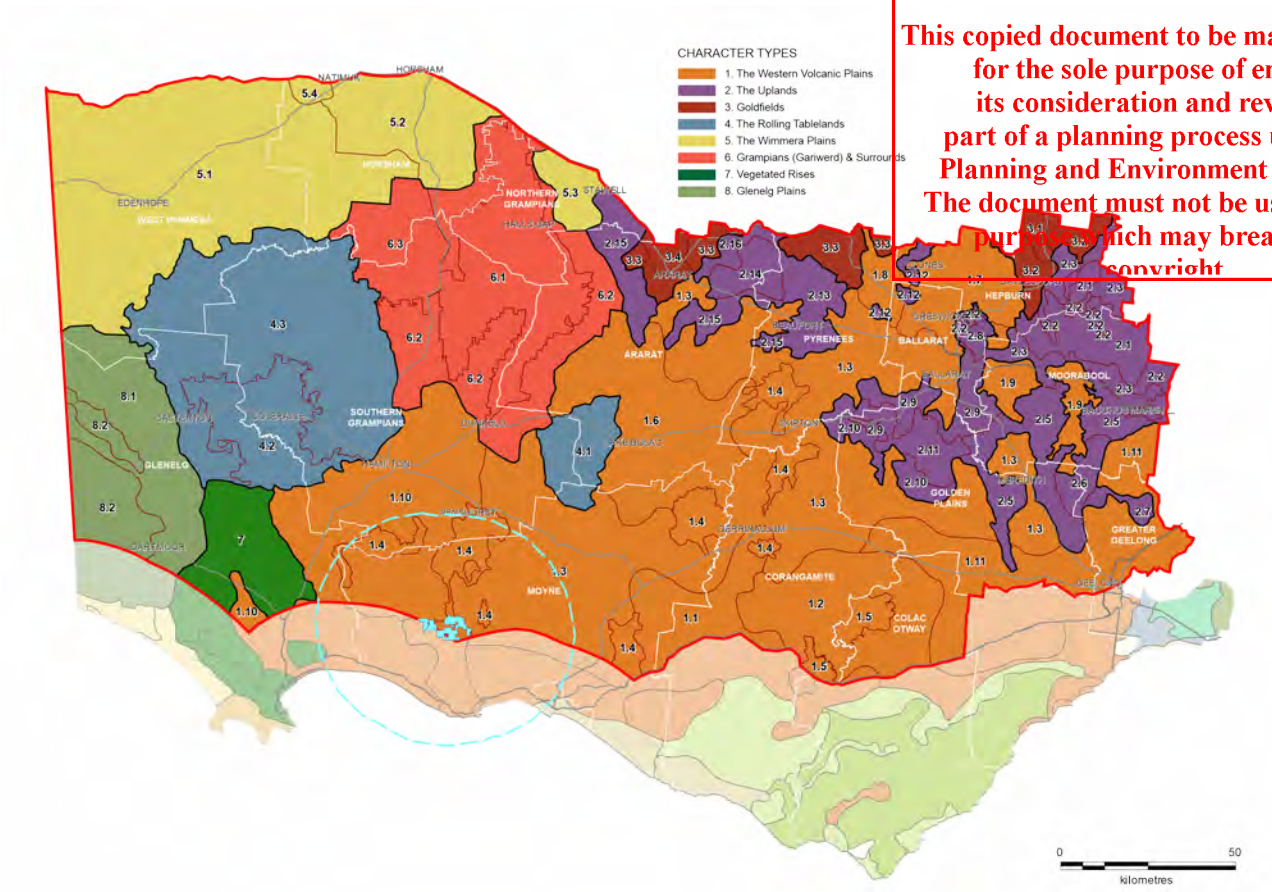


Figure 5-7 SWVLAS Landscape Character Areas. Source: SWVLAS, Planisphere (Modified to show Project location and outline of study area in blue)

The landscape character areas within the study area include the following:

Western Volcanic Plain: 1.3 Volcanic Agricultural

The SWVLAS summary of this landscape area includes the following:

The Volcanic Agricultural Character Area is a vast area within an extensive Character Type.

This landscape is dominated by flat to slightly undulating agricultural plains with open views and a lack of outstanding features. Paddocks are separated by post and wire fences *and occasional dry-stone walls. Exotic and native shelterbelts cut across the land, lining paddock edges, farmsteads, and roadsides.*

Long range views with 'big skies' terminate at partially *wooded backdrops with the Pyrenees and Grampians Ranges occasionally visible on the horizon.*

Scattered farm buildings, including old structures related to sheep farming and dairying, tend to be set back from the road with long driveways. In areas with a finer grain of subdivision *pattern, buildings are often located closer to the road. This is a sparsely treed landscape, but with some regeneration and new planting in specific locations.*

Remnant stands of vegetation are present in patches beside *the roadside, alongside creek lines or occasionally within paddocks.*

This is the landscape that so suited the first European settlers who used the cleared plains for grazing sheep.

Western Volcanic Plain: 1.4 Stony-rises and Lava Flows

The SWVLAS summary of this landscape area includes the following:

This landscape is typified by places where the volcanic history of the Western Plain is visibly written in the landscape through dramatically exposed geology. It features the basaltic lava flows that are often adjacent to dormant volcanoes across the Western Volcanic Plain, including the sculptural and ethereal Tumuli lava blisters and the caves of the Byaduk area.

The roughly textured landscape features exposed rocky outcrops and water-filled, peaty sink holes. Paddocks are strewn with rocks and boulders and mostly cleared of vegetation*. Land is generally not highly productive though livestock is often grazing within the rocky landscape. It supports growth of bracken, grasses, and low shrubs, along with rare and endangered flora which are associated with scoria in lava flows.*

The volcanic rocks that were cleared from the land were used to create the prolific dry-stone walls, and the basalt rock / bluestone was a common material sourced for many *iconic structures in Melbourne and regional towns.*

Western Volcanic Plain: 1.10 Partially Wooded Agricultural

The SWVLAS summary of this landscape area includes the following:

This Character Area sits adjacent to the Vegetated Rises Character Type and acts as an interface between the rolling wooded hills and flat, heavily cleared Western Volcanic Plain.

It features an undulating volcanic topography which is blanketed by a patchwork of cropping, cleared pastoral land and plantations. The thickly vegetated volcanic rises of Mount Napier and Mount Eccles are prominent features of this landscape.

5.6.2.2 Landscapes of state and regional significance

The SWVLAS identifies a range of landscapes across the study area that are considered significant based on a range of factors like aesthetic, historic, environmental & scientific, and social values. Identified landscapes of state and regional significance can be found in Figure 5-8. The approximate location of the Project is also shown.

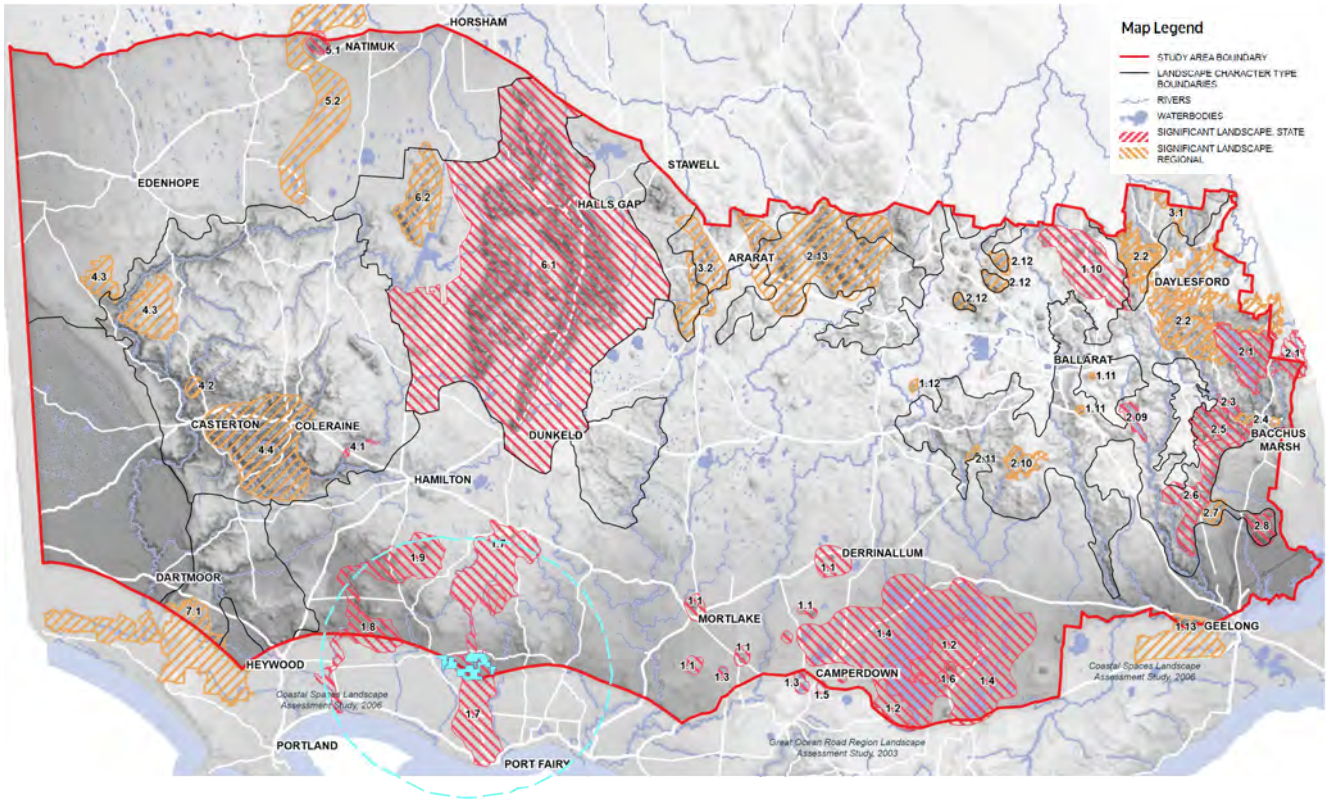


Figure 5-8 Landscapes of State and Regional Significance (Modified to show Project location with blue Project location and outline of study area)

The following landscapes identified in the SWVLAS fall within the study area of the Project.

1.7 - Mount Rouse (state significance)

Mount Rouse is an accumulation of scoria which protrudes 100m above the surrounding landscape. The eastern and southern edges of Mount Rouse have been scarred by quarrying activity, the southern edge slopes toward a deep circular crater with a small lake. The state significance of Mount Rouse is due to the fact that its lava flow is one of the most intact and visually prominent flows found within Victoria. The flow comprises large, hummocky stony-rises, stretching across the surrounding paddocks. The lava flow extends approximately 60 km to the south of Mount Rouse, ending at Port Fairy.

The SWVLAS landscape significance map for Mount Rouse, which illustrates the location of Mount Rouse and the extent of the lava flow, is shown in Figure 5-9. The approximate location of the Project is also shown.

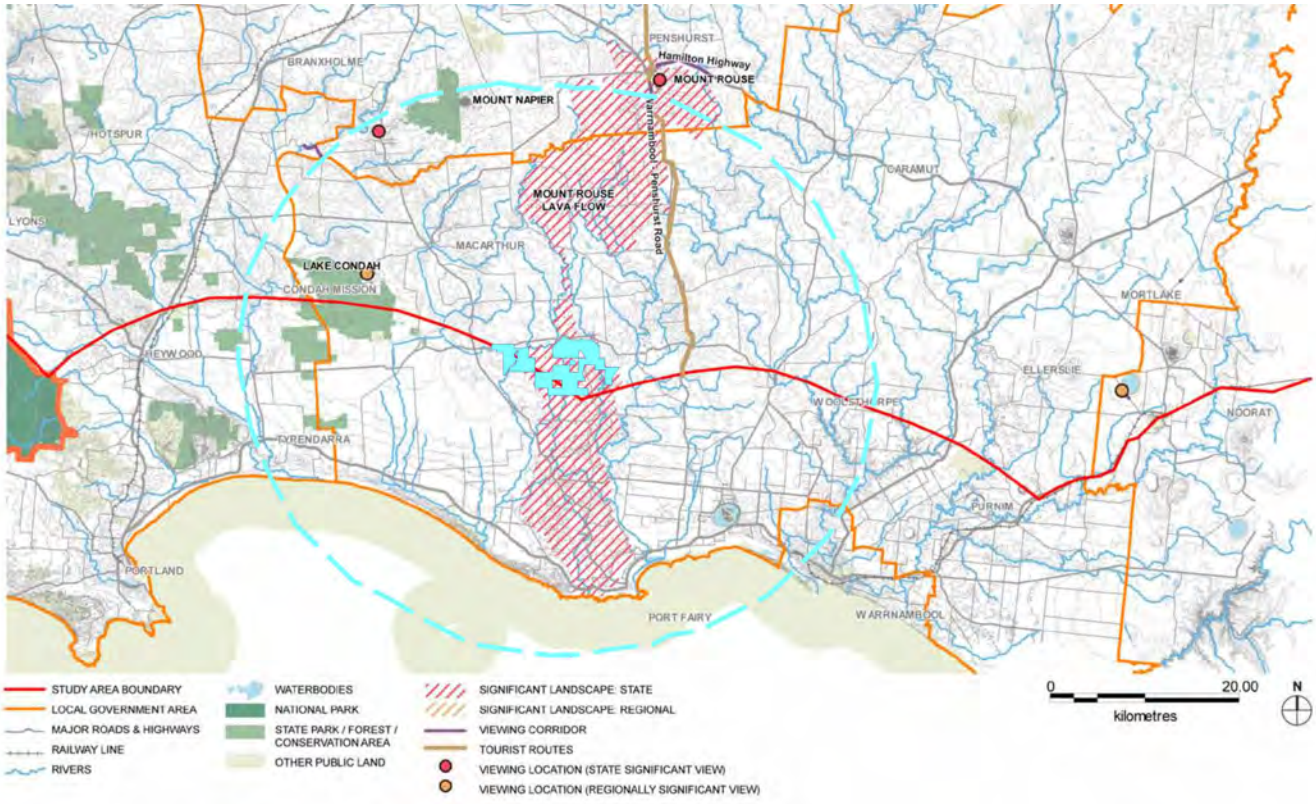


Figure 5-9 Mount Rouse: SWVLAS Significant Landscape map, source: SWVLAS (Modified to show Project location with blue Project location and outline of study area)

Budj Bim (Mount Eccles) & Tyrendarra Lava Flow (state significance)

Budj Bim and Tyrendarra Lava Flow comprise a collection of significant volcanic features including lava flows, cultural artifacts, eruption points, stony-rises, lakes, and wetlands.

Budj Bim is a dormant volcano surrounded by the Budj Bim National Park. At the crater of the volcanic structure is Lake Surprise which features native vegetation at its edges. Mining of scoria has scarred parts of the landscape and this scarring can be seen prominently when viewed from the east. The Tyrendarra lava flow originated from Budj Bim and has created lakes and wetlands such as Lake Condah, which contains networks of stone that were used by the Gunditjmara people as fish creeks, weirs, and traps.

Mount Napier & Harmans Valley Lava Flow (state significance)

This area comprises lava flow, lava caves, eruption points, and stony-rises. Mount Napier is densely vegetated, and its rise forms a contrast to the surrounding flat volcanic plain. A rugged, exposed landscape has formed at Harmans Valley where a lava flow settled into a rock texture along the valley floor.

The nearby lava caves of the Byaduk area display tubular crinkles and folds of lava and the Tumuli lava blisters have created mounds of sculptural stones.

5.6.2.3 Views of Regional and State Significance

The SWVLAS identifies many places across the study area where significant views are available, including volcanic rises and peaks within mountainous areas. Figure 5-10 is the SWVLAS map of these views of state and regional significance. The approximate location of the Project is also shown.

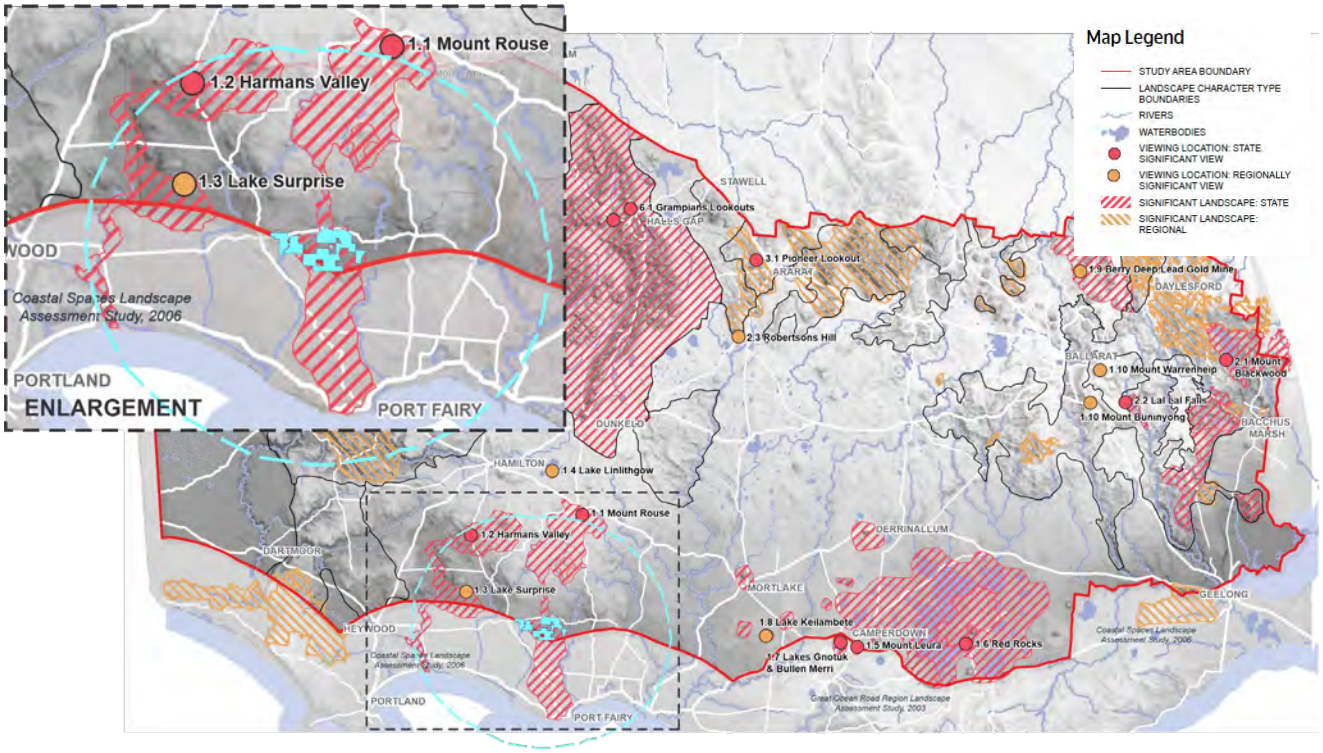


Figure 5-10 Significant landscapes and views map (Source: SWVLAS) (Modified to show Project location with blue Project location and outline of study area)

1.1 Mount Rouse (state significance)

Mount Rouse lookout provides panoramic views across the lava flows in the surrounding district. The jagged peaks of the Grampians Ranges can be seen to the north and create visual contrast with the flat landscape that surrounds. Paddocks in the foreground create patterns with dark green shelterbelts, and the volcanic rises of Mount Napier and Budj Bim (Mount Eccles) can also be seen from the summit.

1.2 Harmans Valley (state significance)

This designated viewing location overlooks the Harmans Valley Lava Flow and includes interpretive information and signage. The view overlooks the valley and features Mount Napier in the background. The foreground is predominantly cleared which allows for uninterrupted views of the lava flow. The rough, textured rock is dominant in this view and contrasts the smooth, grassy slopes of the valley walls.

1.3 Lake Surprise (regional significance)

Located on the edge of the Budj Bim (Mount Eckles) Crater rim, the Lake Surprise lookout overlooks the lake and surrounding volcanic features. This view does not extend to the landscape outside of the crater.

Where relevant, landscape features and character types identified within the SWVLAS have been considered in the definition of landscape character types and landscape sensitivity in Section 6.

Representative viewpoints from these landscapes are assessed within Section 8.1.

5.6.3 UNESCO cultural landscapes: Budj Bim

Budj Bim and Lake Condah are also recognised by UNESCO as a culturally significant landscape. The landscape is recognised due to extensive aquaculture and landscape management by the Gunditjmara Aboriginal People, which is an example of the oldest systems of its kind in the world.

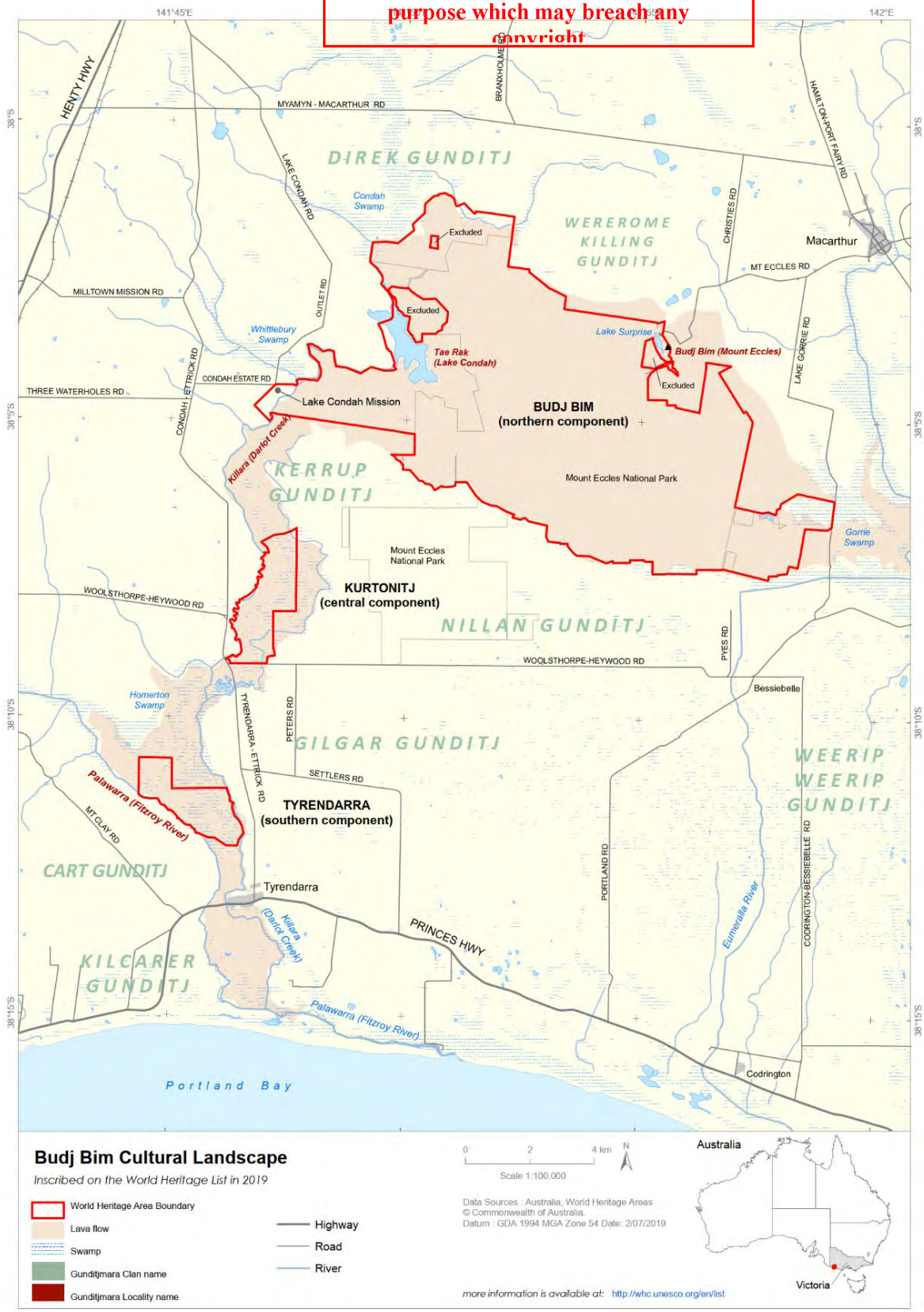


Figure 5-11 Budj Bim Cultural Landscape map: UNESCO World Heritage List

The Budj Bim northern component is located approximately 8.6 km to the west of the Project and is within the study area.

5.7 Planning implications

The PPF puts in place measures to protect natural features, scenic qualities, and prominent views and vistas across the study area. These desires are also echoed by Clause 52.32 which seeks to balance the recognition that wind turbines are large structures and to ensure that they are sited correctly paying particular attention to overlays including ESOs, and SLOs, all of which identify and protect particular environmental or qualitative features.

5.7.1 Zoning

The Project Area is almost entirely within the Farming Zone (FZ), except for areas identified and set aside for future gas-fired power stations under the Special Use Zone (SUZ5 and SUZ6). These three zones indicate the areas set aside for land uses such as agriculture and energy generation, which both may expect potential off-site amenity impacts from their land uses.

Within the broader study area, residential, township, and parks and recreation zoning indicate areas of sensitivity to off-site amenity impacts.

5.7.2 Overlays

SLOs, VPOs, and ESOs identify landscapes or landscape features sensitive to development and contain measures to protect the identified landscape values from inappropriate development. All sensitive landscape overlays exist on landscape features that are at the edge of the study area and include: Mount Rouse (SLO2), Mount Napier and the Harman Valley (SLO6), Yambuk to Port Fairy Coast (SLO4), Warrnambool to Port Fairy Coast (SLO5) and Tower Hill and Environs (SLO6) and Coastal Hinterland Landscape Area (Warrnambool – SLO1).

ESOs exist on the Project Area (ESO5 and ESO6). Both of these overlays relate to noise impacts of the proposed and approved gas-fired power stations and are not relevant to an LVIA of this Project.

Bushfire Management Overlays (BMO) will influence the planning and implementation of landscape screening in proximity to residential dwellings. The impact of this overlay will be considered within the design of landscape screening where required.

6. Existing conditions: landscape character and sensitivity

Landscape Character Units are based on areas with similar visual characteristics in terms of topography and features, such as creeks and drainage lines, soil, vegetation, and land use. All of these aspects are interrelated and influence the resultant perceived landscape character. Figure 6-1 illustrates the process of analysing these features to arrive at a landscape character unit.

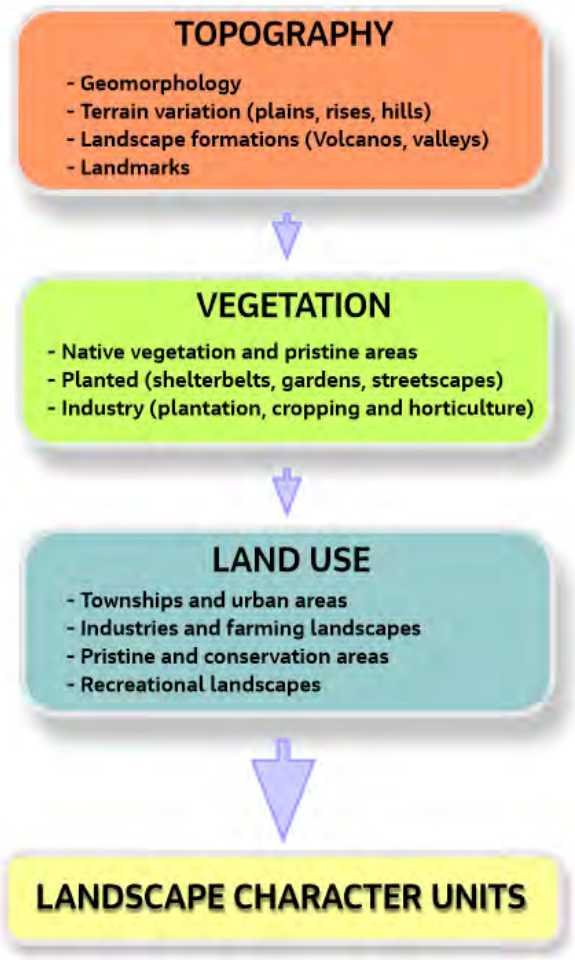


Figure 6-1 Landscape character flow chart

The following sections describe the underlying patterns of these elements to derive the landscape units within the study area.

6.1 Topography and geomorphology

Standard terminology of elevated features in Victoria is determined by the height or relative elevation of the landform. This terminology may not necessarily correlate with the name of local elevated features, such as Mount Rouse and Mount Napier. The names of these features are derived from either earlier explorers or settlers of the district. These terms are described in Table 5.

Table 5: Elevated landform classification (Source: 'Soil and Land Field Handbook' (McDonald et al, 1990, Ed 2, p36), retrieved from http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/landform_description)

Landform	Relative Elevation
Plains	0-9 m
Rises	9-30 m
Low Hills	30-90 m
Hills	90-300 m
Mountains	>300 m

Volcanic activity has created a unique range of features throughout the study area, from basalt plains, volcanic cones and craters, crater lakes, mountains, wetlands, and other features. The 'mounts' within the study area (Mount Rouse, Mount Eccles, Mount Napier, and Tower Hill) are all volcanic features. These features are prominent in the landscape, particularly when viewed across flatter, featureless landscapes. The volcanic peaks and lava flows within the study area are shown in Figure 6-2.

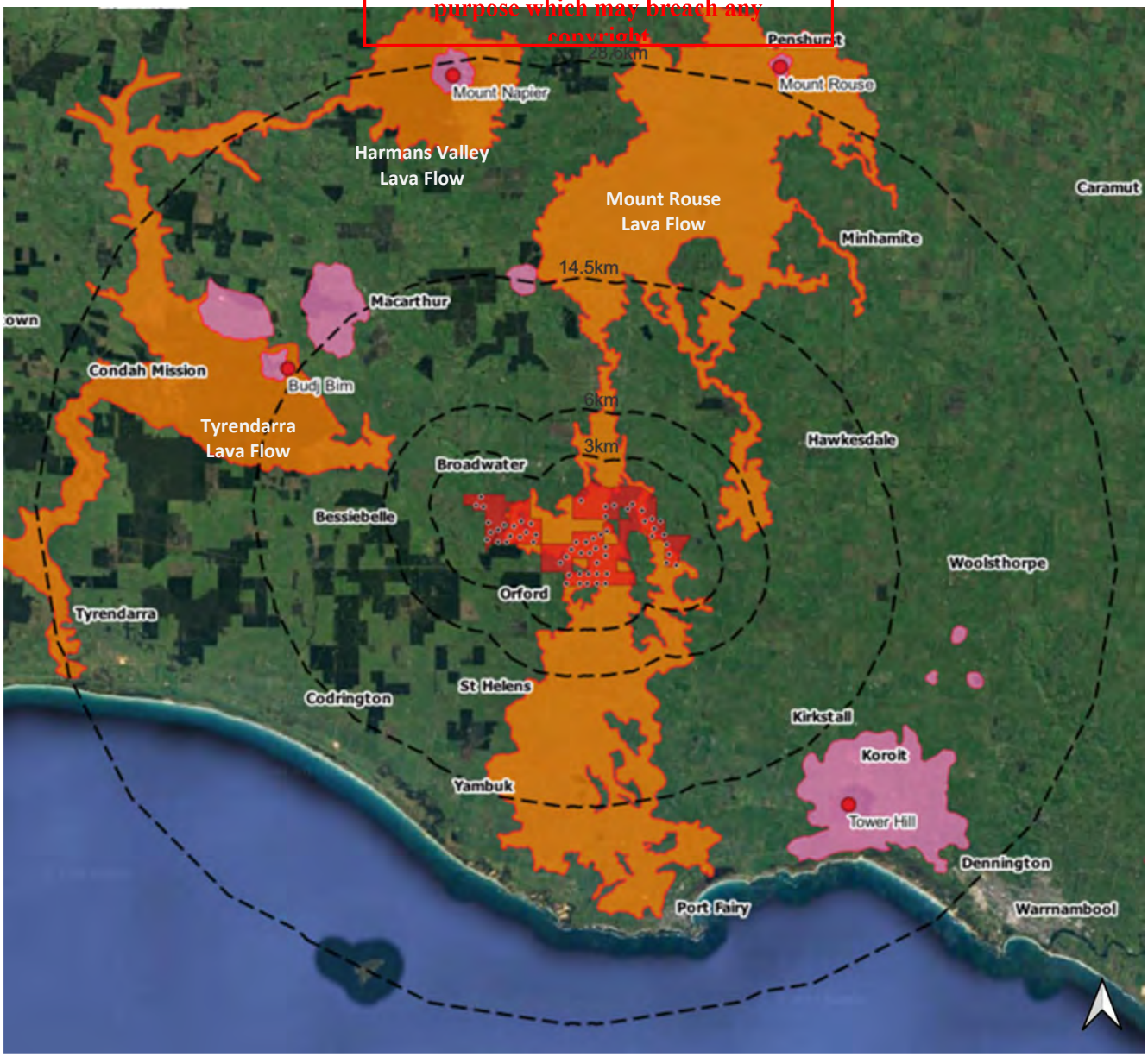


Figure 6-2 Volcanic features map

These volcanic cones also tend to include the greatest extent of native forest cover, as the surrounding flatter areas have been cleared for agriculture or plantation timber. The Budj Bim National Park and Mount Napier State Park are heavily vegetated. The volcanic cones are also a source of sought-after stone materials, such as scoria rock, which has resulted in quarrying activities at several locations, including the eastern slope of Mount Rouse.

The lava flows from the Mount Rouse eruption extend approximately 60 km from Mount Rouse to the coast near Port Fairy and pass through the Project Area. These lava flows have created areas of rises and areas of depressions along the path of the lava flow. This is evidenced by the mosaic of wetlands and irregular, mottled topography. The Mount Rouse lava flow also distinctly influences land use, existing vegetation, and pre-settlement vegetation. The lava flow areas tend to contain far fewer instances of shelterbelt plantings (windbreaks and hedgerows) and intensive agriculture. This can be observed when viewing aerial imagery of the lava flow and surrounding agricultural plains as shown in Figure 6-3. This phenomenon is consistent across the entire lava flow from Mount Rouse to Port Fairy except where dwellings within the lava flow landscape have established localised shelterbelts around dwellings.

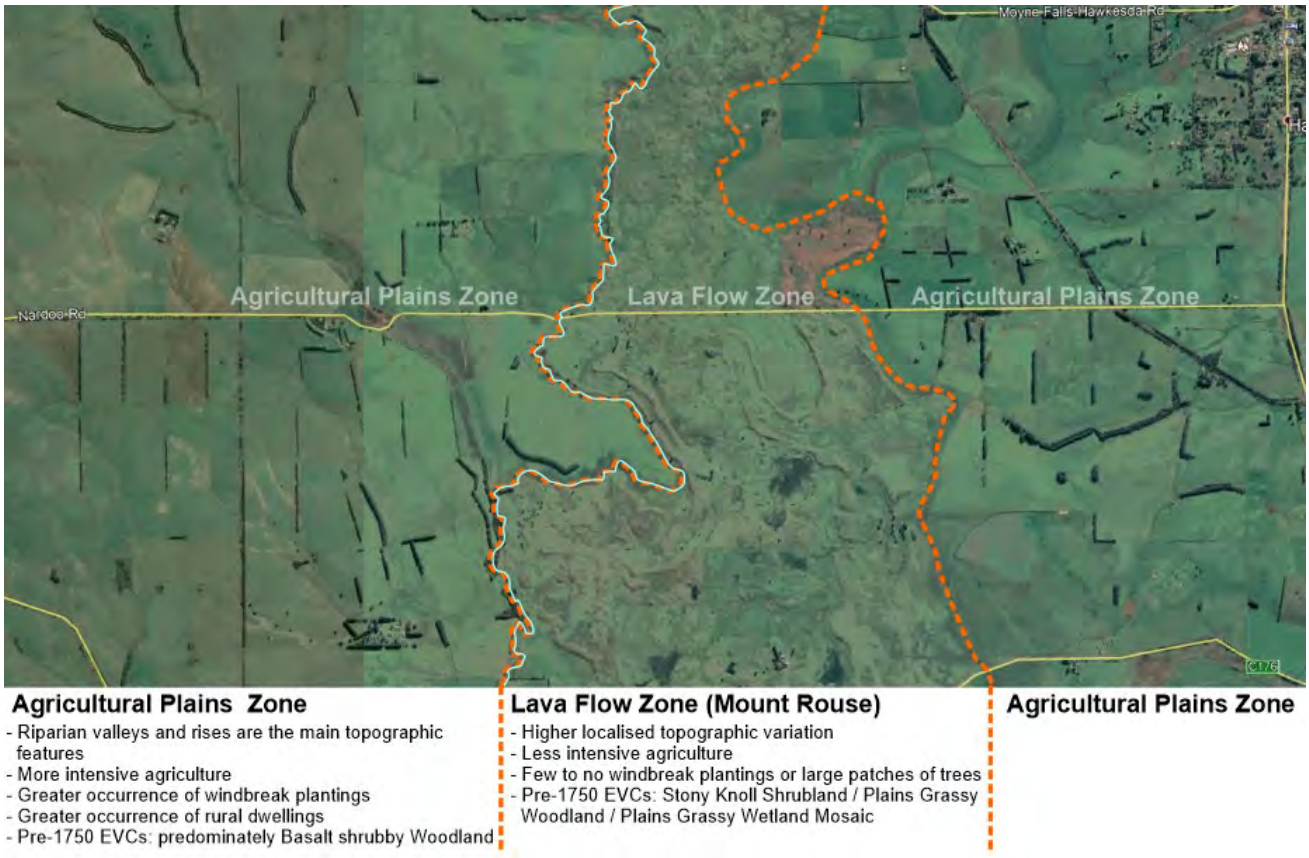


Figure 6-3 Lava flow and agricultural plains

The agricultural plains surrounding the lava flows contain many creeks and tributaries that feed into the lava flow wetland mosaic.

The Tyrendarra lava flow, shown above in Figure 6-2, which is located outside of the Project area and extends from Budj Bim has resulted in a vastly different landscape. This landscape is more forested near the eruption site and then extends into an expansive series of creek lines and swamps heading south toward Tyrendarra. Lake Condah is a notable feature of this lava flow. There is currently a game reserve at the site. The site has a long history of supporting continuous aboriginal settlement in the area and is recognised as the oldest site of land management and aquaculture in the world by the Budj Bim UNESCO Heritage Area, shown in Figure 5-11.

The Harmans Valley lava flow (also located outside the Project area) extends from Mount Napier, meeting the Tyrendarra lava flow further south. The Harmans Valley is a point of interest in the landscape and includes interpretive signage for tourism and education, shown in Figure 6-4.

Figure 6-4 Harmans Valley

The volcanic activity within the study area has had a substantial influence on landscape features, historic and existing land use, vegetation, and creek lines.

Other major topographic types in the study area include:

- volcanic (basalt) plains
- karst (limestone) plains
- terraces
- floodplains and swamps
- coastal barriers.

The geomorphology mapping of the study area i`s shown in Figure 6-5.

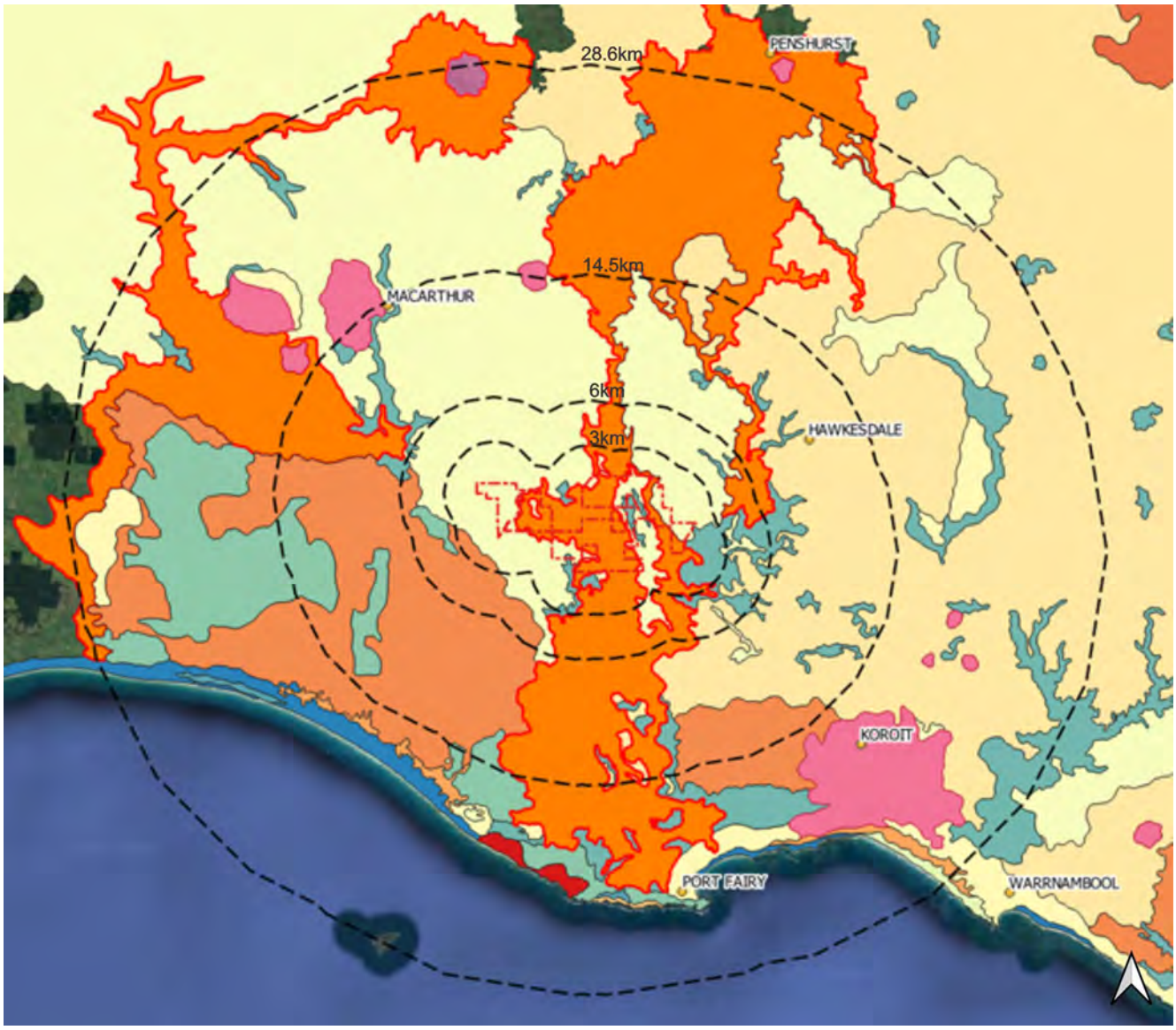


Figure 6-5 Geomorphology of the study area

Waterways in the study area include names rivers and creeks with minor tributaries. The Moyne River passes through the easternmost extent of the Project area. Surrounding these waterways in some areas, particularly with the stony-rises areas, are areas subject to inundation. These areas contain ephemeral swamps that exist in varied wet and dry phases depending on precipitation. Hydrological features of the study area are shown in Figure 6-6.

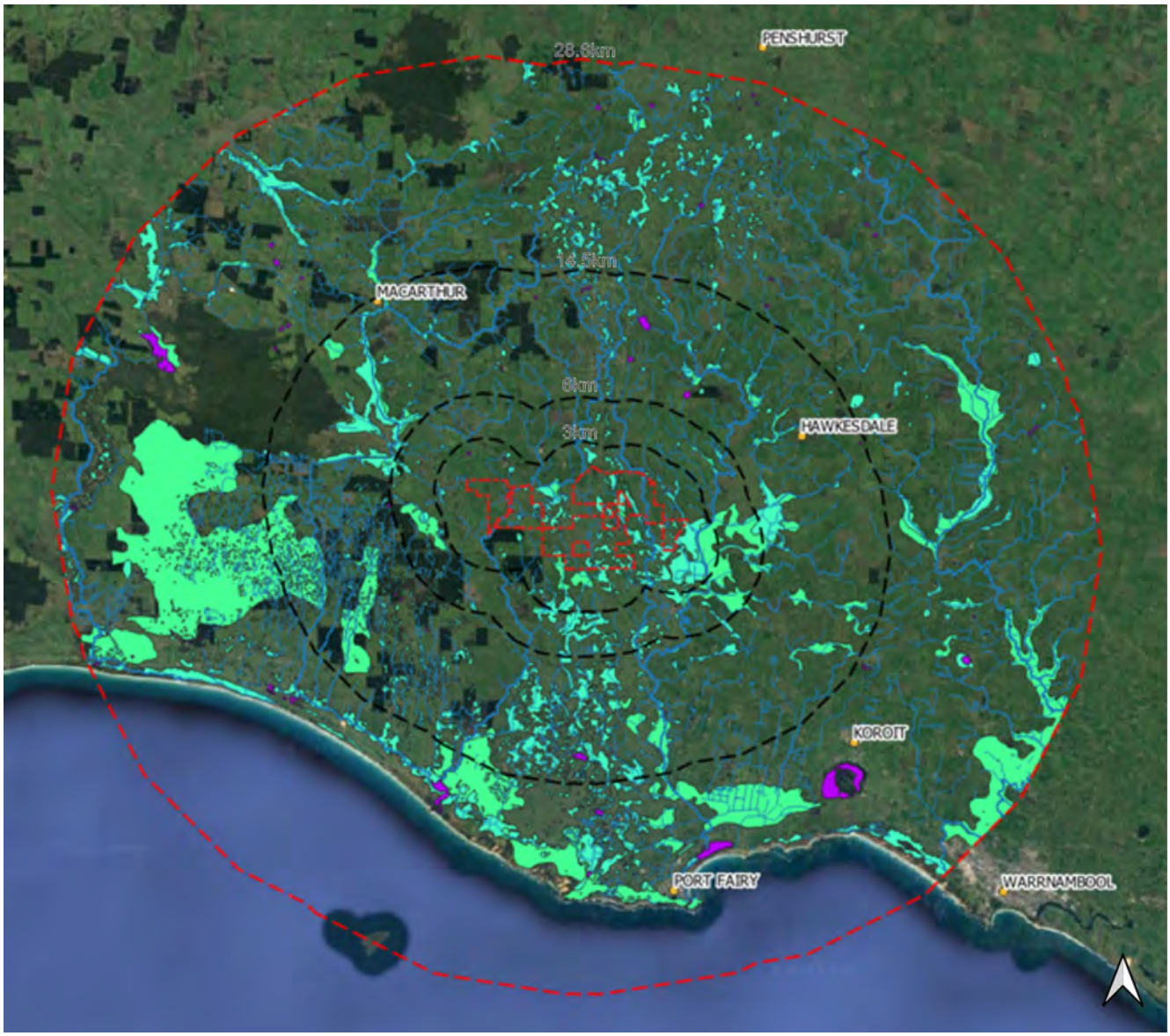


Figure 6-6 Hydrological features

6.2 Vegetation

6.2.1 Pre 1750 EVCs

The Pre-1750 EVC data seeks to represent the landscape and floral biodiversity extent before European settlement, which altered the landscape through clearing of this vegetation. This EVC mapping is shown in Figure 6-7.

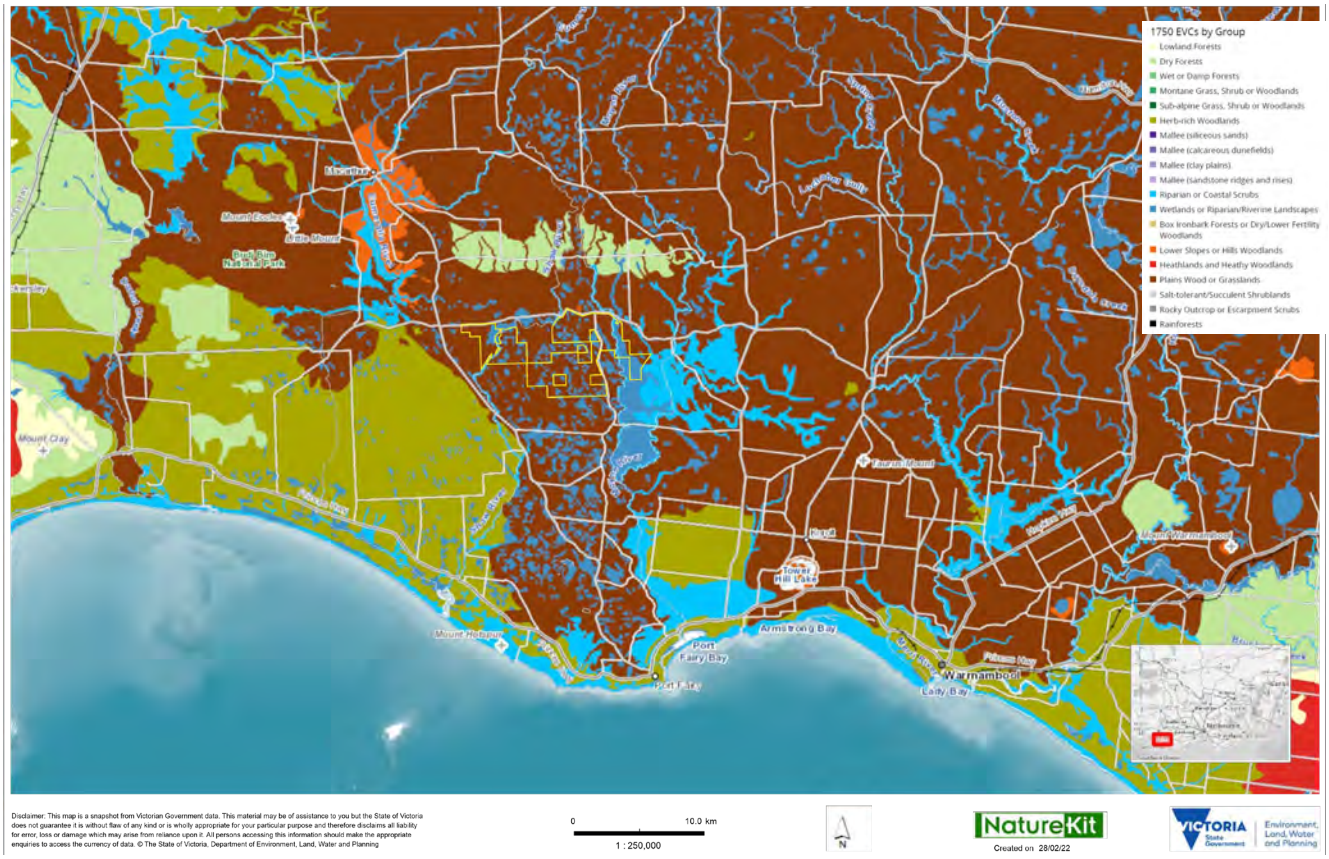


Figure 6-7 Pre-1750 EVCs within the study area

Pre-1750 EVC mapping depicts the Project area as part of an area of wetland mosaics, including Cockatoo Swamp, amongst swampy woodlands, grasslands, and herb lands. The broader study area would have once comprised of vast areas of basalt plains grasslands and woodlands to the north, east, and south. Foothills woodlands existed to the north around the existing Kangertong Road.

Rivers, creeks and low-lying areas, and the underlying geology create the landscape that supports the extent of aquatic and semi-aquatic flora.

6.2.2 Existing vegetation character and land use

The 2005 EVC mapping provides insight into the extent of landscape change and clearing of indigenous vegetation since European settlement and is shown in Figure 6-8.

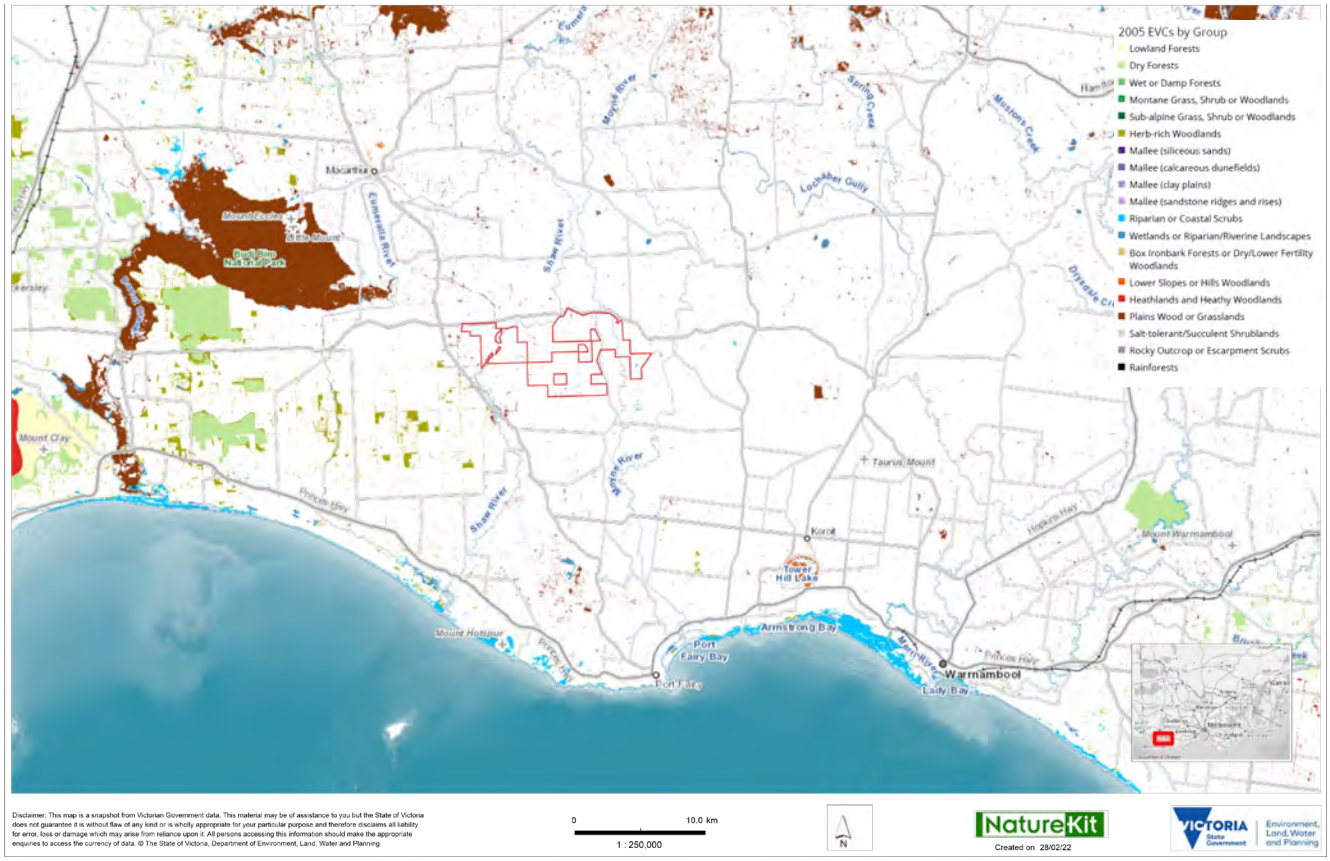


Figure 6-8 2005 EVCs within the study area

The 2005 EVC mapping indicates that large areas of remnant vegetation have been lost following the colonisation of these areas. Large patches of remnant vegetation exist in the reserves across the study area, such as the Budj Bim National Park, nearby state forests, and Woolsthorpe Nature Conservation Reserve.

Naturekit Landcover data (DELWP) provides insight into the current status of land use across the study area.

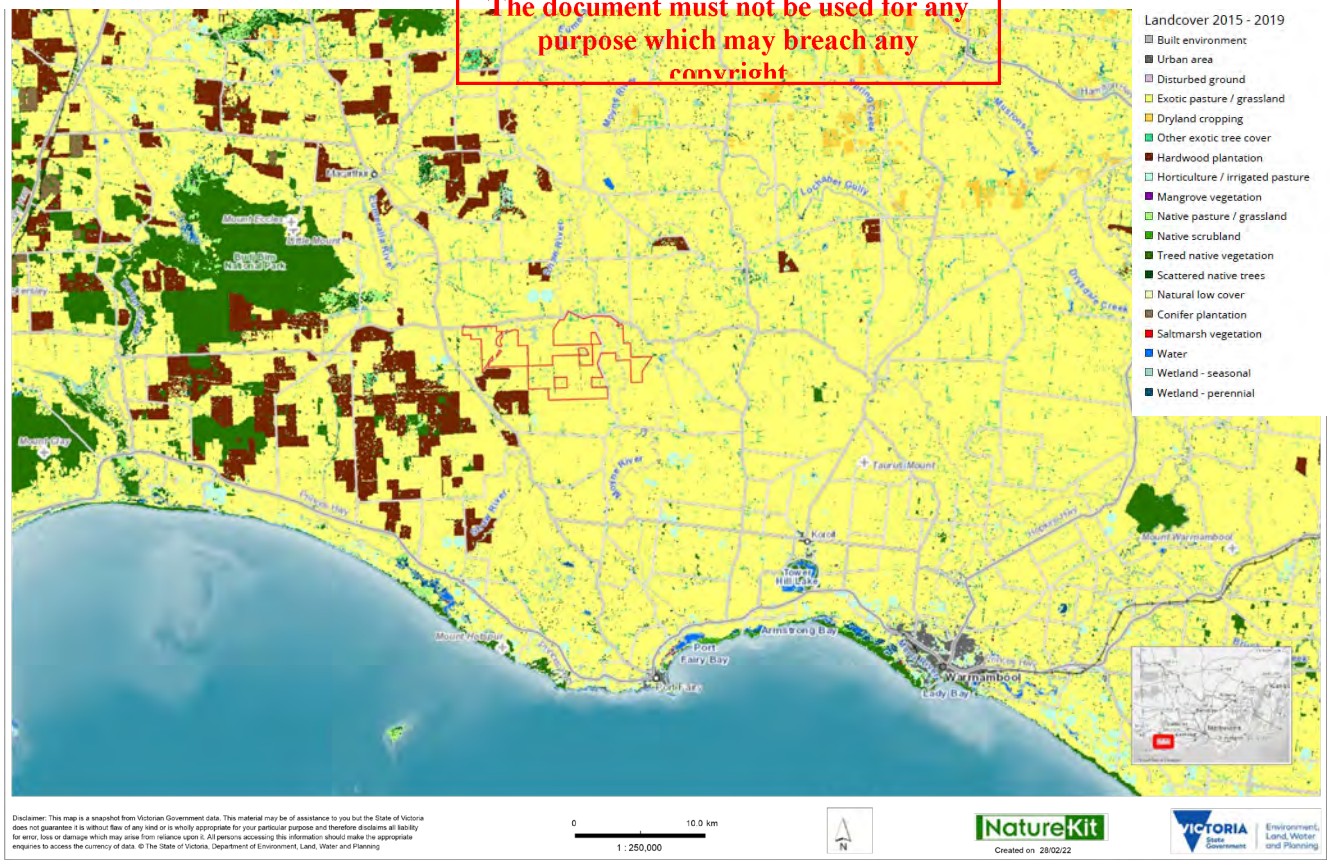


Figure 6-9 Landcover mapping 2015-2019 (DELWP)

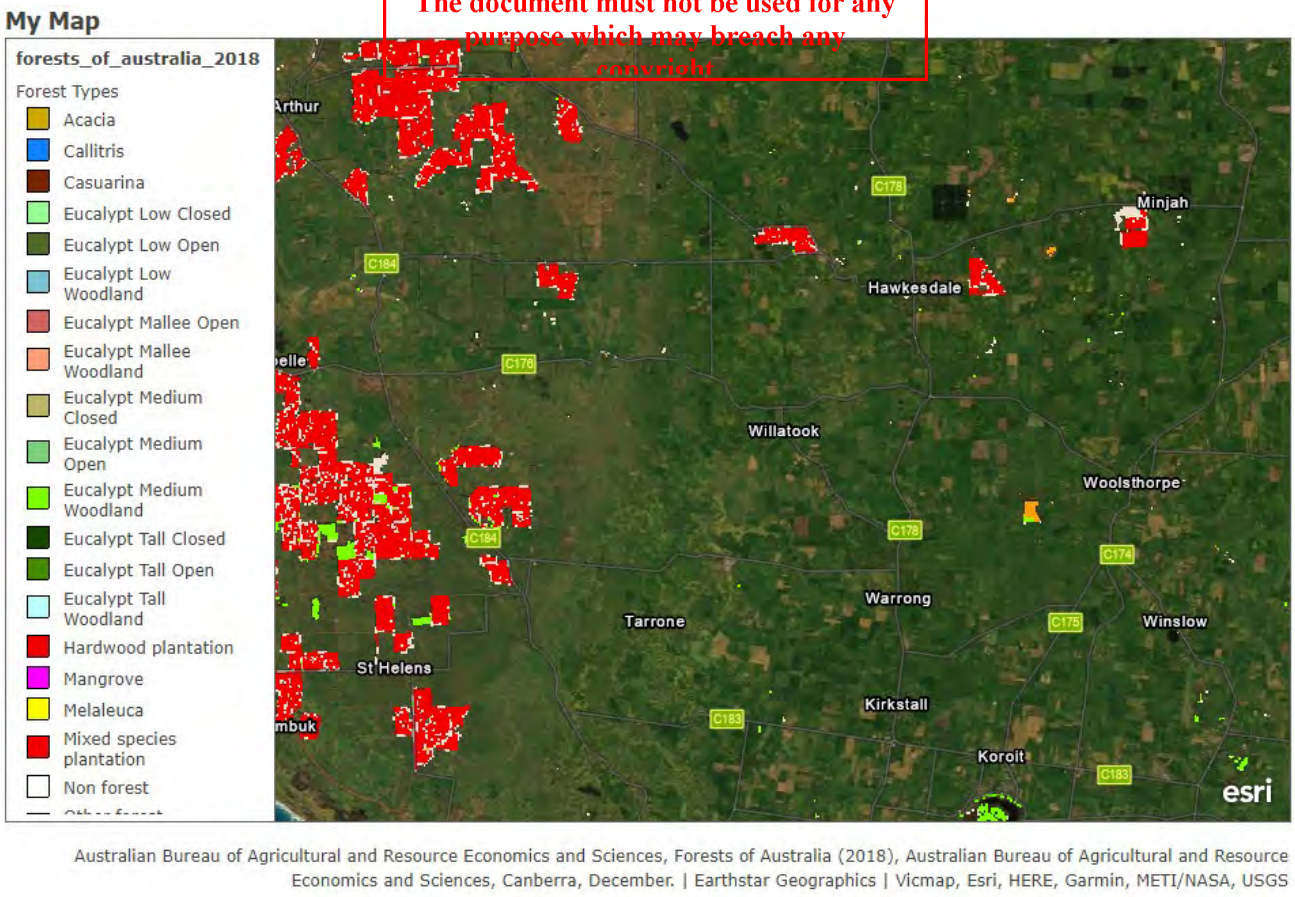
Landcover mapping indicates that the vast majority of land within the study area is occupied by exotic pastures and grasses for grazing. In these areas, trees have been cleared from the woodlands, leaving scattered trees in paddocks. Planted trees of varying species are present within shelterbelts along property boundaries.

Shelterbelt species are primarily exotic species, such as conifers. Roadside vegetation includes a mix of exotic and native species.

Figure 6-10 Example shelterbelt vegetation

Larger patches of native vegetation within the study area are confined to the areas of National Park and State Forests to the west and northwest of the Project area, including at Budj Bim National Park, Mount Napier State Park.

The mapping of forest and plantation types within the study area is shown in Figure 6-11.



Australian Bureau of Agricultural and Resource Economics and Sciences, Forests of Australia (2018), Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, December. | Earthstar Geographics | Vicmap, Esri, HERE, Garmin, METI/NASA, USGS

Figure 6-11 Forest Type Data (Source: Australian Bureau of Agricultural and Resource Economics and Sciences, Forests of Australia (2018)

Many patches of mixed-species plantations also exist, predominately to the west of the Project area. A typical plantation landscape is shown in Figure 6-12.

Figure 6-12 Plantation Forest examples, located along Hamilton – Port Fairy Road

As seen above, plantation vegetation is ordered and forms dense stands of trees that screen views in the landscapes. While many of the plantations in the area consist of native (blue gum) species, the ordered plantings and regular modification of these areas by way of timber harvesting separate the perceived character of these areas from more natural or pristine appearing forests.

6.2.3 Vegetation within the plains farmland

The plains farmland is the most extensive landscape type within the study area. This landscape has been cleared of native vegetation for grazing or cropping agriculture. Native and exotic trees are scattered throughout this landscape. Shelterbelts of exotic species such as cypress or conifers are the most prevalent vegetation type in this landscape. An example of this vegetation is shown in Figure 6-13.

Figure 6-13 Plains Farmland: shelterbelt example, located along Penshurst – Warrnambool Road

The shelterbelts provide sections of visual screening throughout the landscape. Their ability to screen elevated features such as wind turbines depends on the:

- height, density, and topography of the planting
- height and distance of the elevated features
- distance between the viewer and the planting.

As a viewer moves closer to a shelterbelt, it would screen more and more of the elevated features. As the viewer moves away from the shelterbelt, elevated features would become more visible above the planting. As such, when road users travel throughout the plains farmland landscape, they would experience varying degrees of landscape screening throughout the journey.

Roadside vegetation is also present within this landscape. This vegetation tends to consist of native species. Roadside vegetation tends to have a thinner density than shelterbelt plantings. As such, roadside vegetation tends to filter views more so than screen views within the landscape. Figure 6-14 shows an example of roadside vegetation within the study area.

Figure 6-14 Roadside vegetation example, located along Woolsthorpe-Heywood Road

6.2.4 Vegetation at volcanic structures

Volcanoes or other areas of steep or rocky topography tend to be excluded from agricultural areas, resulting in their vegetation remaining relatively uncleared, except for instances of scoria quarrying.

Vegetation at Budj Bim and Mount Napier State Park is relatively intact and is considered natural or pristine in appearance, whereas vegetation surrounding Mount Rouse and Tower Hill has been historically cleared with partial revegetation.

A view of intact vegetation at Mount Napier State Park is shown in Figure 6-15.

Figure 6-15 Mount Napier State Park vegetation

Vegetation was replanted at Tower Hill following historical clearing. Revegetation works were in part influenced by the painting by Eugene Von Guerard in 1855, shown in Figure 6-16.

Figure 6-16 Tower Hill, Eugene Von Guerard 1885. Source: Eugene Von Guerard: Nature Revealed, National Gallery of Victoria, accessed: https://www.ngv.vic.gov.au/essay/eugene-von-guerard-nature-revealed/3/

The existing view at Tower Hill is shown in Figure 6-17. This view is not the same location as the above painting but represents a similar view across the landscape.

Figure 6-17 Tower Hill existing conditions

6.2.5 Vegetation within the lava flows landscape

As discussed in Section 6.1 above, lava flows have influenced vegetation classes and distribution. These areas contain more instances of swamp and wetland vegetation compared to the surrounding plains which contain more woodland and grassland landscapes. Lava flow areas also contain far fewer instances of shelterbelts or forest patches, except around residential dwellings, which limits the potential for existing visual screening within this landscape type.

The Project area is located within a lava flow landscape and contains swamps in localised depressions, grassland and shrubland areas on rises, and scattered trees rather than ordered shelterbelt plantings.

These areas are also now occupied by agricultural land uses, which have modified the landscape from its natural condition. Figure 6-18 shows and example of exotic pastures in the lava flow landscapes.

Figure 6-18 Exotic pastures and stony-rises within lava flows in agricultural landscapes

Figure 6-19 shows an example of a low-lying ephemeral wetland in the same landscape type.

Figure 6-19 Localised ephemeral wetland within lava flows in agricultural landscapes

6.3 Land use

Land Cover data shown in Figure 6-9 demonstrates the extent of agricultural land within the study area. The primary use of these areas is grazing and cropping. The majority of this area is within the Farming Zone. The preference of protections afforded to land withing the Farming Zone is for the ongoing use and operation of these areas for farming and protecting these areas from encroachment brought about by incompatible or sensitive uses. Other land uses include timber plantations, townships, and localities.

Figure 6-20 shows townships and localities within the study area.

Figure 6-20 Townships

Townships and localities within the study area include:

- Hawkesdale
- Kirkstall
- Woolsthorpe
- Warrnambool (outskirts)
- Port Fairy
- Koroit
- Yambuk
- Codrington
- Winslow
- Orford
- Macarthur
- Bessibelle

6.4 Intangible cultural heritage

Intangible cultural heritage relates to particular valued cultural elements that are not particularly physical but may have linkages to places, landmarks, landscape features, or broader landscapes. Intangible cultural heritage includes:

- ceremony
- creation stories
- skills involved in the creation of cultural items
- knowledge and skills associated with medicinal plant use
- language
- dance
- song
- a great variety of other cultural expressions and cultural knowledge systems.

The study area encompasses areas recognised as Gunditjmara Country and Djab Wurrung Country.

Figure 6-21 Gunditjmara Country Map, (Source: https://www.budjbim.com.au/about-us/, accessed 26.02.2021)

Intangible heritage differs from European cultural heritage or tangible places. Intangible cultural heritage includes oral histories and narration or areas that are considered to be sacred. In many instances, it is culturally inappropriate to identify and record such places in the format required by an LVIA.

For this reason, impacts to non-tangible cultural heritage will be addressed in the Aboriginal Cultural Heritage Impact Assessment.

6.5 Landscape units

The following landscape units have been derived following the study of landscape features, character, and land use in the study area:

- Landscape Character Unit 1 – Urban Areas and Townships
- Landscape Character Unit 2 – Rural Residential
- Landscape Character Unit 3 – Plains Farmland
- Landscape Character Unit 4 – Undulating Farmland
- Landscape Character Unit 5a – Native Forests
- Landscape Character Unit 5b – Plantation Forests
- Landscape Character Unit 6a – Lava Flows: Farmland, swamps, and wetlands, stony-rises
- Landscape Character Unit 6b – Lava Flows: Valleys and Rivers
- Landscape Character Unit 7– Lakes and Creek lines
- Landscape Character Unit 8 – Volcanic Cones and Craters
- Landscape Character Unit 9 – Coastal Landscapes
- Landscape Character Unit 10a – Rural Wind Farm (inland)
- Landscape Character Unit 10a – Rural Wind Farm (coastal)

Landscape units such as farming areas, national parks and state forests, or wind farms in farming areas overlap. This may be through transition of landforms from flat to undulating areas, vegetation from state forest to national parks. These areas cannot be readily mapped. Landscapes with clear or defined boundaries include areas within the township zone or in this area landscapes that are underpinned by volcanic lava flows. The characteristics of each landscape character unit are described below.

6.5.1 Landscape Character Unit 1 – Urban Areas and Townships

Townships are characterised by a cluster of residential dwellings around the main street with shops. Most townships have parks and reserves as well as community-orientated buildings.

Vegetation within rural communities and townships is typically located within road reserves and residential gardens.

Warrnambool (outskirts) and Port Fairy are the largest urban centres within the study area and are both located near the edge of the study area. These towns have rich settlement heritage, which is reflected in buildings and streetscapes that particularly feature local stone materials.

Figure 6-22 shows the view looking along Commercial Road from the western edge of Koroit.

Figure 6-22 Koroit Township

Figure 6-23 shows the view looking south east along High Street from the centre of Macarthur.

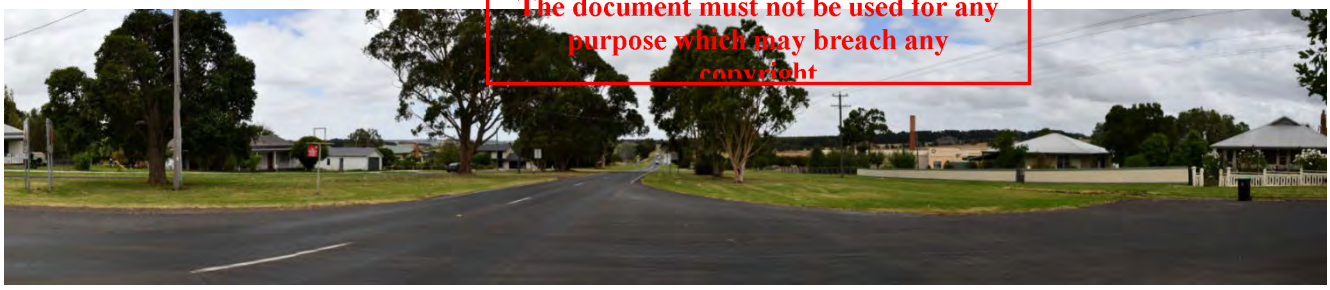


Figure 6-23 Macarthur Township

This view is from an elevated location towards the southern edge of the town.

Figure 6-24 shows the view looking north along Sackville Street through the centre of Port Fairy.

Figure 6-24 Port Fairy Township

Although this view looks away from the Project, it demonstrates the generally flat topography of the town, and screening influence on views through built form, vegetation and other urban elements.

Figure 6-25 shows a view looking over the township of Penhurst looking north west from the Mount Rouse lookout.

Figure 6-25 Penshurst Township, viewed from Mount Rouse lookout

The Project is located to the south west and in the opposite direction.

6.5.2 Landscape Character Unit 2 – Rural Residential

Landscape Character Unit 2 – Rural Residential includes both residential clusters and isolated residential dwellings associated with agricultural or rural areas. Residences in these areas are potentially afforded views and vistas across the landscape, including modified agricultural land uses that may be valued by residents.

Conversely, landscapes in these areas are usually highly modified by way of land clearing and agricultural cycles.

Figure 6-26 Rural residential example

6.5.3 Landscape Character Unit 3 – Plains Farmland

Plains Farmland is areas used primarily for agricultural purposes. There are many instances of constructed elements within this landscape type, including the road network, water windmills, transmission lines, and farm buildings and fences. Approved and operating wind farms are an existing feature in this landscape type.

This landscape differs from the agricultural areas within lava flows in that the terrain is flatter and more regular, generally contains fewer wetlands and swamps, and contains greater instances of shelterbelt plantings.

Figure 6-27 Plains Farmland example

6.5.4 Landscape Character Unit 4 – Undulating Farmland

Undulating Farmland is highly modified, by way of clearing of native vegetation. The intersection of rolling hills and valleys provides for a diversity of framing of views that are either closed and confined or reveal longer views across the landscape to the features in the distance. Sites of significant geological formations often provide points of reference or interest within the landscape.

Stony rises are scattered within the study area, and a remnant feature of historic volcanic activity. The resulting stone resources in the area allowed for the construction of drystone walls by settlers in the late 1800s, as well as the heritage buildings and streetscapes within towns such as Port Fairy.

Figure 6-28 Undulating farmland example

6.5.5 Landscape Character Unit 5a – Native Forests

National Parks, State Parks, and native (natural) forests comprise the few locations within the study area that contain expansive areas of remnant native vegetation. These areas are often forested and associated with geological features such as volcanic cones or other landscapes unsuitable to be cleared for agriculture. This landscape is attractive and valued as it contains areas that appear pristine. These areas often have associated tourism or amenity uses, such as lookouts, picnic areas, walking trails, and campgrounds. Elevated locations, such as volcanic cones, provide for expansive vistas across the landscape.

Figure 6-29 Mount Napier State Park vegetation

Figure 6-30 Budj Bim vegetation

6.5.6 Landscape Character Unit 5b – Plantation Forests

Plantation forests within the study area are typically native hardwood, eucalypt species such as blue gums. These plantations have an ordered, monocultural appearance, and do not represent natural or wild appearing forests. Nonetheless, these landscapes may be valued for their appearance in the otherwise cleared landscape. These plantation forests often undergo modification by way of timber harvesting.

Figure 6-31 Plantation Forest example

6.5.7 Landscape Character Unit 6a – Lava Flows: Farmland, Swamps and Wetlands, Stony-Rises

Lava flows have resulted in extensive mosaics of ephemeral wetlands and swamps across the study area. Major lava flows exist between Mount Rouse to Port Fairy, and Mount Eccles to Tyrendarra.

Ephemeral wetlands exist in various wetting phases depending on rainfall, flooding events, and regulation of catchments, creek lines, and irrigation. These areas are valued for their biodiversity and geological significance but are not visually prominent features within the landscape.

Figure 6-32 shows an example of swamps and wetlands, and stony-rises in the Lava flows: Farmland landscapes.

Figure 6-32 Lava flows: Farmland, swamps and wetlands, and stony-rises

The Mount Napier lava flow extends to the west and has resulted in the formation known as the Harmans Valley. This location is unique regionally and provides for expansive vistas across the landscape. Figure 6-35 shows views across the valley to farmland, timber plantations, and Mount Napier in the background.

Figure 6-35 shows the view looking east along the Harman Valley volcanic lava flows.

Figure 6-33 Harman Valley

6.5.8 Landscape Character Unit 7 – Lakes and Creek Lines

There are several creek lines, rivers, and creeks across the study area. These creeks and rivers are relatively narrow except in times of flood. Some sections of creeks and rivers include a narrow band of surrounding riparian vegetation, but many creek lines and rivers within farmland are devoid of trees.

Lakes are uncommon within the study area and include Lake Cartcarrong at Winslow, and the crater lakes at Tower Hill and Mount Eccles/Budj Bim (Lake Surprise), and Lake Condah.

Figure 6-36 shows a view from Cairn Lookout looking north west over Tower Hill.

Figure 6-34 Tower Hill crater lake from Cairn Lookout

Figure 6-37 shows a view looking northwest over lake Cartcarrong near the locality of Winslow to the south east of the Project.

Figure 6-35 Lake Cartcarrong

Figure 6-38 shows a typical example of a managed waterway passing through the low-lying agricultural areas within the study area.

Figure 6-36 Waterway in an agricultural setting

Permanent waterbodies are valued equally for their recreational and environmental values by locals and visitors to the region.

6.5.9 Landscape Character Unit 8 - Volcanic Cones and Craters, Natural Forests

Several elevated volcanic landforms exist in the study area, including Budj Bim, Mount Napier, Tower Hill, and Mount Rouse. These features are prominent in the otherwise relatively flat plains landscape, resulting in these features appearing as landmarks and focal points in the landscapes. These areas also may include recreational areas and attractions such as elevated lookouts, walking trails, picnic areas, and tourist centres (Tower Hill).

Figure 6-39 shows a view looking south to west from the public lookout at Mount Rouse to the north of the Project.

Figure 6-37 View from Mount Rouse Lookout

Figure 6-40 shows a view looking north to east from the eastern edge of the crater within the Budj Bim National Park.

Figure 6-38 View from Budj Bim Peak

The volcanic cones are notable features in views across the broad plains and are visible over many kilometres. These features are unique characteristics of this region. The cones, where accessible, also host vantage points taking in views of the coastal landforms and open waters of Bass Straight towards the south and clear open plains in areas towards the west and north. The elevated nature of these features is a celebrated feature of the region featuring in historical painting and sketches from recognised landscape artists such as Eugene Von Guerard and lookouts and recreation areas in their current context.

6.5.10 Landscape Character Unit 9 – Coastal Landscapes

The landscape is found near the edge of the study area to the south, along Victoria's south coast. This landscape is the terminal point for the overland lava flows from Budj Bim and Mount Rouse. Cliffs overlooking the coastline offer expansive views over the Southern Ocean.

Wind farms have been developed within this landscape and are operating at Codrington and Yambuk.

Figure 6-39 Coastal Landscapes

6.5.11 Landscape Character Unit 10a – Rural Wind Farm Landscape (Inland)

Landscape Character Unit 10a recognises the presence of wind farms or other energy infrastructure in the landscape. In these areas, the underlying features defining the landscape character in turbines may be located will not alter, such as topography, vegetation, planning provisions and land-use. Further, the sensitivity of these areas is also not materially altered (reduced). As such, the underlying character will remain, albeit modified through the inclusion of such features.

Figure 6-42 shows turbines in the existing Macarthur Wind Farm to the north of the Project.

Figure 6-40 Rural Wind Farm Landscape (Inland)

Vertical features (such as wind turbines or transmission towers) may be visible over considerable distances, therefore the Rural Wind Farm landscape unit cannot be directly or mapped to areas that host turbines, rather this landscape character unit assists in the discussion of existing and approved turbines from viewing locations.

6.5.12 Landscape Character Unit 10b – Rural Wind Farm Landscape (Coastal)

Similar to inland rural wind farms, rural coastal landscapes within the study area at Codrington and Yambuk contain operating wind turbines that are prominent features within the landscape. The turbines are located on the coastal hinterland and dunes that is otherwise occupied by agricultural uses such as grazing.

Figure 6-41 Rural Wind Farm Landscape (Coastal)

6.6 Landscape character mapping

Several of the landscape character units and features within them may be visible for many kilometres and will often be noticeable beyond the land on which they are located. Examples where this may occur include volcanic cones, areas of open water, or wind turbines. As such, mapping of character areas, particularly within a study area extending to 28 km from the turbines is not able to be accurately plotted. The boundaries of such areas can be considered at a high-level through the underlying land-use zones in the relevant local government areas.

Figure 6-44 maps high level mapping of landscape character areas identified in the preceding section.

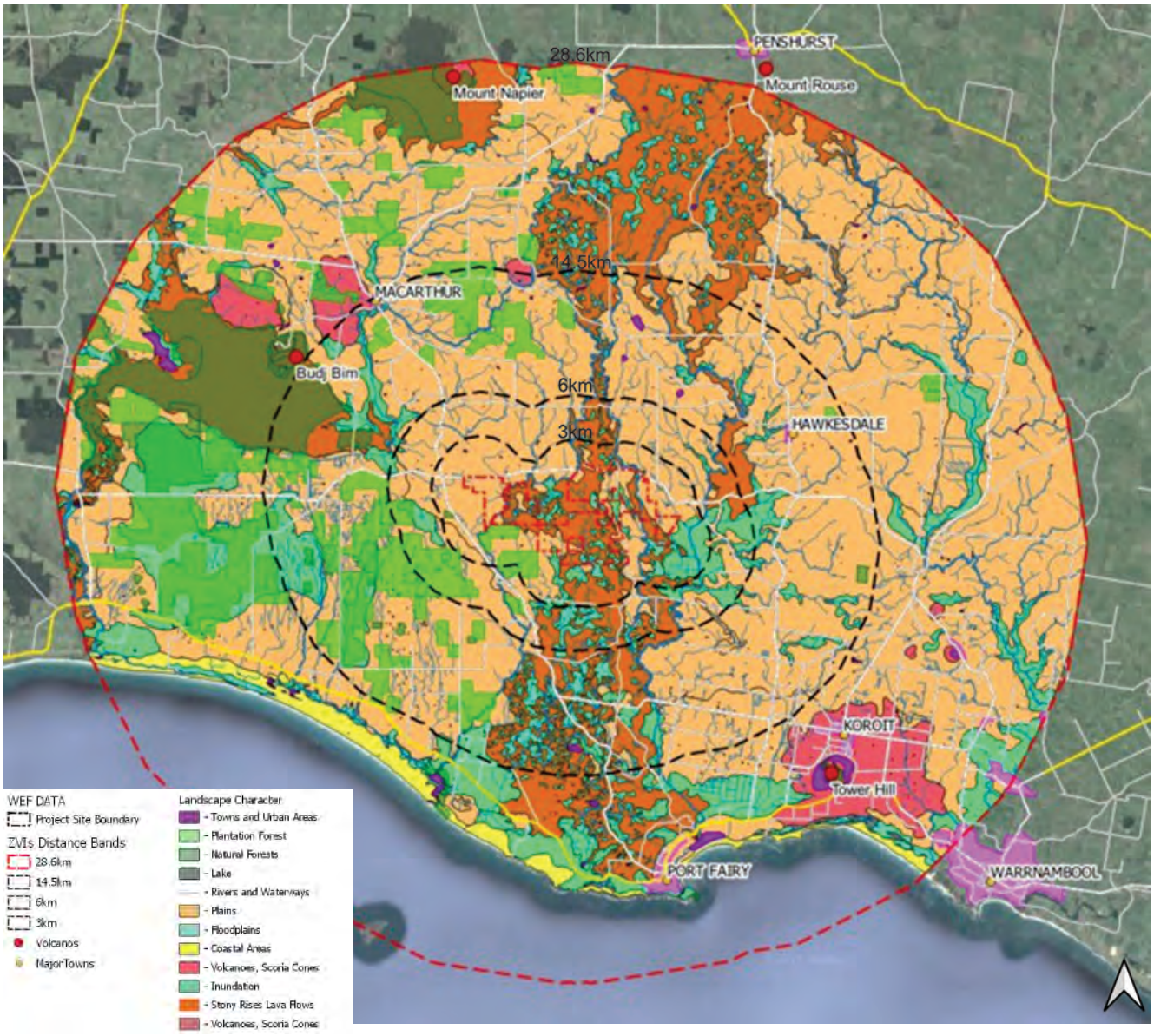


Figure 6-42 Landscape character mapping

Where multiple landscape character units overlap in the landscape, they will be identified and discussed in the viewpoint assessment chapters.

6.7 Landscape sensitivity

Landscape sensitivity is in part a measure of the ability of a landscape to absorb visual change based on attributes of a particular landscape. The sensitivity of the previously described landscape units will depend upon several attributes, such as:

- **Location.** The sensitivity of a potential viewer varies according to location. For example, visitors to a National Park where the landscape appears untouched or pristine will be more sensitive to the imposition of new or artificial elements within that landscape. The same viewer travelling along a rural highway, which contains existing examples of modifications and artificial elements, will be less sensitive to the presence of new elements. Modifications or artificial elements are not confined to vertical structures or built form, they also include removal of native vegetation; and visibility of roads, tracks, fences, and other rural infrastructure, all of which decrease the sensitivity of a landscape to further change.
- **The rarity of a particular landscape.** Landscapes that are considered rare or threatened are valued more highly by viewers.

- **The scenic qualities of a particular landscape.** Landscapes that are considered scenic are also those that are considered sensitive. They often contain dramatic topographical changes, the presence of water, coastlines, and other comparable features. The presence of modifications or artificial elements (including built form, roads, tracks, fences, and silos), as well as farming practices including land clearing, cropping, and burning, can decrease the sensitivity of a landscape's scenic qualities.

The landscape units and sensitivity ratings will form the basis of the visual impact of views from publicly accessible locations.

Landscape sensitivity from individual residential properties will always be assessed as 'high', as for a resident, their home will always be a highly sensitive location and disturbances to a resident's views must always be considered to have the highest degree of sensitivity.

Dwellings in rural residential areas are subject to a specific zone within the planning scheme, and generally include greater protections regarding amenity. Rural residential areas tend to be located on the margins of larger towns and have been established to promote a rural lifestyle. These are distinct to dwellings in rural or farming zones, where the primary use and protections are to enable the use of the land for agriculture and recognises the off-site amenity impacts of these areas.

Table 6 Landscape Units and Sensitivity

Landscape Unit	Sensitivity
LCU 1 - Urban Areas and Townships	**Medium** - Built form and other visual elements reduce the visual sensitivity of these areas. However, as these are urban areas with many dwellings, the landscape sensitivity is rated Medium.
LCU 2 - Rural Residential	**Medium-High -** While these areas are valued for their 'natural-appearing or rural landscape amenity, they have modified landscapes within zones that are set aside for rural related industries such as farming, and thus inherently contain land uses with potential off-site amenity impacts.
LCU 3- Plains Farmland	**Low** – Highly modified, contains visible infrastructure, is not topographically dramatic, and does not contain large bodies of water.
LCU 4 - Undulating Farmland	**Low to Medium –** Highly modified, by way of clearing of native vegetation. The intersection of rolling hills and valleys provides for a diversity of framing of views. Elevated hills provide moments of vistas in journeys through the landscape.
LCU 5a – Native (Natural) Forests	**High** - This landscape is attractive as it contains areas that appear pristine. Natural forests are rare in the study area and confined to parks and reserves.
LCU 5b – Plantation Forests	**Low** - This landscape is attractive when vegetated. This landscape is ordered in appearance and regularly modified through timber harvesting.
LCU 6a – Lava Flows: Farmland, Swamps, and Wetlands	**Low to Medium –** This landscape type is widespread throughout the study area. Its features are not often apparent when viewed from the ground and have been highly modified for agricultural uses.
LCU 6b – Lava Flows: Valleys and Rivers	**Medium to High –** This landscape occurs in the Harmans Valley and other areas where rivers and creek lines have formed within the lava flow. The Tyrendarra / Budj Bim lava flow has formed vast waterway areas recognised as significant indigenous cultural heritage.

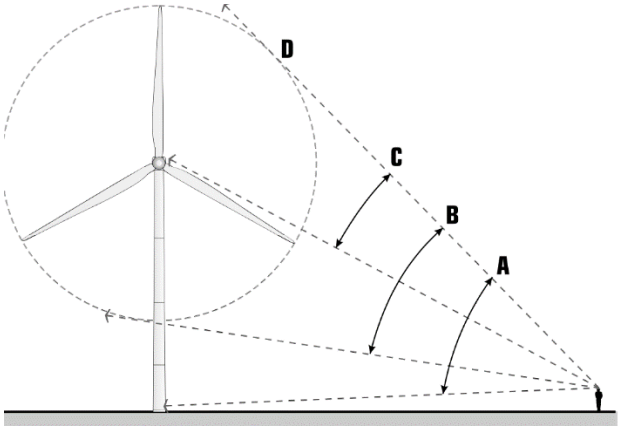
LCU 7 – Lakes and Creek Lines	**Medium to High -** Lakes and creek lines usually have a high sensitivity to visual change due to their scenic qualities, passive or recreational uses, and intrinsic value.
LCU 8 –Volcanic Cones and Craters, Natural Forests	**Medium to High –** These features are a focal point in an otherwise flat landscape. Budj Bim and Mount Napier are relatively pristine, whereas Mount Rouse and Tower Hill have been historically cleared of vegetation or quarried for scoria. These features are also tourist attractions, and geologically and educationally significant features.
LCU 9 – Coastal Areas	**Medium to High –** Coastal areas are valued for their recreation and amenity benefits. Some coastal areas have been modified by way of agriculture and urban areas, which lessens their sensitivity to visual change. Some of these areas are recognised by SLOs.
LCU 10a – Rural Wind Farm (Inland)	Inland farming areas that currently host wind turbines. The sensitivity of these areas is defined by the underlying zoning, topography, vegetation, land use and prevalence of that landscape type. In farming areas may include Landscape Character Unit 3 Plains farmland, or Unit 4 - Undulating farmland and may include 6a Lava Flows.
LCU 10b – Rural Wind Farm (Coastal)	Coastal wind farm areas that currently host wind turbines, the sensitivity of these areas is defined by the underlying zoning, topography, vegetation, land use and prevalence of that landscape type. Although coastal areas are strongly valued for their amenity and aesthetic, some areas have been modified by the addition of operating wind farms.

7. Seen Area Analysis

A Seen Area Analysis (SAA) identifies patterns of theoretical visibility and potential views towards the Project. The SAA is a theoretical model that is based upon key Project infrastructure and the topography of the surrounding landscape. The SAA does not include features such as vegetation, minor topographical variation buildings, or structures that will assist to screen or filter views. These landscape features cannot be modelled in a desktop analysis and are instead examined in detail within the viewpoint assessment chapters following site visits and photographic capture of these features.

The patterns of theoretical visibility assist to determine locations where the Project would be most visible and guide the selection of representative viewpoints to determine the views to the site and to the proposed location of transmission towers, from key vantage points, major roads, and tourist routes, and residential clusters sufficient to give a sense of the Project and its setting.

The Seen Area Analysis can map patterns of visibility for either the Project as a whole or in key components. Sections that are relevant to views and visual impact are set out below.



- Zone A – Areas from which one or more Turbines are visible in their entirety.
- Zone B – Areas from which the entire swept path of one or more Turbines are visible.
- Zone C – Areas from which nacelle and above of one or more Turbines are visible; and
- Zone D - Areas from which tip of the blade of one or more Turbines are visible

Figure 7-1: Visibility parameters (not to scale)

Zone A includes locations that have the potential to view a wind turbine in its entirety. A viewer at this location would theoretically be able to see 'any part of the wind turbine blades' which includes Zone B, C and D.

Figure 7-2 shows the GIS based mapping of Zones A, B, C and D.

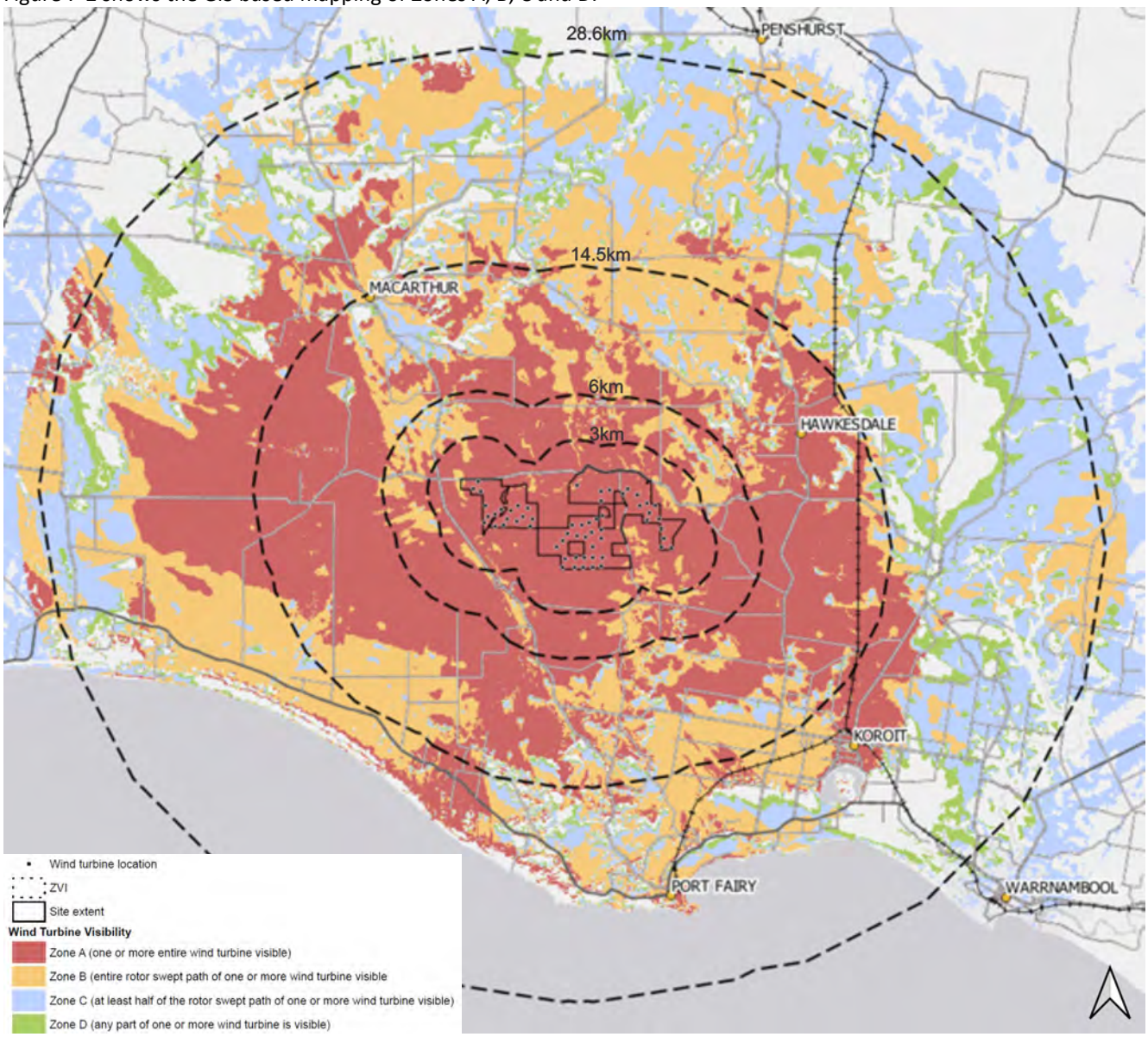


Figure 7-2 Areas of potential wind turbine visibility

The mapping of turbines in their entirety (Zone A) or the areas from which a blade tip is visible (Zone D) is too prescriptive and is not indicative of the overall visibility of the Project. Mapping those areas where the swept path (Zone B) and the nacelle and above (Zone C) are more useful when selecting viewpoints in which to assess the likely visual impact of the Project.

Figure 7-3 shows the visibility patterns for Zone C (nacelle and upper portion of the swept path) within the study area. This is a conservative assessment in that the mapping for Zones A and B tends to show smaller areas of visibility. This is because the modelling will exclude areas that may not 'see' part of these features and are therefore excluded from the results. The mapping for each of the zones is included in Appendix A.

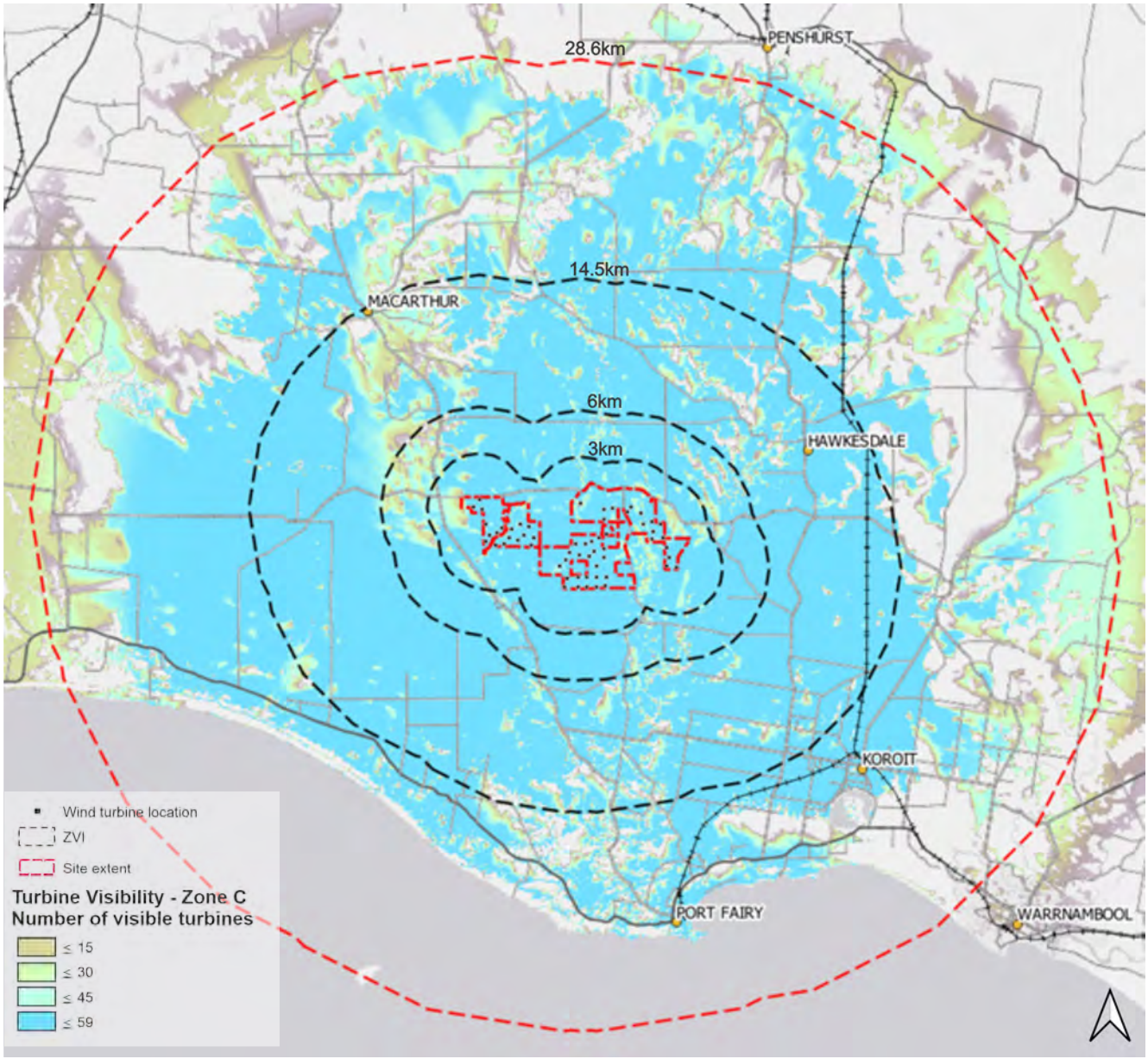


Figure 7-3 Seen Area Analysis: Zone C

The SAA demonstrates that visibility of the proposed turbines is widespread across the study area due to the relatively flat and undulating topography, with elevated features limited to the volcanic cones towards the outer areas of the study area. Areas to the east near the locality of Minjah and Woolsthorpe, and towards Tower Hill to the southeast would have limited to no visibility. Similarly, areas towards the north-western extent of the study area near Mount Napier and Knebsworth would also have little to no turbine visibility.

The Princes Highway to the south is the only highway in proximity to the Project and within the study area. The SAA demonstrates theoretical visibility from other major roads including the Hamilton-Port Fairy Road which runs to the west of the Project, Penshurst-Warrnambool Road to the east, and Woolsthorpe-Heywood Road to the north of the Project. These roads are class C roads under the *Road Management Act 2004* road classification strategy.

It is emphasised that this modelling is theoretical and does not consider vegetation seen in many areas across the study area. This modelling assisted in the selection of publicly accessible viewpoints assessed in the following Section.

8. Publicly accessible viewpoints

This section will assess the potential visual impact of the proposed Willatook Wind Farm from publicly accessible locations. Viewpoints have been selected to consider the location of the proposed wind turbines from significant landscapes and key vantage points, townships, major roads, and local roads sufficient to give a sense of the Project and its setting following the requirements set out in Clause 53.32 Wind Energy Facility of the VPP.

In all, 118 viewpoint locations were visited, and imagery captured with the study area. These have been distilled into a collection of 35 representative viewpoints which are discussed in this section.

Figure 8-1 shows all viewpoints visited for this assessment.

Figure 8-1 Map: Viewpoints

The visual impact from each of these 35 viewpoints assists to compile the overall visual impact of the proposed Willatook Wind Farm upon the surrounding area. Viewpoints have been grouped to assist with the assessment of areas set out in the *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria* (July 2021) which require the consideration of views from townships and urban areas, conservation and recreation areas, National Parks and State forests, water features, tourist routes and walking tracks and major roads. In

doing so, these groupings assist in the consideration of the impacts on use and sensitivity to ascertain the overall visual impact of the Project. For these reasons the 35 viewpoints are set out under the following groupings:

- Significant landscapes and vantage points (Viewpoints SL1-SL8)
- Major Roads and Highways (Viewpoints H1-H17)
- Local Roads (Viewpoints L1-L4)
- Townships (Viewpoints T1-T6)

The visual impact of the wind farm from locations is also informed by photomontages which have been prepared for 5 locations H2, H5, H8, H13 and T2.

Viewpoints have been selected from locations where the SAA has demonstrated potential visibility of the Project based on topography only or from locations considered to be of significance to the local community and user groups.

A summary of the quantitative criteria such as distance, viewer numbers and landscape sensitivity are set out in a summary table at each viewpoint. This is not to be relied upon for the determination of the overall visual impact as the qualitative criteria such as landscape sensitivity, features in the view and mutable factors such as screening provided by local topography, vegetation and buildings which cannot be captured or summarized through metrics are not accounted for. For this reason, the key considerations which have contributed to the overall visual impact arrived at for each viewpoint are described in the qualitative assessment above the summary table.

8.1 Significant landscapes and vantage points

It is a requirement of the Victorian Guidelines set out in 52.32 Wind Energy Facility to consider the potential for impacts on views and amenity from conservation and recreation areas, water features, tourist routes, and walking tracks.

Section 5.1.3 of the Wind Farm Guidelines requires the consideration of *'The degree of visual impact of a wind energy facility depends on the extent of the change to the landscape caused by the development, taking into account …*

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

This section will review the views and visual impact from such locations within the study area.

The selected viewpoints are recognised landscapes, features, or vantage points, and were identified as having potential visibility of the Project. These landscape and viewer sensitivity for viewpoints selected in this section are all considered to be High. Viewpoints have been selected from key locations and areas of interest at each of the areas and from locations where the SAA has predicted theoretical Project visibility.

Consistent with the approach taken in the SWVLAS, viewpoints have been taken from identified vantage points, viewing locations or lookouts where practicable. These locations generally include interpretative panels and information, where visitors to the area are encouraged to take in views and engage with or interpret the cultural and scenic values of the landscape.

Significant landscapes and areas of indigenous landscapes that form part of the local tourism network and included in publicly accessible information are considered within this assessment. The implications of the Project on Indigenous cultural values has been undertaken by others.

In addition to these significant features identified within the planning scheme this report has also included landscapes of geological significance such as the volcanic landscapes within the area.

The location of each viewpoint in proximity to the Project is shown in Figure 8-2.

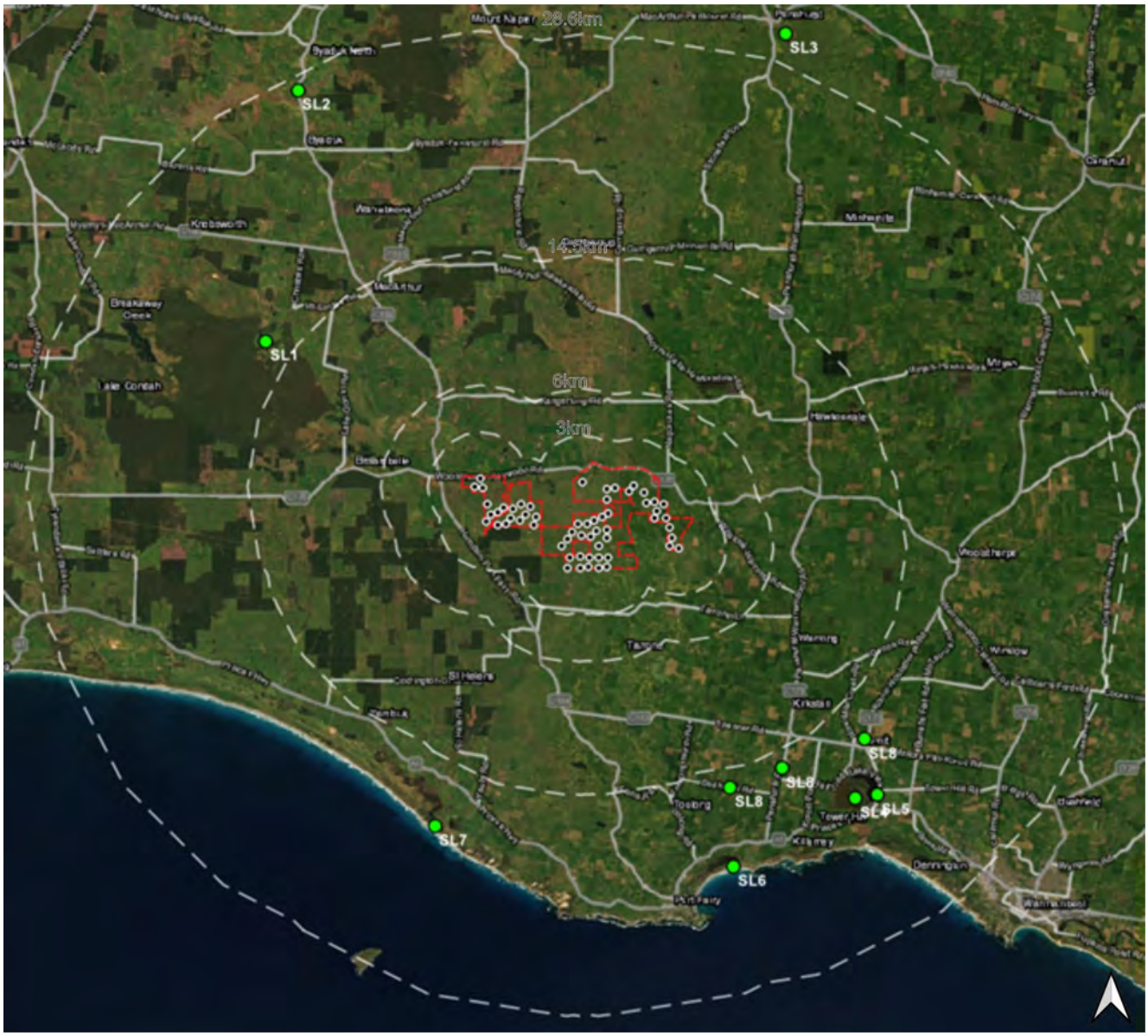


Figure 8-2 Map: Significant Landscape Viewpoints

The location, co-ordinates, distance to the nearest turbine and prevalent landscape unit towards the wind farm are described in Table 8.1.

Table 8.1: Significant landscape viewpoints

VP	Distance to nearest turbine	GPS Co-ordinates	Landscape Unit
SL1 – Budj Bim National Park	16.3km SE (T1)	54H 581208, 5786820	LU8 – Volcanic Cones and Craters, Natural Forests
SL2 – Harmans Valley Lookout	27.4km SE (T2)	54H 583243, 5802814	LU 6b – Lava Flows: Valleys and Rivers
SL3 – Mount Rouse	30.4km SW (T48)	54H 614377, 5806428	LU8 – Volcanic Cones and Craters, Natural Forests
SL4 – Tower Hill Lookout (Interior)	19.5km NW (T59)	54H 618863, 5757663	LU8 – Volcanic Cones and Craters, Natural Forests
SL5 – Tower Hill Lookout (Cairn Hill)	20.1km NW (T59)	54H 620213, 5757870	LU8 – Volcanic Cones and Craters, Natural Forests
SL6 – Port Fairy Coast	20.5km N (T59)	54H 614377, 5753314	LU9 – Coastal Landscape
SL7 – Lake Yambuk Caravan Park and boat ramp	18.4km NE (T20)	54H 591990, 5755889	LU9 – Coastal Landscape
SL8 – Port Fairy to Warrnambool Rail Trail	15.4km NW (T59)	54H 614133, 5759567	LU3 – Plains Farmland

8.1.1 VP SL1 – Budj Bim National Park: Budj Bim Peak

Viewpoint SL1 is located at the Budj Bim peak, within the Budj Bim National Park.

The nearest Project turbine is approximately 16.3km south-east of this viewpoint.

Figure 8-3 shows the view looking east toward the Project.

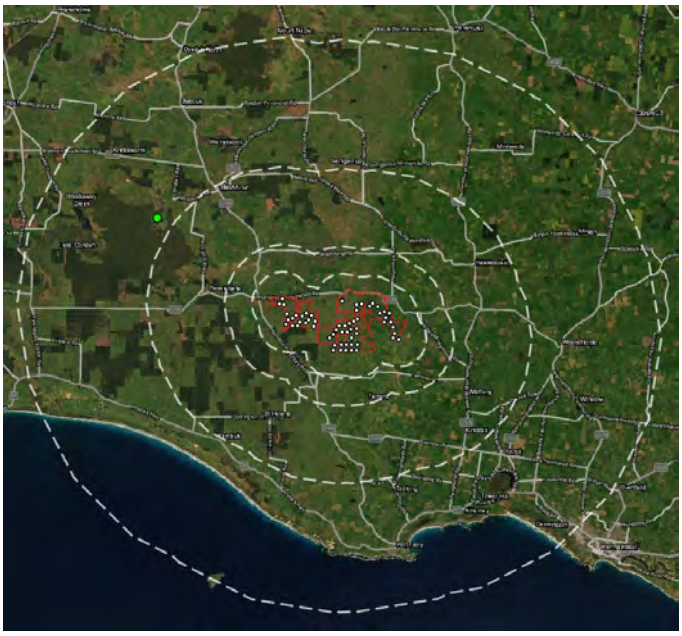


Figure 8-3 VP SL1 – Budj Bim peak, looking east toward the Project

Landscape Character

At this location, the walking trail enters a cleared area at the top of Budj Bim, formerly known as Mount Eccles. Budj Bim (the extinct volcano) forms the northern part of the Budj Bim cultural landscape, along with Lake Condah to the southwest.

The landscape of Budj Bim is characterised by the native vegetation and the obvious volcanic landform. Lake Surprise exists within the Budj Bim crater.

A view of the crater is shown in Figure 8-4.

Figure 8-4 Budj Bim Crater

The sensitivity of the Budj Bim landscape is high. This is due to the area appearing relatively pristine, with large areas of intact native vegetation, and volcanic features making this landscape an outlier in an otherwise flat, modified surrounding landscape.

Project Visibility

Views toward the Project are filtered through the existing vegetation surrounding the clearing. Breaks in this vegetation afford views toward the Project site.

At this distance, the nearest Project turbines would form a noticeable, but not a dominant element in the landscape.

Other areas of the Budj Bim cultural landscape are located further to the southwest and would not experience elevated views like the peak. For these reasons, the overall visual impact would be **Low–Negligible**.

VIEWPOINT SL1 – Budj Bim National Park: Budj Bim Summit (54H 581208, 5786820)			
Distance	16.3km SE (T01)	**ZVI**	Noticeable, but will not dominate the landscape
Landscape Unit	LU8 – Volcanic Cones and Craters, Lakes, Natural Forested Areas	**Sensitivity**	High
Viewer Type	Tourist	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Low–Negligible**		

8.1.2 VP SL2 – Harmans Valley Lookout

Harmans Valley is recognised in the SWVLAS and roadside interpretation signage. Mount Napier, which is visible in the distance, is the source of the lava flow in this area.

Harmans Valley is an ancient volcanic feature and interpretive location that was part of the former Kanawinka Geo-Park.

Viewpoint SL2 is located at the designated viewing location adjacent to Hamilton–Port Fairy Road.

The nearest Project turbine is located approximately 27.4km to the south-east.

Figure 8-5 shows the view looking south-east toward the Project.

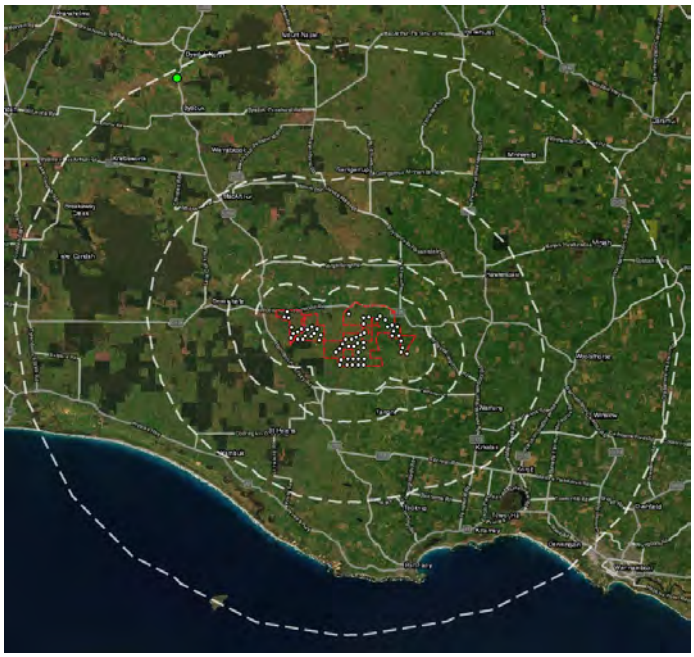


Figure 8-5 Viewpoint SL2 – Harmans Valley, looking south-east toward the Project (image left) interpretive panel (image right).

The SAA (Zone A) modelling determined that, due to topography, the Project turbines would not be visible at this location. This along with distance, topography, and vegetation the overall visual impact from this location would be **Nil**.

VIEWPOINT SL2 – Harmans Valley (54H 583243, 5802814)			
Distance	27.4km SE (T2)	**ZVI**	Noticeable, but will not dominate the landscape
Landscape Unit	LU 6b – Lava Flows: Valleys and Rivers	**Sensitivity**	Medium - High
Viewer Type	Tourist	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Nil**		

8.1.3 VP SL3 – Mount Rouse

Mount Rouse is a large volcanic cone situated to the south of Penshurst. There is a publicly accessible viewing platform from the public car park located near the summit. There are also several communications installations and supporting infrastructure located at the summit and east of the main lookout.

Viewpoint SL3 is located at the lookout structure upon Mount Rouse, near Penshurst.

The nearest Project turbine is approximately 30.4 km to the south-west.

Mount Rouse is located outside the study area, however being an elevated vantage point, it is acknowledged that at the distance of greater than 28.6 km the turbines may still be visible on a clear day where views allow.

Figure 8-6 shows the view looking south toward the Project.

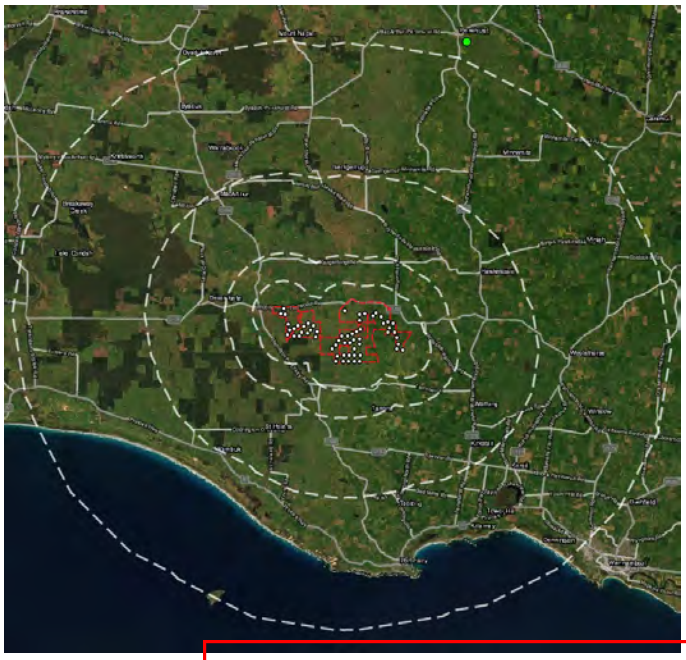


Figure 8-6 VP SL3 – view from Mount Rouse Lookout looking south toward the Project

Figure 8-7 shows an enlargement of the view including the existing turbines within the Macarthur Wind Farm. The nearest turbine within the Macarthur Wind Farm is approximately 14.0 km to the south.

Figure 8-7 Enlargement of view looking south

On clear days, and in good visibility, the turbines within the Macarthur Wind Farm are noticeable, but not visually dominant visual features.

The nearest Project turbine is approximately 30.4 km to the south-west of Mount Rouse and would be up to 250 m in height. The vertical scale of a 150 m high wind turbine such as those within the Macarthur Wind Farm, when viewed at a distance of 14.0 km is approximately 0.65º. A 250 m high wind turbine viewed at a distance of approximately 30 km is approximately 0.55º in the vertical plane.

Landscape Character

This location is characterised as a Volcanic Cone. The main mound, where this viewpoint and lookout are located, is approximately 100 m above the surrounding landscape which allows for expansive vistas across the otherwise relatively flat landscape. Parts of Mount Rouse are forested, though some sections have also been cleared of vegetation. Some of these sections have also been utilised for scoria quarrying; the eastern slope of Mount Rouse is scarred red from mining. The vegetation clearing and quarrying extent are evident from aerial photography.

Project Visibility

Figure 8-8 demonstrates the overlap in view arc to these wind farms. The view arc to the Project considers the proposed turbines within the 28.6km study area extent.

Figure 8-8 View arc from Mount Rouse to wind farms

The Project would be located behind and to the left of the Macarthur Wind Farm.

The Macarthur Wind Farm is visible in the distance from this viewpoint. Due to distance and on a clear day the turbines are noticeable, however, they are not readily discernible features in the landscape. Visibility is impeded during overcast conditions that blend the white wind turbines into the cloudy background.

Although the Project turbines are 100 m taller than those located within the Macarthur Wind Farm, due to distance they would be less noticeable.

Based on the above, the overall visual impact from this location would be **Negligible**.

VIEWPOINT SL3 – Mount Rouse Lookout (54H 614377, 5806428)			
Distance	30.4km SW (T66)	**ZVI**	Noticeable, but will not form a dominant element in the landscape
Landscape Unit	LU8 – Volcanic Cones and Craters, Lakes, Natural Forested Areas	**Sensitivity**	Medium - High
Viewer Type	Tourist	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Negligible**		

8.1.4 VP SL4 - Tower Hill Lookout (Interior)

Viewpoint SL4 is located within the Tower Hill volcanic formation.

The nearest Project turbine is approximately 19.5 km to the north-west.

Figure 8-9 shows the view from the lookout location orientated to the north toward the Project.

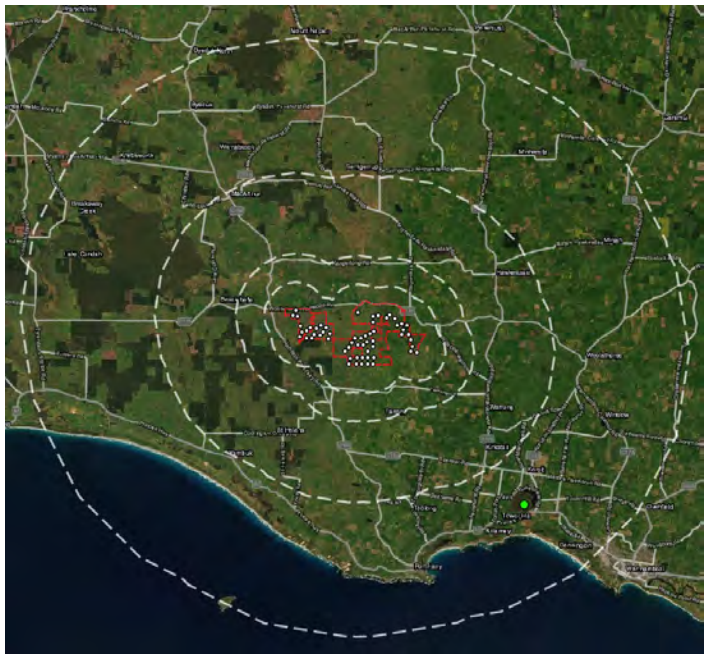


Figure 8-9 VP SL4 – Tower Hill Lookout, view looking north toward the Project

Landscape Character

The landscape character type is a blend of Volcanic Cones and Lakes and Creek lines, with broader views taking in coastal and agricultural landscape features.

The sensitivity of this area is high. Despite the vegetation of Tower Hill being vastly modified and replanted, it is naturally appearing, and the volcanic cone is a popular tourist location for visitors of Warrnambool and the south coast.

The main view at this location is orientated to the south towards the ocean and over the crater lake as shown in Figure 8-10.

Figure 8-10 Tower Hill Lookout, view looking south

The visitor centre is another gathering area and picnic point for tourists visiting Tower Hill. The visitor centre is set low in the reserve and amongst extensive vegetation. The visitor centre and landscape setting are shown in Figure 8-11.

Figure 8-11 Tower Hill visitor centre

The Project would not be visible from the visitor centre, areas of open grass and picnic facilities.

Project Visibility

The view north toward the Project from this location is well vegetated. A break in vegetation affords a framed view toward the north-west in the direction of the Project and across the outskirts of Koroit.

Visibility toward the Project is largely limited from the designated elevated viewing locations due in part to the orientation of views being generally toward the coast, vegetation which filters or screens views to the north and distance. Breaks in vegetation may permit glimpses of the Project when looking north.

The wind turbines would be at a distance that, if visible through vegetation, would be a noticeable but not a dominant element in the landscape. For these reasons, the overall visual impact is considered to be **Negligible – Nil.**

VIEWPOINT SL4 – Tower Hill lookout - interior (54H 618863, 5757663)			
Distance	19.5km NW (T59)	**ZVI**	Noticeable, but will not dominate the landscape
Landscape Unit	LU8 – Volcanic Cones and Craters, Lakes, Natural Forested Areas	**Sensitivity**	High

Viewer Type	Tourist	**Viewer numbers**	Medium-High
OVERALL VISUAL IMPACT	**Negligible – Nil**		

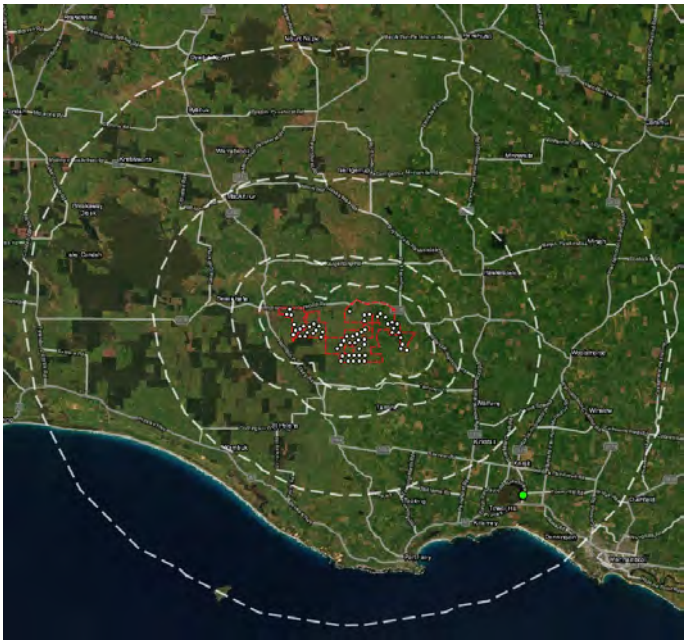
8.1.5 VP SL5 – Tower Hill Lookout (Cairn Hill)

Viewpoint SL5 is located at the Cairn Hill Lookout to the southeast of the Tower Hill reserve and external to the Tower Hill crater.

Access is directly from Lake View Road approximately 1.0 km north of its intersection with the Princes Highway.

The nearest Project Turbine is approximately 20.1 km to the north-west.

Figure 8-12 shows the view looking west.



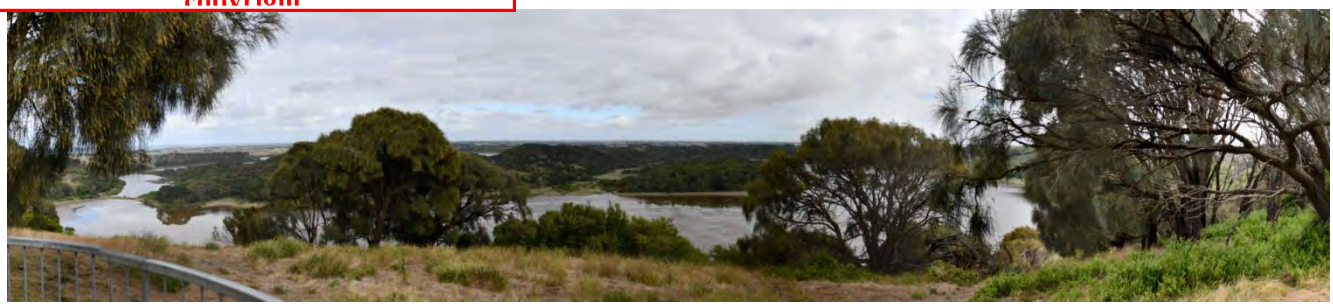


Figure 8-12 VP SL5 – Cairn Hill Lookout, looking west

Landscape Character

At this location, the Cairn Hill Lookout is orientated toward the west, allowing views across the Tower Hill landform and lake, and allowing glimpses of the coast to the south. The Tower Hill landform is the focal point of this view and informs the landscape setting as a distinctly volcanic landscape. As discussed in the preceding viewpoint, much of the Tower Hill vegetation was historically cleared and replanted. Nonetheless, it is perceived as naturally appearing and pristine and therefore has a high landscape sensitivity.

Project Visibility

Views to the north-west toward the Project are partially screened and filtered by native vegetation. The Project may be visible in part along the horizon in long-range views. Due to the distance to the Project, those turbines that are visible would be a noticeable, but not dominant element in the landscape. The filtering and screening of these views by the nearby vegetation would assist to ameliorate the visual impact from this lookout. For these reasons, the visual impact would be **Negligible – Nil**.

VIEWPOINT SL5 – Tower Hill - Cairn Hill Lookout (54H 620213, 5757870)			
Distance	20.1km NW (T59)	**ZVI**	Noticeable, but will not dominate the landscape
Landscape Unit	LU8 – Volcanic Cones and Craters, Lakes, Natural Forested Areas	**Sensitivity**	High
Viewer Type	Tourist	**Viewer numbers**	Medium-High
OVERALL VISUAL IMPACT	**Negligible – Nil**		

8.1.6 VP SL6 - Port Fairy Coast

Viewpoint SL6 is located at the crest of a coastal dune on Skene Road. The trail provides access to a local car park and beach access point along the coastline to the east of Port Fairy.

The nearest Project turbine is approximately 20.5 km to the north.

Figure 8-13 shows the view looking north toward the Project.

Figure 8-14 shows the view orientated toward the coast to the south.

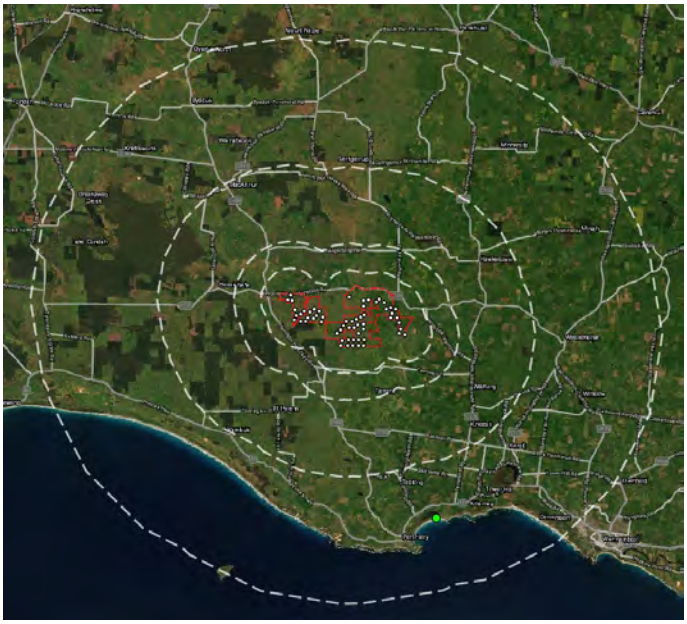


Figure 8-13 VP SL6 – Port Fairy Coast, View looking north towards the Project

At this location, the more dominant views are towards the open waters of Bass Straight to the south and away from the Project. Figure 8-14 shows the view looking south.

Figure 8-14 VP SL6 – Port Fairy Coast, View south to the coast (away from the Project)

Landscape Character

The dominant character in views is the open water, coastal dunes, and beachfront to the south. Other features nearby include the waters of Belfast Lough to the north of Princess Highway. Nearby features include the Port Fairy Golf Club to the east and grassed airstrip associated with the Port Fairy Aerodrome to the north. The sensitivity of this coastal area is high.

SLO 5 – Port Fairy to Warrnambool Coast exists within this area, which sets out objectives for, among other things:

- *To protect locally significant views and vistas that contribute to the character of the landscape, such as extensive vistas to low dunes and the open hinterland from the Princes Highway, and spectacular long-range views to Tower Hill, and from other localised rises throughout.*
- *To reduce the visual impact of infrastructure throughout the landscape*
- *To protect landscape character and attributes that are consistent with the Aboriginal cultural heritage values of the area.*
- *To recognise, and protect, the landscape of the Port Fairy to Warrnambool Coast as a place of significant Aboriginal cultural heritage value.*

The SAA (Zone C) indicates theoretical visibility of the Project at this location. However due to the overall distance to the Project and intervening vegetation, it is unlikely turbines would be visible. If visible, they would not be a dominant element in the view. The more dominant views of the area are to the south, and away from the Project. For these reasons, the overall visual impact would be **Negligible** – **Nil**.

VIEWPOINT SL6 – Port Fairy Coast (54H 614377, 5753314)			
Distance	20.5km N (T57)	**ZVI**	Noticeable, but will not form a dominant element in the landscape
Landscape Unit	LU9 – Coastal Landscape	**Sensitivity**	High
Viewer Type	Tourist	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Negligible** – **Nil**		

8.1.7 VP SL7 - Lake Yambuk Caravan Park and Boat Ramp.

Viewpoint SL7 is located at the Yambuk Lake Caravan Park and public boat ramp.

The nearest Project turbine is located approximately 18.4 km north-east.

Public facilities include the boat ramp, jetty and fishing pontoon, comfort station and children's play equipment.

The main caravan park is located further to the north behind the vegetated dune seen in the background of this view. Vegetation and topography within the caravan park and nearby area to the north would filter or screen views of the Project.

Figure 8-15 shows the view from the public car park adjacent to the boat ramp and children's play area and other infrastructure.

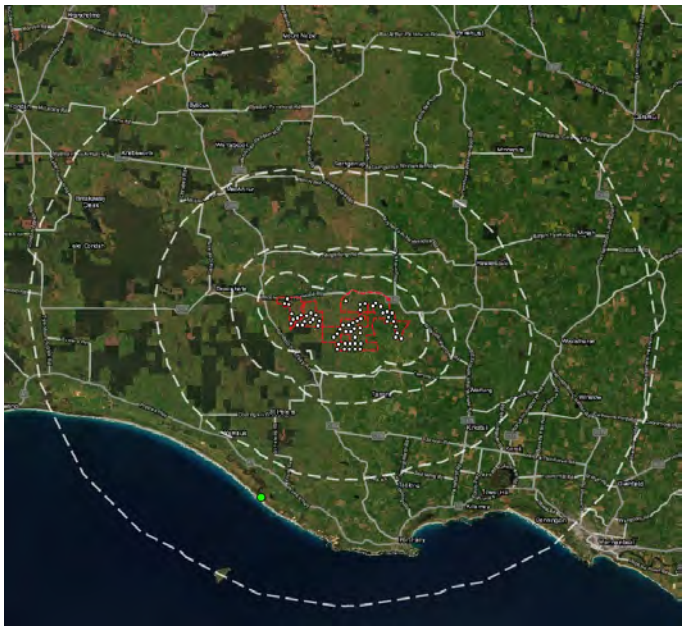


Figure 8-15 VP SL7 – Lake Yambuk caravan park

The Seen Area Analysis mapping described in Section 7 identifies this area as having theoretical visibility of Turbines from the nacelle and above. This may be due to the high-level nature of mapping.

The view shown in Figure 8-15 demonstrates the screening effect of smaller, local changes in topography and vegetation. Due to the screening afforded by this topography and vegetation, the Project would not be visible from the public areas and facilities at Yambuk Lake and Caravan Park. For these reasons, the overall visual impact would be **Nil**.

VIEWPOINT SL7 – Yambuk Lake Caravan Park and boat ramp (54H 591990, 5755889)			
Distance	18.4km NE (T20)	**ZVI**	Noticeable, but will not form a dominant element in the landscape
Landscape Unit	LU 9 – Coastal Landscape	**Sensitivity**	High
Viewer Type	Tourist	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Nil**		

8.1.8 VP SL8 – Port Fairy to Warrnambool Rail Trail

The Port Fairy to Warrnambool Rail Trail is approximately 36 km of trail from Port Fairy to Warrnambool that heads to the north of Koroit.

The nearest Project turbine is located approximately 15.4 km north-west.

Figure 8-16 shows the view looking north-west towards the Project along the rail trail near Koroit Station.

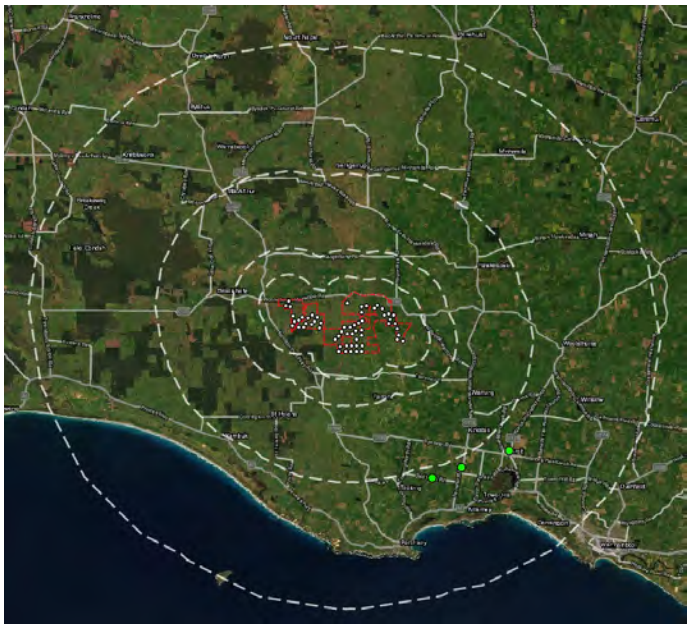


Figure 8-16 VP SL8 – View looking north-west along Rail Trail from Koroit Station (54H 619415, 5761417)

Koroit Station is a key stopping location along the rail trail, with the heritage original station building to the north of town. From this location the nearest Project turbine is approximately 17 km north-west. Views to the north-west are limited due to vegetation either side of the rail trail.

Figure 8-17 shows the view looking north-west from where the rail trail crosses Penshurst-Port Fairy Road.

Figure 8-17 VP SL8 – Port Fairy to Warrnambool Rail Trail / Penshurst-Port Fairy Road Crossing (54H 614133, 5759567)

From this location the closest Project turbine is approximately 15.4km north-west. Views to the north-west are over Plains Farmland with a low sensitivity to visual change. Where visible between breaks in wind break

planting at a distance of approximately 15.4 km the turbines would be noticeable, however would not be a dominant element in the view.

Figure 8-18 shows the view looking north-west from where the rail trail crosses Badham's Road.

Figure 8-18 VP SL8 – Port Fairy to Warrnambool Rail Trail / Badham's Road Crossing (54H 610869, 5758356)

Project Visibility

The Port Fairy to Warrnambool Rail Trail runs along part of the southern edge of the Project viewshed and allows for open and long-distance views over large areas of plains farmland.

The trail at its closest point is approximately 15 km to the nearest turbine. At this distance, even if visible, the proposed turbines would not be visually dominant features. The predominant views from the rail trail are across Plains Farmlands which has a low sensitivity to visual change. Existing vegetation in the form of roadside vegetation and wind breaks would further filter views. For these reasons, the overall visual impact would be **Negligible**.

Cumulative Considerations

Ryan Corner at its closest point to the rail trail would be approximately 9 km to the west. At its closest point to the rail trail Woolsthorpe Wind Farm would be approximately 9 km north and Hawkesdale approximately 12 km north.

While there is the potential for simultaneous views from points along the rail trail, at these distances the addition of the Project to these views would not be dominant element in the view and would not alter a viewer's perception of the landscape.

VIEWPOINT SL8 – Port Fairy to Warrnambool Rail Trail			
Distance	15.4km NW (T59)	**ZVI**	**Noticeable, but will not dominate the landscape**
Landscape Unit	LU3 – Plains Farmland	**Sensitivity**	Low
Viewer Type	Tourist	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Negligible**		

8.1.9 Significant landscapes and vantage points summary

A requirement of the Victorian Guidelines is the consideration of views from conservation and recreation areas, National Parks recognised by the National Parks Act 1975. Locations assessed in this report include views from volcanic structures, crater lakes, national park forests, and coastal areas. With the exception of volcanic lava flows, areas within this category are located towards the outer extent of the study area.

These include the elevated viewing locations such as the volcanic cones, including Budj Bim, Mount Rouse, Mount Napier and Toer Hill are valued landscapes in part due to their expansive vistas afforded across the relatively flat volcanic plains.

The Mount Rouse lookout includes views of the Project site that would be unimpeded by intervening topography or vegetation. This view would also include views to the existing Macarthur Wind Farm. The Macarthur Wind Farm is a barely perceptible feature in the landscape when viewed from Mount Rouse.

The visual impact of the Project in views from significant landscapes and vantage points would be assessed from **Low-Negligible** through to **Nil**.

Table 8.2: Significant landscape viewpoint summary

VP	Distance to nearest turbine	Landscape Unit	Visual Impact Assessment
SL1 – Budj Bim National Park	16.3km SW (T01)	LU8 – Volcanic Cones and Craters, Natural Forests	**Low- Negligible**
SL2 – Harmans Valley Lookout	27.4km SE (T02)	LU 6b – Lava Flows: Valleys and Rivers	**Nil**
SL3 – Mount Rouse	30.4km SW (T48)	LU8 – Volcanic Cones and Craters, Natural Forests	**Negligible**
SL4 – Tower Hill Lookout (Interior)	19.5km NW (T59)	LU8 – Volcanic Cones and Craters, Natural Forests	**Negligible-Nil**
SL5 – Tower Hill Lookout (Cairn Hill)	20.1km NW (T59)	LU8 – Volcanic Cones and Craters, Natural Forests	**Negligible-Nil**
SL6 – Port Fairy Coast	20.5km N (T59)	LU9 – Coastal Landscape	**Negligible-Nil**
SL7 – Lake Yambuk Caravan Park and boat ramp	18.4km NE (T20)	LU9 – Coastal Landscape	**Nil**
SL8 – Port Fairy to Warrnambool Rail Trail	15.4km NW (T59)	LU3 – Plains Farmland	**Negligible**

8.2 Townships

Six viewpoints have been selected as representative of the visual impact on viewers using the townships within the study area.

Landscape sensitivity is assessed as medium/high due to the residential component of townships, while the viewer numbers range from low to high depending on the township.

The location of each viewpoint in proximity to the Project is shown in Figure 8-19.

Figure 8-19 Map: Township Viewpoints

The location, co-ordinates, distance to the nearest turbine and prevalent landscape unit towards the wind farm are described in Table 8.3.

Table 8.3: Township Viewpoints

VP	Distance to nearest turbine	GPS Co-ordinates	Landscape Unit
VP T1 – Macarthur township	13.7km SE (T2)	54H 587876, 5789864	LU1 – Townships
VP T2 – Hawkesdale township	10.6km SW (T54)	54H 615943, 5781541	LU1 – Townships
VP T3 – Woolsthorpe township	17.7km W (T59)	54H 625401, 5772857	LU1 – Townships
VP T4 – Winslow township	21.2 km NW (T59)	54H 627446, 5766036	LU1 – Townships
VP T5 – Kirkstall township	12.5km NW (T59)	54H 614871, 5763326	LU1 – Townships
VP T6 – Orford township	3.8km NE (T20)	54H 596971, 5770680	LU1 – Townships

8.2.1 VP T1 - Macarthur Township

Viewpoint T1 is located within the rural township of Macarthur which is situated to the northwest of the Project on the Hamilton–Port Fairy Road.

The nearest Project turbine is approximately 13.7 km to the south-east.

The nearest turbine within the Macarthur Wind Farm is approximately 11 km to the east.

Figure 8-20 shows the view looking south toward the Project.

Figure 8-20 VP T1 – Macarthur Township, view south toward the Project

Figure 8-21 shows the view looking east from the Hamilton – Port Fairy Road roughly central to the town towards the Macarthur Wind Farm.

Figure 8-21 View to the east, toward the existing Macarthur Wind Farm

Within the township, views to the east toward the existing Macarthur Wind Farm are limited due to existing vegetation, buildings, and topography screening most views.

Landscape Character

This viewpoint is within the township landscape unit. Built form including dwellings and shops are focal points in this landscape and screen views to broader features. Mature street trees are found throughout the town, which also frames views within the road corridor and filters broader views. The south of the town is elevated and includes views across the creek lines and plantation forests to the south.

Project Visibility

At this location, the road is elevated slightly above the plains to the south. This enables long-range views over buildings in some locations which may include Project site. From most locations however, vegetation and built form, including dwellings and shops assist to screen or filter views toward the Project.

There is the potential for the tips of Project turbines to be visible from some locations within the town. The visual impact from the majority of areas within Macarthur would range from **Negligible** – **Nil** due to predominantly to distance. The overall visual impact from Macarthur township is considered to be **Negligible** – **Nil.**

Cumulative Considerations

There is the potential for locations on the outskirts of town to take in simultaneous views of both turbines where views already include the within the operating Macarthur Wind Farm. The change in views would be noticeable, however, due to distance would not be a substantive visual change.

VIEWPOINT T1 – Macarthur Township (54H 587876, 5789864)			
Distance	To Project: 13.7km SE (T2) To Macarthur Wind Farm: 11km E	**ZVI**	Noticeable, and can dominate the landscape
Landscape Unit	LU1 – Townships	**Sensitivity**	Medium
Viewer Type	Township viewers, tourists, road users (Connector Road)	**Viewer numbers**	Medium-High
OVERALL VISUAL IMPACT	**Negligible - Nil**		

8.2.2 VP T2 – Hawkesdale Township

Viewpoint T2 is located along Penshurst–Warrnambool Road roughly central to the Hawkesdale township.

The nearest Project turbine is approximately 10.6 km to the south-west.

The nearest turbine within the operating Macarthur Wind Farm is approximately 10.5 km to the north-west.

The approved Hawkesdale and Woolsthorpe Wind Farms are approximately 3.0 km to the south of this location.

Figure 8-22 shows the view looking south along the service road outside the Moyne Shire Offices and CFA.

Figure 8-22 VP T2 – View in Hawkesdale looking south toward the approved Hawkesdale wind farm.

The township is located on a local rise that falls generally east to west towards the Moyne River and its tributaries.

Figure 8-23 shows the view looking west from the same location.

Figure 8-23 VP T2 – Hawkesdale Township, view looking southwest toward the Project

There are many large trees located within road reserves and private allotments within the town. This vegetation and associated structures would screen views of the Project. Figure 8-23 shows the view looking southwest through north-west from the south-western edge of Hawkesdale township on Ryan's Road.

Figure 8-24 VP T2 – Southwestern edge of Hawkesdale Township, view looking southwest through north-west

Figure 8-25 shows a photomontage of the same view with the turbines superimposed into the view.

Figure 8-25 VP T2 – Photomontage

Figure 8-26 shows an enlargement of the photomontage looking southwest towards the Project.

Figure 8-26 VP T2 – Photomontage enlargement

Landscape Character

This viewpoint is within the township landscape unit. Built form including dwellings, shops, and community buildings are focal points in this landscape and screen views to broader features. Street trees are found throughout the town, which also frames views within the road corridor and filters broader views. Views would be limited to the outskirts of town where built form and vegetation allows views. Views from the outskirts of town are over Plains Farmland.

Project Visibility

This location is elevated slightly above the township and surrounding agricultural plains. From most locations within the township, vegetation and built form, including dwellings, shops, municipal and civic buildings assist to screen or filter views toward the Project.

There is the potential for the tips of Project turbines to be visible from some locations within the town. The visual impact from the majority areas within Hawkesdale township would range from **Negligible-Nil** due either to limitations on visibility or through distance. Where visible from the outskirts of town they would be **Low**.

Cumulative Considerations

The approved Hawkesdale and Woolsthorpe wind farms are located to the south and are not visible from most areas within Hawkesdale. The Macarthur Wind Farm, which is situated to the west, northwest of the town is visible from elevated locations, the parts of the northern and southern town entrances and locations to the west. It is likely that proposed turbines within the Project would be visible from similar locations. Where visible, this would introduce simultaneous of several projects and an increase the horizontal range in which turbines are visible.

VIEWPOINT H2 – Hawkesdale Township (54H 615943, 5781541)			
Distance	To Project: 10.6km SW (T54) To Hawkesdale Wind Farm: 2.6km S	**ZVI**	Noticeable, and can dominate the landscape
Landscape Unit	LU1 – Townships	**Sensitivity**	Medium
Viewer Type	Township viewers, tourists, road users (Connector Road)	**Viewer numbers**	Medium-High
OVERALL VISUAL IMPACT	Within town **Negligible - Nil** From the township outskirts **Low**		

8.2.3 VP T3 – Woolsthorpe Township

The township of Woolsthorpe is located at the junction of several roads including Koroit–Woolsthorpe Road to the south, Woolsthorpe–Heywood Road to the west, Woolsthorpe–Caramut Road north, and Woolsthorpe–Ballangeich Road to the east.

The nearest Project turbines would be approximately 17.7 km west.

The approved Woolsthorpe Wind Farm would be located approximately 3.0 km west of the view and Hawkesdale Wind Farm would be located approximately 6.6 km north-west. Both approved wind farms would be located between this viewpoint and the Project.

Figure 8-27 shows the view looking south-west along the Koroit – Woolsthorpe Road and the character of the town.

Figure 8-27 VP T3 – Woolsthorpe Township, view looking south-west

There are many large trees located within road reserves and private allotments within the town. This vegetation and associated structures would screen views of the Project from within the township.

The landscape sensitivity of townships is rated Medium, however, at a distance of approximately 17 km, the Project wind turbines, if visible would not be a noticeable element within the view. From many areas within Woolsthorpe, the turbines would most likely be completely screened by existing vegetation on the southern edge of the township.

For these reasons, the overall visual impact would be **Nil** within the township to **Negligible** should turbines be visible.

VIEWPOINT T3 – Woolsthorpe Township (54H 625401, 5772857)			
Distance	To Project: 17.7km W (T59) To Woolsthorpe Wind Farm: 3.0km W Hawkesdale Wind Farm 6.5km NW6 Macarthur Wind Farm 21km NW	**ZVI**	**Noticeable**, but will not dominate the landscape
Landscape Unit	LU1 – Townships	**Sensitivity**	Medium
Viewer Type	Township viewers, tourists, road users (Connector Road)	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Negligible – Nil**		

8.2.4 VP T4 – Winslow Township

Viewpoint T4 is located on the Warrnambool–Caramut Road within the township of Winslow to the south-east of the Project.

A feature of the town is Lake Cartcarrong to the west of the town.

The nearest Project turbine is approximately 21.2 km to the north-west.

Figure 8-28 shows the view looking west along the main lake access through to north from the Warrnambool - Caramut Road

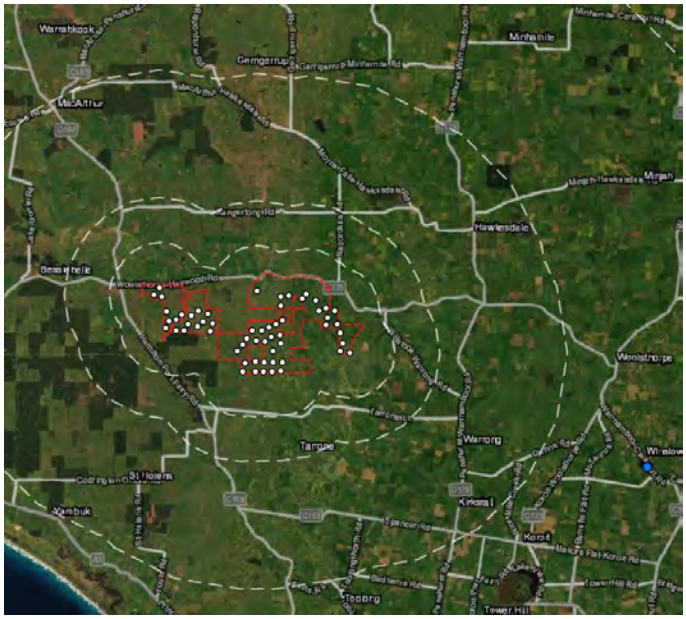


Figure 8-28 Winslow streetscape character

There are many large trees located within road reserves and private allotments within the town. This vegetation and associated structures screen views beyond the town and towards the Project.

Figure 8-29 shows the view looking south-west toward the Project from Lake Cartcarrong.

Figure 8-29 VP – Lake Cartcarrong, Winslow Township looking north-west toward the Project

Views from the eastern shores over the lake surface and cleared farmland in the distance. Being from a lower viewing angle vegetation and topography on the far shoreline would screen or filter views of the turbines within the Project.

From many areas within Winslow existing vegetation along roadsides and within private allotments would filter or completely screen turbines from view. however, at a distance of approximately 21 km, the Project wind turbines, if visible would not be a dominant element within the view.

Landscape Character

The landscape character at this location is characterised by the lake, which allows for expansive mid-range views to the west and north toward the broader plains, and the adjacent township of Winslow.

Project Visibility

The SAA indicates that areas around Winslow would have limited visibility of the Project turbines due to topography alone. At this distance, the Project may be a noticeable, but would not be a dominant element in the landscape where visible. Vegetation and built form within township areas would further assist to screened and filter views. For these reasons, the overall visual impact from the Winslow township would be **Negligible – Nil**.

VIEWPOINT T4 – Winslow Township (54H 627446, 5766036)			
Distance	To Project: 21.2 km NW (T59)	**ZVI**	**Noticeable, but not dominant in the landscape**
Landscape Unit	LU1 – Townships	**Sensitivity**	Medium
Viewer Type	Township viewers, tourists, road users (Connector Road)	**Viewer numbers**	Medium-High
OVERALL VISUAL IMPACT	**Negligible – Nil.**		

8.2.5 VP T5 – Kirkstall Township

Viewpoint T5 is located at the intersection of Penshurst–Warrnambool Road and Terka Road, within the township of Kirkstall.

The nearest Project turbine is approximately 12.5 km to the north-west.

Figure 8-30 shows the view looking north-west toward the Project.

Figure 8-30 VP T5 – Penshurst-Warrnambool Road / Terka Road, Kirkstall looking north towards the Project.

The landscape rises gently away from the coastline to the north and north-west in the direction of the Project. A low horizon within the nearby farming area immediately north-west, combined with vegetation within road reserves and nearby farming areas further filters and screens views to the north and towards the Project.

Landscape Character

This viewpoint is located within a township with medium sensitivity to visual change, however views away from the township are over Plains Farmland landscape with a low sensitivity to visual change. Several minor creek lines run through this area, partly a product of narrow rivers of the Mount Rouse lava flow. Vegetation within shelterbelts screens and filters views to these waterway features. The gentle undulations and topographical changes would screen views as road users travel throughout the landscape, concealing and revealing turbines where breaks in vegetation permit.

Project Visibility

At a distance of approximately 12.5 km, the nearest turbine has the potential to be a noticeable feature where visible, however would not be dominant. There is the potential for the Project turbines to be visible above the nearby low rise and existing vegetation and limited to the tips of the turbines only. The overall visual impact would be **Negligible** if visible to **Nil**.

Cumulative Considerations

The approved wind farms of Hawkesdale and Woolsthorpe would be to the north of this location and screened by topography and vegetation. The approved Ryan Corner Wind Farm to the east would also be screened.

VIEWPOINT T5 – Kirkstall township (54H 614871, 5763326)			
Distance	To Project: 12.5km NW (T59)	**ZVI**	**Noticeable, and can dominate the landscape**
Landscape Unit	LU1 – Townships	**Sensitivity**	Medium
Viewer Type	Road users	**Viewer numbers**	Medium-High
OVERALL VISUAL IMPACT	**Negligible – Nil**		

8.2.6 VP T6 – Orford Township

Viewpoint T6 is located along the Hamilton–Port Fairy Road within the township of Orford to the south-west of the Project.

The nearest Project turbine is approximately 3.8 km to the north-east.

Figure 8-31 shows the view looking north-east from this viewpoint.

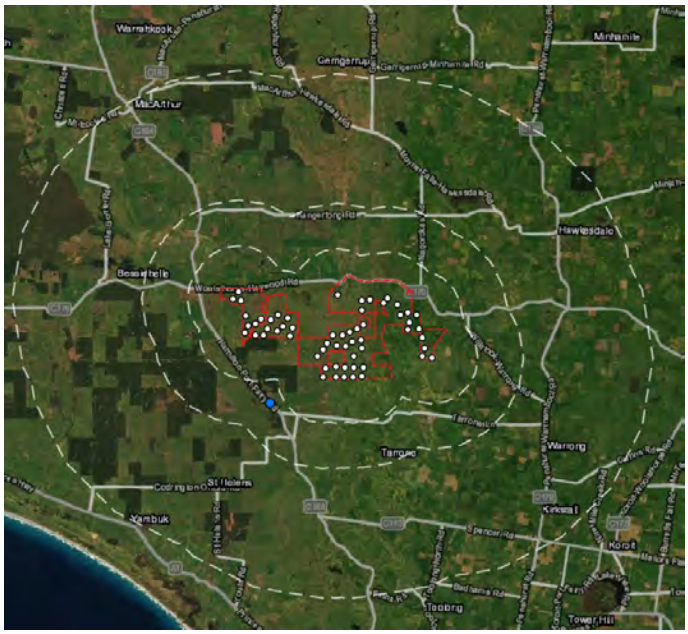


Figure 8-31 VP H9 – Hamilton–Port Fairy Road, Orford

Landscape Character

Orford is a small township comprising residential dwellings, a church, and a war memorial. The characterised of the township is rural-residential rather than its Township zoning. This rural residential character is due to the absence of shops and other features that commensurate with Townships and villages. The absence of urban elements increases the sensitivity of the township.

In the foreground of this view, recent plantings of an avenue of honour can be seen along the road verge between the viewer and the Project. Other vegetation is common throughout the township along roadsides and within residential gardens. The current break in vegetation above the avenue of honour plantings allows views of the plantation forests to the northeast. The presence of the plantations as a backdrop lessens the sensitivity somewhat. While these may be valued landscape features, they are not naturally appearing, and also undergo cyclical visual change through timber harvesting.

Project Visibility

From most locations observed, the proposed turbines would be partially screened or filtered by the plantation areas to the east of the town and seen in the background of views, These views, or generally oblique to the direction of travel . It is recognised however that turbines would be visible from roads and locations that are setback from plantation areas or where breaks in roadside vegetation and other plantings allow views to the east.

The nearest turbine would be approximately 3.8 km to the northeast. At this distance, the Project turbines have the potential to be visually dominant features in the landscape where visible.

Roadside and residential vegetation throughout the township would further assist in filter and screen views to the turbines.

Once the avenue of honour planting has established, the views from the major road would be further filtered or screened. This may take several years to establish, depending on the species planted and maintenance.

For these reasons, the overall visual impact would be **Low**.

Cumulative Considerations

The approved Ryan Corner Wind Farm would be located approximately 5.4km to the south. Figure 8-32 shows the view looking south.

Figure 8-32 VP T6 - Orford township - view looking south towards Ryan Corner Wind Farm

Roadside vegetation along Hamilton – Port Fairy Road south of Orford is mature and provides screening and filtering of views to the south and therefore Ryan Corner Wind Farm.

VIEWPOINT T6 – Orford township (54H 596971, 5770680)			
Distance	3.8km NE (T20)	**ZVI**	**Highly visible and will usually dominate the landscape**
Landscape Unit	LU2 – Rural residential	**Sensitivity**	Medium-High
Viewer Type	Road users	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Low**		

8.2.1 Summary of township viewpoints

A requirement of the Victorian Guidelines is the potential for impacts on nearby communities and town centres. This section has reviewed locations and views from several townships and localities within the study area. These assessments are supported by the mapping prepared by the SAA in Section 7 and views observed from within and around the townships. The overall visual impact from these areas is considered **Low** through to **Negligible-Nil**.

Views from most locations within the nearby towns and localities would be filtered or screened by a combination of topography, vegetation or buildings and other structures. Views are typically limited to the edges or approaches to towns or areas such as recreation reserves and waterbodies that allow for views over cleared farming areas.

Table 8.4: Township Viewpoints summary

VP	Distance to nearest turbine	Landscape Unit	Visual Impact Assessment
VP T1 – Macarthur township	13.7km SE (T2)	LU1 – Townships	**Negligible-Nil**
VP T2 – Hawkesdale township	10.6km SW (T54)	LU1 – Townships	Within town **Negligible - Nil** From the township outskirts **Low**
VP T3 – Woolsthorpe township	17.7km W (T59)	LU1 – Townships	**Negligible-Nil**
VP T4 – Winslow township	21.2 km NW (T59)	LU1 – Townships	**Negligible-Nil**
VP T5 – Kirkstall township	12.5km NW (T59)	LU1 – Townships	**Negligible-Nil**
VP T6 – Orford township	3.8km NE (T20)	LU1 – Townships	**Low**

8.3 Major roads (highways) and connector roads

Defined highways and tourist routes within the study area are limited to the Princes Highway to the south of the Project and closely follow the shoreline. The highway is approximately 13km to the south of the Project at its nearest point. Viewer numbers are considered to be high. The landscape sensitivity varies and is dependent on the viewing location and landscapes in the area to the Project.

Connector roads are frequently used by locals as they go about their daily lives in the area. Connector roads include the Hamilton-Port Fairy Road to the west, Penshurst-Warrnambool Road to the east, and Woolsthorpe-Heywood Road which runs generally north of the Project. The landscape sensitivity varies and is dependent on the viewing location and landscapes in the area.

Viewer numbers for these roads have been considered as medium to high with the landscape sensitivity varying dependent on the viewing location and proximity to the Project. These roads also may be used by tourists navigating the region.

The location of each viewpoint in proximity to the Project is shown in Figure 8-33.

Figure 8-33 Map: Major Roads Viewpoints

The location, co-ordinates, distance to the nearest turbine and prevalent landscape unit towards the wind farm are described in Table 8.5.

Table 8.5: Major Roads viewpoints

VP	Distance to nearest turbine	GPS Co-ordinates	Landscape Unit
VP H1 – Princes Highway (Codrington)	15.4km NE (T4)	54H 585520, 5763291	LU9 – Coastal Landscape
VP H2 – Princes Highway (Yambuk)	16.3km NE (T20)	54H 595004, 5756941	LU3 – Plains Farmland
VP H3 – Hamilton–Port Fairy Road	11.8 km SE (T2)	54H 588836, 5788182	LU3 – Plains Farmland, Plantation Forest
VP H4 – Hamilton–Port Fairy Road/ Kangertong Road	5.6km SE (T2)	54H 592458, 5783064	LU3 – Plains Farmland
VP H5 – Hamilton–Port Fairy Road	3.1km SE (T1)	54H 592053, 5779406	LU3 – Plains Farmland
VP H6 – Hamilton–Port Fairy Road/ Woolsthorpe–Heywood Road	2.4km SE (T1)	54H 592264, 5778264	LU3 – Plains Farmland
VP H7 – Hamilton–Port Fairy Road	1.7km E (T4)	54 H 593552, 5774989	LU3 – Plains Farmland
VP H8 – Hamilton–Port Fairy Road	2.7km NE (T7)	54H 595358, 5772493	LU3 – Plains Farmland, Plantation Forest
VP H9 – Hamilton–Port Fairy Road	7.3km N (T20)	54H 599781, 5765063	LU3 – Plains Farmland, Lava Flows: Agricultural
VP H10 – Woolsthorpe–Heywood Road	9.9km E (T1)	54H 584573, 5777397	LU3 – Plains Farmland
VP H11 – Woolsthorpe–Heywood Road	2.2km S (T14)	54H 598096, 5778598	LU3 – Plains Farmland
VP H12 – Woolsthorpe–Heywood Road	1.2km SE (T48)	54H 604206, 5778774	LCU 6a – Lava Flows: Farmland, Swamps, and Wetlands
VP H13 – Woolsthorpe–Heywood Road	5.3km SW (T54)	54H 611862, 5776981	LCU 6a – Lava Flows: Farmland, Swamps, and Wetlands
VP H14 – Penshurst–Warrnambool Road	26.7km SW (T48)	54H 613618, 5802852	LCU 6a – Lava Flows: Farmland, Swamps, and Wetlands
VP H15 – Penshurst–Warrnambool Road	13 km SW (T54)	54H 614824, 5786563	LU3 – Plains Farmland
VP H16 - Penshurst–Warrnambool Road/ Nardoo Road	9.8km SW (T54)	54H 615825, 5779762	LU3 – Plains Farmland
VP H17 - Penshurst–Warrnambool Road/ Willatook-Warrong Road	8.1km NW (T59)	54H 615179, 5770639	LU3 – Plains Farmland

8.3.1 VP H1 – Princes Highway #1

Viewpoint H1 is located at the Codrington and Yambuk Wind Farm viewing platform, adjacent to the Princes Highway, near the locality of Codrington.

The nearest Project turbine is approximately 15.4 km to the north-east.

Figure 8-34 shows the view from the wind farm observation point looking towards the Codrington and Yambuk Wind Farms. This view is looking south and away from the Project.

Figure 8-34 VP H1 – Princes Highway #1 view looking south toward the Codrington and Yambuk Wind Farm

Figure 8-35 shows the view looking north from the same location in the direction of the Project.

Figure 8-35 VP H1 – Princes Highway #1 view looking northeast toward the Project

Figure 8-36 shows an enlargement of the view looking north-east towards the Project and east of the nearby windbreak plantings.

Figure 8-36 Enlargement of the view looking north-east toward the Project

The plantation areas seen in the background of this view are approximately 1.8 km in the distance. While noticeable, the tree height is not a visually dominant feature. From this location, the Project would be over 16.0 km away. Even though the proposed turbines are up to 250 m in height, at this distance, vertically they would be approximately 1º. In the context of this view, the turbines would be partially screened or wholly screened from views.

Landscape Character

Viewpoint H1 is located within the Rural Wind Farm (Coastal) landscape unit. The predominant land use is cleared farmland used for grazing. The coast is approximately 2.3km south of this viewpoint and the Princes Highway.

The sensitivity of coastal landscapes is high, however views of the coastline and open waters from this location are screened by intervening sand dunes and low rises which run parallel to the highway. Views towards the Project are over the Plains landscape. This landscape unit which is highly modified and prevalent in the area is less sensitive to visual change.

Project Visibility

Views towards the Project are away from the coast and across Plains Landscape. At this distance, the Project wind turbines would not form a dominant element in this landscape given the distance to the proposed wind farm.

Shelterbelt, roadside vegetation, and vegetation surrounding dwellings assist to further filter or screen views to the north. The overall visual impact from this location would be **Negligible** if visible to **Nil**.

VIEWPOINT H1 – Princes Highway (Codrington) - 54H 585520, 5763291			
Distance	To Project: 15.4km NE (T4)	**ZVI**	**Noticeable**, but will not dominate the landscape
Landscape Unit	LU10b – Rural wind farm (Coastal)	**Sensitivity**	Medium
Viewer Type	Tourists, road users	**Viewer numbers**	High
OVERALL VISUAL IMPACT	**Negligible - Nil**		

8.3.2 VP H2 – Princes Highway #2

Viewpoint H2 is located along the Princes Highway, approximately 2 km east of Yambuk.

The nearest Project turbine is approximately 16.3 km to the north-east.

The coastline and existing wind turbines at the Codrington and Yambuk Wind Farms to the south-west are approximately 3.0 km south of the highway at this location.

The proposed Ryan Corner wind farm would be approximately 2.5 km north-east.

Figure 8-37 shows the view looking north toward the Project and the proposed Ryan Corner Wind Farm.

Figure 8-37 VP H2 – View north toward the Project (and approved Ryan Corner Wind Farm)

Landscape Character

Viewpoint H2 is located within the Plains Farmland and Rural Wind Farms (Coastal) landscape units. Sections of the Mount Rouse Lava flow exist nearby to the east and north. The predominant land use is grazing agricultural fields.

Plains Farmland landscapes are inherently of a low sensitivity to visual change, recognising that these landscapes are highly modified from their natural state, are not rare and often undergo visual change seasonally.

This location is from a highway, which would expect high viewer numbers and high tourism numbers.

Project Visibility

Figure 8-38 shows a wireframe of the same view with the turbines superimposed into the view.

Figure 8-38 VP H2 – Wireframe view of the proposed Willatook turbines

Figure 8-39 shows the wireframe view with the addition of the proposed Ryan Corner wind turbines.

Figure 8-39 VP H2 – Wireframe view of the proposed Willatook turbines and Ryan Corner turbines

It is to be noted that being a wireframe only, not a photomontage, the visibility of turbines is accentuated due to the use of colour and numbering. They also do not have the screening benefits applied of the topography and vegetation in the foreground.

At this distance, the Project may be a noticeable, but would not be a dominant element in the landscape.

Shelterbelts to the north are scattered and would assist in filtering and screening views toward the Project. Glimpses toward the Project would be afforded to passing motorists. For these reasons, the overall visual impact of the Project would be **Low** – **Negligible**.

Cumulative Considerations

Views to the west along Princes Highway include the constructed turbines at Yambuk as shown in Figure 8-40.

Figure 8-40 VP H2 – View to the west toward Yambuk Wind Farm.

Views to the north and towards the Project would include the proposed Ryan Corner wind turbines. As seen in the wireframe view at Figure 8-39 the more noticeable turbines would be those of the proposed Ryan Corner wind farm. The inclusion of the Project turbines further north at a distance of approximately 16.3km would not be a dominant element.

In these instances, the nearest wind farm is the most obvious contributor to views. The impact brought about by another wind farm in the distance does not alter the level of impact. Therefore, the cumulative impact of the inclusion of Project turbines would be **Negligible**.

VIEWPOINT H2 – Princes Highway (Yambuk) 54H 595004, 5756941			
Distance	16.3km NE (T20)	**ZVI**	**Noticeable**, but will not dominate the landscape
Landscape Unit	LU3 – Plains Farmland	**Sensitivity**	Low
Viewer Type	Road users, tourists	**Viewer numbers**	High
OVERALL VISUAL IMPACT	**Low – Negligible**		

8.3.3 VP H3 – Hamilton–Port Fairy Road #1

Viewpoint H3 is located along Hamilton–Port Fairy Road.

The nearest Project turbine is approximately 11.8 km to the southeast.

The existing Macarthur Wind Farm is approximately 12.4 km to the east.

Figure 8-41 shows the view looking south-east toward the Project.

Figure 8-41 VP H3 – Hamilton–Port Fairy Road, looking south-east

Figure 8-42 shows an enlargement of the view looking east towards the existing turbines at the Macarthur Wind Farm.

Figure 8-42 VP H3 – Hamilton–Port Fairy Road, looking east

The existing turbines located within the Macarthur Wind Farm, which are approximately 2.0 km closer than those proposed by the Project are not visible or readily discernible from this location. This is due in part to distance, the topography of the landscape between the road and the turbines, and vegetation along roadsides, property, and paddock boundaries and within farming areas. It is acknowledged that the turbines proposed by the Project are 100 m taller, however, due to the increased distance, the change in the vertical field of view would be less than 0.5º of a degree and therefore insignificant.

Landscape Character

Viewpoint H3 is located within the Plains Farmland and Plantation Forests landscape units. The Plains Farmland to the east allows clear views across the landscape toward undulating farmland and creek lines, framed between scattered instances of vegetation. The Plantation Forests, which are scattered in all directions, provide moments of screening and revealing of views throughout the landscape. The sensitivity of both landscape units is low.

Project visibility

Exotic coniferous shelterbelt plantings and the plantation forest to the right of this view filter and screen views toward the Project at this location. Project turbine blades may be visible above this vegetation.

In the context of a road journey, turbines would appear and disappear as travellers move through the plantation landscape. Due to the limited visibility, landscape sensitivity, and distance to the Project, the overall visual impact from this location would be **Negligible – Nil**.

VIEWPOINT H3 – Hamilton Port Fairy Road (54H 588836, 5788182)			
Distance	11.8 km SE (T2)	**ZVI**	**Noticeable, and can dominate the landscape**
Landscape Unit	LU3 – Plains Farmland, LU5b – Plantation Forest	**Sensitivity**	Low
Viewer Type	Road users	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Negligible - Nil**		

8.3.4 VP H4 – Hamilton–Port Fairy Road / Kangertong Road

Viewpoint H4 is located at the intersection of Hamilton–Port Fairy Road and Kangertong Road to the north-west of the Project and west of the Macarthur Wind Farm.

The nearest Project turbine is approximately 5.6 km to the south-east.

Turbines within the existing Macarthur Wind Farm are approximately 8.6 km to the east.

Figure 8-43 shows the view looking south-east toward the Project.

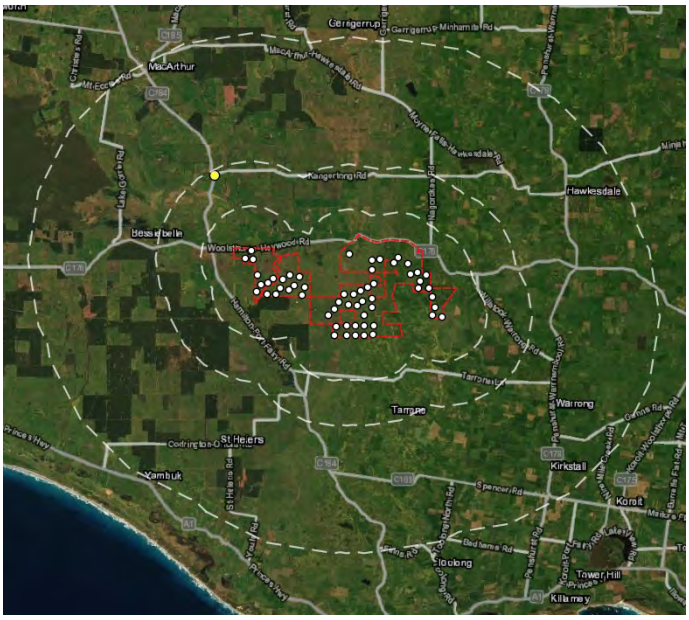


Figure 8-43 VP H4 – Hamilton–Port Fairy Road / Kangertong Road

Figure 8-44 shows an enlargement of the view looking south-east towards the Project.

Figure 8-44 Enlargement of the view looking south-east.

In this direction, the proposed turbines would be approximately 4.5 km in the distance and visible over the cleared farmland where breaks in roadside and other vegetation permits.

Landscape Character

Viewpoint H4 is located within the Plains Farmland landscape. The predominant land use in this area is agricultural grazing land. Lineal plantings of exotic trees are located along roadsides, shelterbelts, and property boundaries are common in this area. Several creek lines, wetland areas, and tributaries converge in this

location, which adds visual diversity in an otherwise modified, flat landscape. The Plains Farmlands are generally of low sensitivity to visual change as these areas have been highly modified from their natural state. The presence of wetlands in this location heightens the sensitivity somewhat, however, are not publicly accessible, protected, or highlighted landscape features.

Project visibility

This location is not one of visual significance, rather it is a transitory view where a break in roadside vegetation allows for views towards the Project. These views would be filtered through roadside vegetation and shelterbelts as they move through the landscape, viewer numbers would be medium, with views over a landscape unit that is not sensitive to visual change.

The proposed turbines would be likely be visible and at a distance where they could potentially be visually dominant structures. Further, views from the road are dynamic and range from little or no visibility to open and clear views over short distances. For these reasons, the overall visual impact would be **Low**.

VIEWPOINT H4 – Hamilton–Port Fairy Road / Kangertong Road (54H 592458, 5783064)			
Distance	5.6km SE (T2)	**ZVI**	**Highly visible and will usually dominate the landscape**
Landscape Unit	LU3 – Plains Farmland	**Sensitivity**	Low
Viewer Type	Road users	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Low**		

8.3.5 VP H5 – Hamilton–Port Fairy Road #2

Viewpoint H5 is located along Hamilton–Port Fairy Road, near the locality of Broadwater.

The nearest Project turbine is approximately 3.1km to the south-east.

Figure 8-45 shows the view looking east through south.

Figure 8-45 Viewpoint H5 – Hamilton–Port Fairy Road view looking east through south

Landscape Character

This landscape is within the Plains Farmland landscape unit. However, there are several residential dwellings, agricultural sheds, and a community tennis court are present in this area, views are over land zoned Farming. Shelterbelts and roadside vegetation are common in this area, but not present at this location between the viewer and the Project. Although views include residential dwellings, views are over Plains Farmland which has a low sensitivity to visual change.

Project Visibility

Figure 8-46 shows a photomontage of the same view with the turbines superimposed into the view.

Figure 8-46 Viewpoint H5 – Photomontage

Figure 8-47 shows an enlargement of the photomontage.

Figure 8-47 Viewpoint H5 – Photomontage enlargement

At this location, the Project turbines would be visible and potentially dominant elements in the landscape due to distance and absence of intervening topography and vegetation.

Roadside vegetation would assist in screening or filtering views near this location. Views towards the Project would be filtered or revealed entirely as road users travel through this landscape.

Although the proposed turbines would be visible and at a distance where they could potentially be visually dominant structures, viewer numbers would be medium and over a landscape unit that is not sensitive. Further, views from the road are dynamic and range from little or no visibility to open and clear views over short distances. For these reasons, the overall visual impact would be **Low**.

This assessment of low does not relate to residential dwellings within the locality. Impacts from residential dwellings have a higher sensitivity and would be considered separately and where access is granted.

VIEWPOINT H5 – Hamilton-Port Fairy Road (54H 592053, 5779406)			
Distance	3.1km SE (T1)	**ZVI**	**Highly visible and will usually dominate the landscape**
Landscape Unit	LU3 – Plains Farmland	**Sensitivity**	Low
Viewer Type	Road users	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Low**		

8.3.6 VP H6 – Hamilton–Port Fairy Road / Woolsthorpe–Heywood Road

Viewpoint H6 is located at the intersection of Hamilton–Port Fairy Road and Woolsthorpe–Heywood Road.

Being at the junctions of several roads, there would be an increased likelihood of road users stopping or slowing and taking in views of the turbines.

The nearest Project turbine is approximately 2.4 km to the south-east. Macarthur Wind Farm is approximately 10 km to the north-east.

Figure 8-48 shows the view looking north to south through east toward the Project and Macarthur Wind Farm.

Figure 8-48 VP H6 – Hamilton–Port Fairy Road / Woolsthorpe–Heywood Road, looking north to south through east

On a clear day the tips of the Macarthur Wind Farm turbines are visible above the horizon where breaks in boundary plantings and wind breaks permit views.

Figure 8-49 shows an enlargement of the view looking north-east towards the Macarthur Wind Farm.

Figure 8-49 Enlargement of view north-east towards Macarthur turbines

Cumulative Considerations

Although not discernible even in the enlarged image, the tips of several turbines within the Macarthur Wind Farm can be seen from this location when on-site and on clear days. Due to the limited visibility and the ameliorating effects of turbine scale over distance, intervening topography and vegetation, the turbines within the Macarthur Wind Farm even with the enlarged image are not visually dominant features. Due to limited visibility and prominence of turbines within the Macarthur Wind Farm the addition of turbines within the proposed Willatook Wind Farm either through sequential or simultaneous views from this location would be **Low–Negligible**.

Landscape Character

Viewpoint H6 is located within the Plains Farmland landscape unit. The landscape is relatively flat and cleared of canopy vegetation. The predominant land use is agricultural grazing. There are few dwellings in this area due to the larger farms. This location has a low sensitivity.

Project Visibility

From this location the Project turbines would be highly visible and a dominant feature in this landscape, due to the limited roadside vegetation, proximity of the turbines and the generally flat to undulating topography.

However, views towards the Project are over Plains Farmland, and do not include features of landscape significance or that are recognised in the Planning Scheme or strategic documents, views are transitory in nature and therefore limited in duration.

Due to the transitory nature of views and low landscape sensitivity, the overall visual impact would be **Low**. This assessment of low does not relate to residential dwellings within the locality. Impacts from residential dwellings would be considered separately and where access is granted.

VIEWPOINT H6 – Hamilton–Port Fairy Road / Woolsthorpe–Heywood Road (54H 592264, 5778264)			
Distance	2.4km SE (T1)	**ZVI**	**Will always be visually dominant in the landscape**
Landscape Unit	LU3 – Plains Farmland	**Sensitivity**	Low
Viewer Type	Road users	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Low**		

8.3.7 VP H7 – Hamilton–Port Fairy Road #3

Viewpoint H7 is located along the Hamilton–Port Fairy Road, north of Orford.

The nearest Project turbine is approximately 1.7 km to the east. The proposed on-site quarry would be approximately 4.1 km also to the east.

Figure 8-50 shows the view looking east toward the Project.

Figure 8-50 VP H7 – Hamilton–Port Fairy Road, looking east toward the Project

Landscape character

Viewpoint H7 is located within the Plains Farmland landscape character unit. Roadside vegetation is widespread along this section of Hamilton–Port Fairy Road, which frames views to the road corridor, and offers glimpses to the wider landscape when breaks in vegetation occur.

Project Visibility

Roadside vegetation would allow for filtering and partial screening of the turbines. At this distance, turbines may appear above the canopy level of this roadside vegetation. Where visible, the turbines would be a dominant feature in the landscape.

Due to the distance of approximately 4.1 km and intervening vegetation, the on-site quarry would not likely be visible.

Views to the Project would be generally oblique to the direction of travel and generally short in duration where breaks in roadside vegetation permit views towards the Project. For these reasons, the overall visual impact is considered to be **Low**.

VIEWPOINT H7 – Hamilton – Port Fairy Road (54 H 593552, 5774989)			
Distance	1.7km E (T4) 4.1km E – Quarry Area	**ZVI**	**Will always be visually dominant in the landscape**
Landscape Unit	LU3 – Plains Farmland	**Sensitivity**	Low
Viewer Type	Road users	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Low**		

8.3.8 VP H8 – Hamilton – Port Fairy Road #4

Viewpoint H8 is located along the Hamilton – Port Fairy Road, north of Orford.

The nearest Project turbine is approximately 2.7 km to the north-east.

Limited roadside vegetation along the eastern road reserve permits clear views across the landscape in the direction of the Project.

Figure 8-51 shows the view looking east toward the Project.

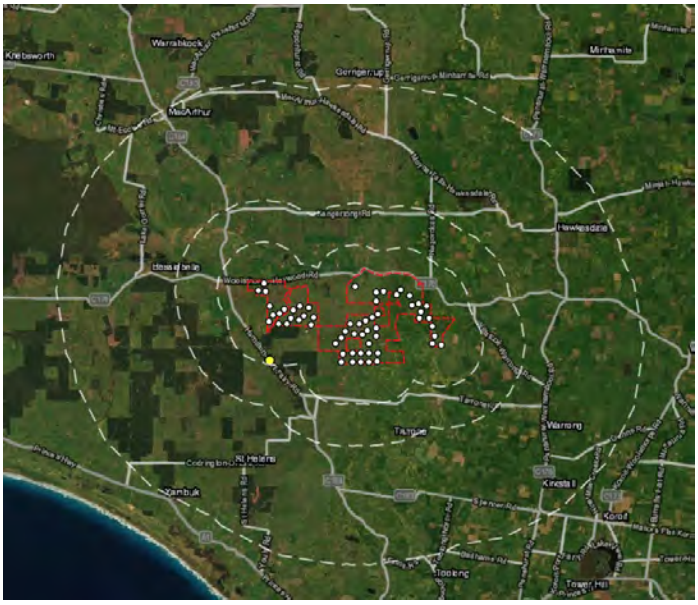


Figure 8-51 VP H8 – Hamilton – Port Fairy Road #4

Landscape Character

Plains Farmland is the predominant landscape character of this area. A vegetated waterway exists approximately 380 m to the east of this location but is not visually discernible.

Project Visibility

Figure 8-52 shows the same view with the proposed turbines superimposed.

Figure 8-52 VP H8 – Photomontage

Figure 8-53 shows an enlargement of the photomontage looking north.

Figure 8-53 VP H8 – Photomontage enlargement looking north

The Project would be a visible and dominant element due to distance, flat topography to the east and limited roadside vegetation. The turbines towards the northern end of the Project would be partially screened or filtered by the existing vegetation, with the nearer turbines at the southern end of the Project visible above nearby vegetation.

Cumulative Considerations

The approved Shaw River Gas Fired Power Station would be located approximately 1.2 km to the east of this viewpoint. There is limited information available to consider the context of the power station relative to the Project.

The existing 500 kV transmission lines are approximately 1 km to the north of this viewpoint. An enlargement of the transmission line is shown in Figure 8-54. The turbines within the Macarthur Wind Farm are not visible.

Figure 8-54 VP H8 – Transmission line enlarged view

At this distance, intervening mature shelterbelt vegetation filters and screens views to the transmission towers. They are prominent and noticeable features in the landscape but are not dominant against the perceived scale of existing vegetation.

The Project would be a visible and dominant element due to distance, flat topography to the east, and limited roadside vegetation. Although viewer numbers along this section of road are higher than local roads, views would be relatively short and not in proximity to any designated viewing locations or roadside stops. Views

towards the Project are also over a landscape that is not rare or unique and one that includes the existing high voltage transmission lines. For these reasons, the visual impact would be **Low**.

VIEWPOINT H8 – Hamilton – Port Fairy Road (54H 595358, 5772493)			
Distance	2.7km NE (T7)	**ZVI**	**Will always be visually dominant in the landscape**
Landscape Unit	LU3 – Plains Farmland, Plantation Forest	**Sensitivity**	Low
Viewer Type	Road users	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Low**		

8.3.9 VP H9 – Hamilton – Port Fairy Road #5

Viewpoint H9 is located along Hamilton–Port Fairy Road, adjacent to the approved Ryan Corner Wind Farm.

The nearest Project turbine is approximately 7.3 km to the north.

Figure 8-55 shows the view looking north toward the Project.

Figure 8-55 VP H10 – Hamilton – Port Fairy Road, view north towards the Project

Landscape Character

This landscape includes a mix of both Plains Farmland and Lava Flows: Agricultural landscape types. The Predominant land use is grazing agricultural land.

Trees and other vegetation are relatively scarce in this area and limited to areas surrounding residential dwellings and patches of roadside vegetation. The Pretty Hill Flora Reserve is located approximately 1km to the north of this location.

Project Visibility

The Project turbines would be visible on the horizon to the north of this viewpoint. The turbines would be at such a distance that they would be noticeable and potentially dominant elements in the landscape. The horizontal extent (view arc) of visible turbines would be up to 65 degrees.

Cumulative Considerations

The approved Ryan Corner Wind Farm is directly adjacent to this viewpoint to the west. Figure 8-56 shows the view of the Ryan Corner Wind Farm site.

Figure 8-56 VP H10 - Hamilton - Port Fairy Road, view west towards approved Ryan Corner Wind Farm

The Ryan Corner Wind Farm, once constructed and operating, would be a highly visible and dominant element in this landscape. The landscape character of this location would then include the character of a Rural Wind Farm landscape.

The Project would be a visible due to the flat topography to the north, and limited roadside vegetation. At a distance of approximately 7.3 km the turbines would be a noticeable element in the view. Although viewer numbers along this section of road are higher than local roads, views would be relatively short and not in proximity to any designated viewing locations or roadside stops. Views towards the Project are also over a landscape that is not rare or unique. For these reasons, the visual impact would be **Low**.

VIEWPOINT H10 – Hamilton – Port Fairy Road (54H 599781, 5765063)			
Distance	7.3km N (T20)	**ZVI**	Noticeable, and can dominate the landscape
Landscape Unit	LU3 – Plains Farmland, Lava Flows: Agricultural	**Sensitivity**	Low
Viewer Type	Road users	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Low**		

8.3.10 VP H10 – Woolsthorpe – Heywood Road #1

Viewpoint H10 is located along Woolsthorpe–Heywood Road, approximately 1km north of the locality of Bessiebelle where a narrow break in roadside vegetation permits views to the east.

The nearest Project turbine is approximately 9.9 km to the east of this viewpoint

Figure 8-57 shows the view looking east toward the Project.

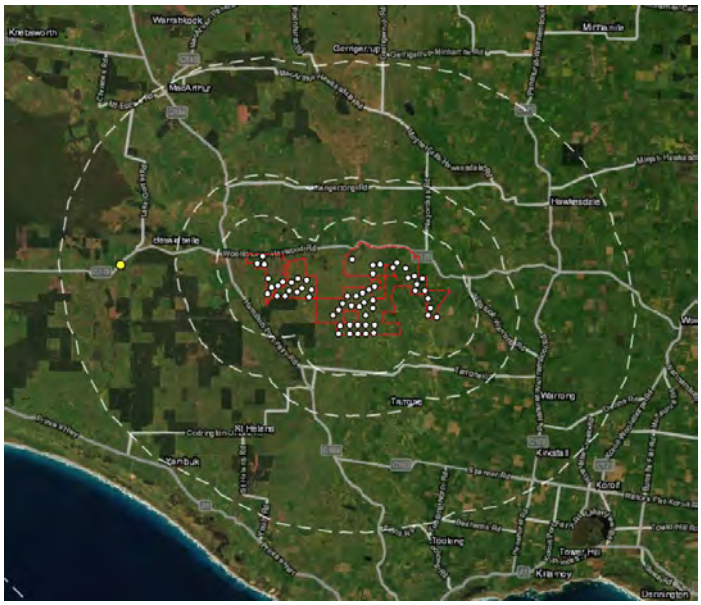


Figure 8-57 Viewpoint H10 – Woolsthorpe–Heywood Road view looking east

Landscape Character

Viewpoint H10 is located within the Plains Farmland and Plantation Forests landscape units. Both of these landscape units are prevalent in this area and characterise views along this road.

A large number of plantation areas results in a mosaic of plantation forest with sharply defined margins along property boundaries and planting coups. These areas highlight the temporal variability and modification of these landscapes. The sensitivity of these landscape units is low due in part to their prevalence and representation in the region and the use of the land for productive purposes.

Project Visibility

Views to the Project from this area would be filtered and screened by a combination of roadside vegetation and plantation forests.

In the context of a journey, views toward the Project would become more apparent and more dominant above vegetation as road users travel east of Bessiebelle.

The visual impact from this location would be **Low – Negligible**. This is due to a combination of roadside vegetation, trees within timber coups which limit visibility across the landscape, along with, few viewer numbers and the lower sensitivity of the surrounding landscape to visual change.

VIEWPOINT H10 – Woolsthorpe – Heywood Road (54H 584573, 5777397)			
Distance	9.9km E (T1)	**ZVI**	**Noticeable, and can dominate the landscape**
Landscape Unit	LU3 – Plains Farmland	**Sensitivity**	Low
Viewer Type	Local	**Viewer numbers**	Low
OVERALL VISUAL IMPACT	**Low – Negligible**		

8.3.11 VP H11 – Woolsthorpe–Heywood Road #2

Viewpoint H11 is located along Woolsthorpe–Heywood Road immediately north of the Project.

Turbines would be located to the north-east, east, south, and south-west.

The nearest Project turbine would be approximately 2.2 km to the south. The Project quarry would be approximately 3.1 km to the south.

Existing turbines within the Macarthur Wind Farm are approximately 6.7 km to the north-east.

Figure 8-58 shows the view looking northeast to southeast along Woolsthorpe – Heywood Road from the northern end of a windbreak located within farmland to the south.

Figure 8-58 VP H11 – Woolsthorpe–Heywood Road, looking northeast through south-west.

The features of the stony-rises landscape character resulting from the Mount Rouse lava flow are also visible in the image.

Figure 8-59 shows the same view with and enlargement of the visible turbines within the Macarthur wind farm.

Figure 8-59 VP H11 – Enlargement of the view north-east toward the Macarthur Wind Farm

The nearest turbines within the Macarthur Wind Farm are approximately 7.4 km to the north-east and to the rights of the shelterbelt planting highlighted within the inset image.

The height of this shelterbelt is effective at screening the height of the existing turbines, though the length of the shelterbelt allows visibility of turbines at this location as shown in the enlarged inset image. The visible turbines are at such a distance that they do not be prominent elements in views.

The nearest Project turbines when looking generally east would be approximately 4.7 km to the north (image left) of the road and 3.3 km to the south (image right). At these distances, the turbines would be highly visible and potentially dominant features.

Figure 8-60 shows the view looking from south-east to south-west through south from the same location.

Figure 8-60 Viewpoint H11 – Woolsthorpe–Heywood Road, looking south-east to south-west through south.

The nearest Project turbine in this direction would be turbine T13, approximately 2.2 km directly to the south and would be visually dominant due to distance.

Shelterbelts are prevalent in the areas to the north, which assists in screening views to the existing Macarthur Wind Farm. In the area to the south, shelterbelts are less prevalent, are generally perpendicular to the road, and therefore would allow clear views to the Project turbines.

Project Visibility

Views to the Project from this area would be filtered and screened by a combination of roadside vegetation and plantation forests.

In the context of a journey, views toward the Project would become more apparent and more dominant above vegetation for road users.

The visual impact from this location would be **Low** due to few viewer numbers and the low sensitivity of the surrounding landscape to visual change.

Quarry Considerations

The Project quarry would be approximately 3.1 km to the south and beyond the horizon created by the low rise seen in the background of Figure 8-60 and would not likely be visible.

Cumulative Considerations

While both the Project and the existing Macarthur Wind Farm would be visible at this location, the cumulative impact would be **Low-Medium**. This is attributed to the low visual prominence of turbines within the Macarthur Wind Farm and few viewer numbers.

VIEWPOINT H11 – Woolsthorpe–Heywood Road (54H 598096, 5778598)			
Distance	2.2km S (T14) 3.1km S (Quarry Area)	**ZVI**	**Will always be visually dominant in the landscape**
Landscape Unit	LU3 – Plains Farmland	**Sensitivity**	Low
Viewer Type	Local	**Viewer numbers**	Low
OVERALL VISUAL IMPACT	**Low-Medium**		

8.3.12 VP H12 – Woolsthorpe–Heywood Road / Tarrone North Road

Viewpoint H12 is located along Woolsthorpe–Heywood Road at the intersection with Tarrone North Road.

Turbines would be located to the north, south-east, south, and south-west.

The nearest Project turbine is approximately 1.2 km south-east.

Existing turbines within the Macarthur Wind Farm are approximately 6.4 km to the north.

Figure 8-61 shows the view looking south-east through south-west toward the Project.

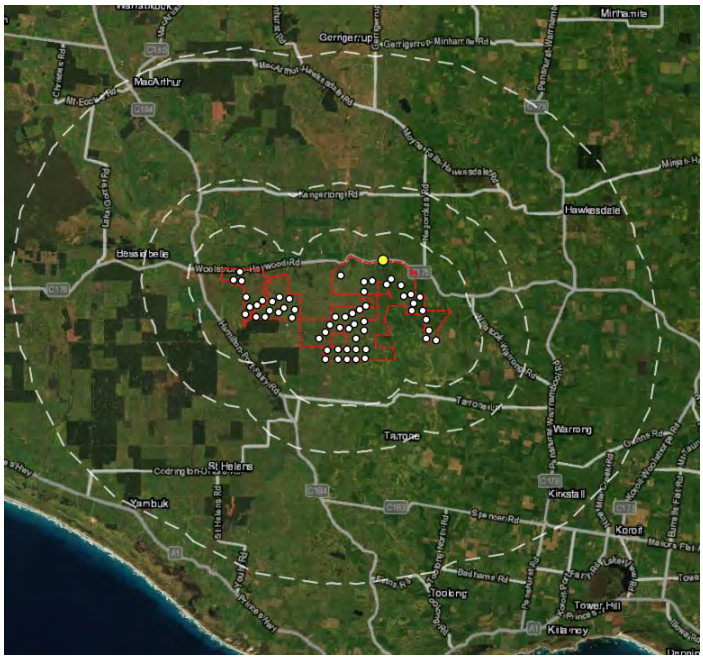


Figure 8-61 VP H12 – Woolsthorpe–Heywood Road, looking southeast through southwest.

Figure 8-62 shows the view looking north-west through north-east.

Figure 8-62 VP H12 – Woolsthorpe–Heywood Road, looking northwest through northeast

Figure 8-63 shows an enlargement of the view looking north showing the existing Macarthur wind turbines through breaks in vegetation on the northern side of Woolsthorpe-Heywood Road.

Figure 8-63 VP H12 – Enlargement of the view north to Macarthur turbines

Project Visibility

Due to Woolsthorpe-Heywood Road running along the northern edge of the wind farm site and this viewpoint location located adjacent to the northern site boundary, Project visibility would be high. Turbines to the south would be visible above the hedgerows and windbreak planting seen in Figure 8-61. The Project would be clearly visible and dominant in views to the south at this location. However, due to the low viewer numbers, the low-medium sensitivity of the landscape in views towards the Project and the filtering of views by vegetation, the overall visual impact is assessed as **Low-Medium**.

Cumulative Considerations

While both the Project and the existing Macarthur Wind Farm would be visible at this location, the cumulative impact would be **Low**. This is attributed to the filtering of views to Macarthur to the north by existing vegetation on the northern side of Woolsthorpe-Heywood Road, the low visual prominence of turbines within the Macarthur Wind Farm and few viewer numbers.

VIEWPOINT H12 – Woolsthorpe–Heywood Road (54H 604206, 5778774)			
Distance	1.2km SE (T48)	**ZVI**	**Will always be visually dominant in the landscape**
Landscape Unit	LCU 6a – Lava Flows: Farmland, Swamps, and Wetlands	**Sensitivity**	Low-Medium
Viewer Type	Local	**Viewer numbers**	Low
OVERALL VISUAL IMPACT	**Low-Medium**		

8.3.13 VP H13 – Woolsthorpe–Heywood Road #3

Viewpoint H13 is located along Woolsthorpe–Heywood Road. The nearest Project turbine is approximately 5.3 km to the south-east.

Turbines would be located to the north-west, west, south, and south-west.

Existing turbines within the Macarthur Wind Farm are approximately 10.2 km to the north-west.

Figure 8-64 shows the view looking west toward the Project.

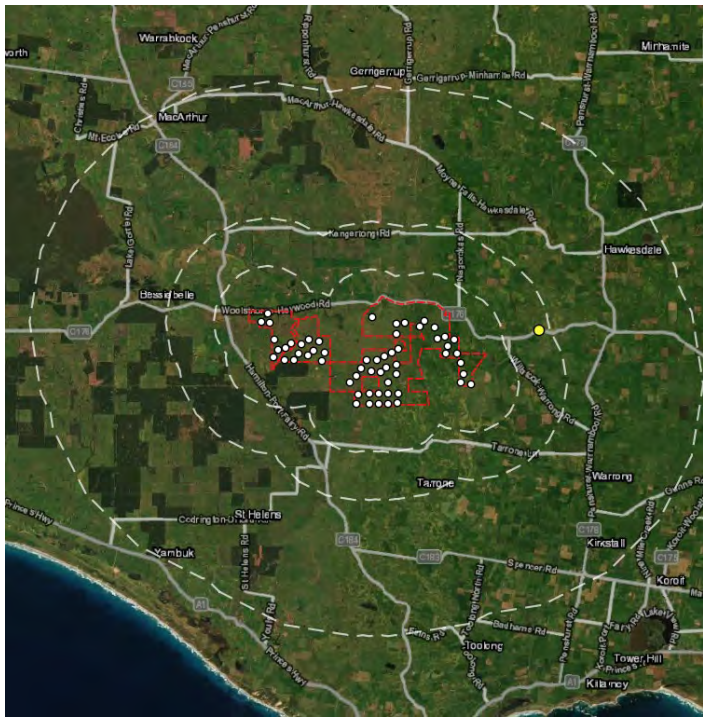


Figure 8-64 VP H13 – Woolsthorpe–Heywood Road, looking south through north-west

Figure 8-65 shows an enlargement of the view looking west.

Figure 8-65 VP H13 – Enlargement looking west

Figure 8-66 shows the same view with the proposed Willatook turbines superimposed.

Figure 8-66 VP H13 – Photomontage looking west

Project Visibility

The Project would be a visible and dominant element due to distance, flat topography to the east and limited roadside vegetation. In the context of a journey, views toward the Project would become more apparent and more dominant above vegetation for road users.

The visual impact from this location would be **Low** due to few viewer numbers and the low sensitivity of the surrounding landscape to visual change. This location is not one of visual significance, rather it is a transitory view where a break in roadside vegetation allows for views towards the Project.

Cumulative Considerations

While both the Project and the existing Macarthur Wind Farm would be visible at this location, the cumulative impact would be **Low-Medium**. This is attributed to the low visual prominence of turbines within the Macarthur Wind Farm and few viewer numbers.

When travelling west from Hawkesdale, travellers would have just passed through Woolsthorpe and Hawkesdale windfarms, contributing to a sequential cumulative impact.

The existing 500 kV transmission lines are approximately 600 m to the south of this viewpoint and are apparent in the existing view.

VIEWPOINT H13 – Woolsthorpe–Heywood Road (54H 611862, 5776981)			
Distance	5.3km NW (T54)	**ZVI**	**Highly visible and will usually dominate the landscape**
Landscape Unit	LCU 6a – Lava Flows: Farmland, Swamps, and Wetlands	**Sensitivity**	Low-Medium
Viewer Type	Local	**Viewer numbers**	Low
OVERALL VISUAL IMPACT	**Low**		

8.3.14 VP H14 – Penshurst–Warrnambool Road #1

Viewpoint H14 is located along Penshurst–Warrnambool Road north of Hawkesdale. The nearest Project turbine is approximately 26.7 km to the south-west.

The existing Macarthur Wind Farm is situated between this location and the Project. The nearest turbine at Macarthur is approximately 11.8 km to the south-west of this view.

Figure 8-67 shows the view looking south-west toward the Project and the Macarthur Wind Farm.

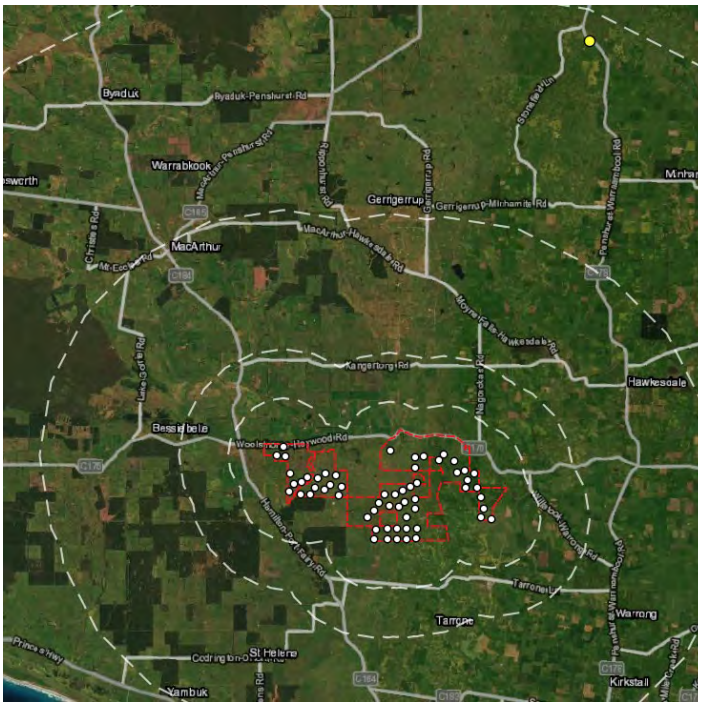


Figure 8-67 VP H14 – Penshurst–Warrnambool Road, looking south-west toward the Project

Landscape Character

Viewpoint H14 is located within a broad stretch of the Mount Rouse Lava Flow. The lava flow contributes to undulating, irregular terrain which is visible from the road network. This area is predominately modified agricultural land, which has been cleared of remnant native vegetation.

Project Visibility

At this location, the Macarthur Wind Farm is located in front of the Project and within this view. The Macarthur Wind Turbines are located behind the windbreak plantings seen roughly central to this view. The nearest Macarthur Wind Turbines are approximately 11.8 km to the south-west.

An enlarged and contrast-enhanced (to highlight turbines) view south-west toward the existing Macarthur Wind Turbines is shown in Figure 8-68.

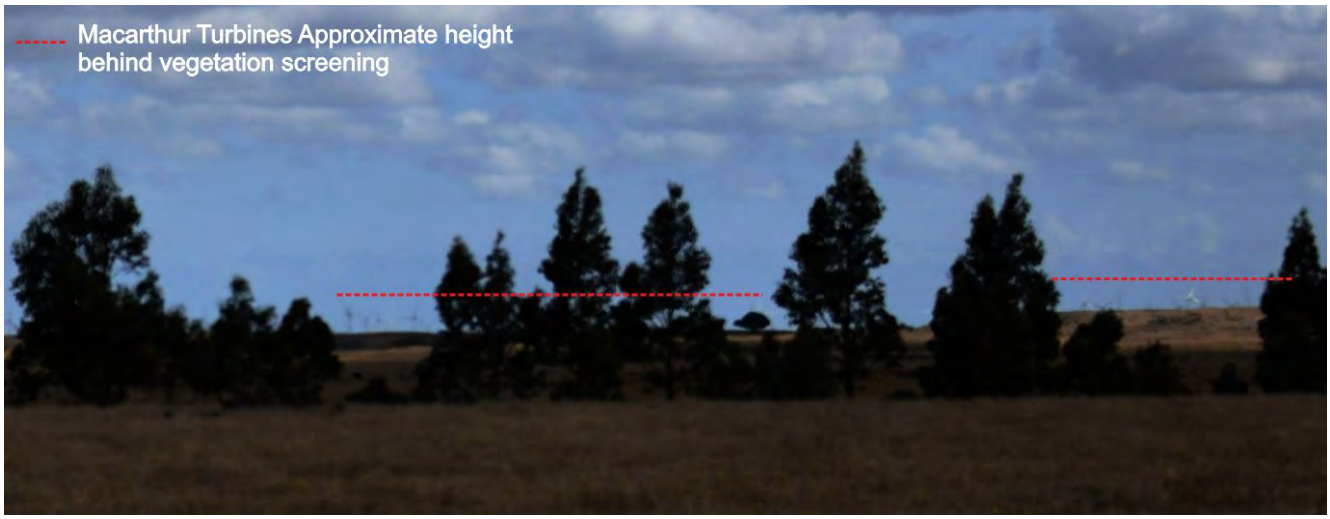


Figure 8-68 VP H15 – Enlarged view south-west toward Macarthur Wind Turbines

Turbines within the Macarthur windfarm are filtered or screened by a combination of vegetation and topography within the Lava Flows landscape.

The Project turbines would be over 10.0 km further than those within the Macarthur Wind Farm and would not be visible. Therefore, the visual impact from this location would be **Nil**.

Cumulative Considerations

While theoretically both the Project and the existing Macarthur Wind Farm could be visible at this location, the cumulative impact would be **Nil**, due to the Project turbines not likely being visible. The Macarthur wind turbines would be the only visible turbines in this view.

VIEWPOINT H14 – Penshurst–Warrnambool Road (54H 613618, 5802852)			
Distance	26.7km SW (T48)	**ZVI**	**Noticeable, but will not dominate the landscape**
Landscape Unit	LCU 6a – Lava Flows: Farmland, Swamps, and Wetlands	**Sensitivity**	Low-Medium
Viewer Type	Road users	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Nil**		

8.3.15 VP H15 – Penshurst–Warrnambool Road #2

Viewpoint H15 is located along Penshurst–Warrnambool Road at a break in roadside vegetation.

The nearest Project turbine is located approximately 13 km to the south-west.

The existing Macarthur Wind Farm is approximately 8.5 km to the west. The wind farm extends generally to the south-west through the north-west.

Figure 8-69 shows the view looking south-west toward the Project.

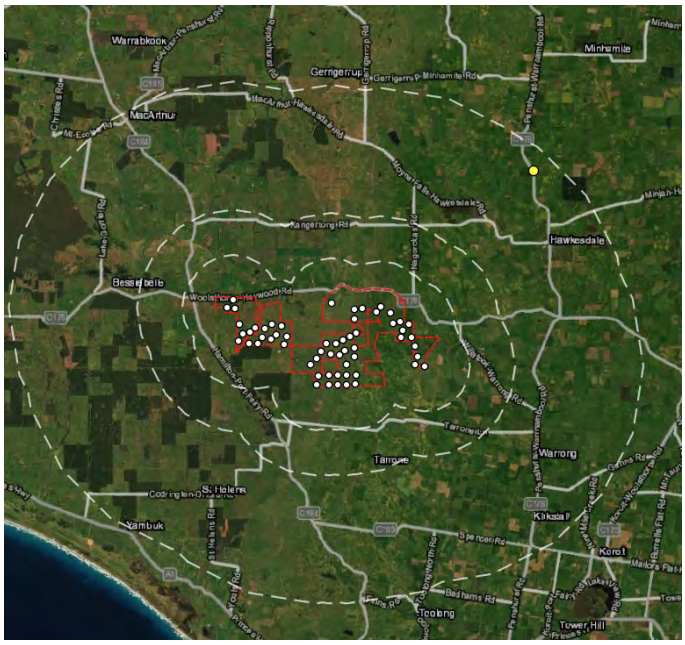


Figure 8-69 VP H15 – Penshurst–Warrnambool Road #2 view looking south-west toward the Project

A low but subtle rise in the landscape to the south of this location would likely screen most turbines within the Project. Vegetation located along roadsides, property boundaries, and fence lines would further limit views of the Project.

Figure 8-70 shows the view looking west to north-west from the same location towards the existing turbines within the Macarthur Wind Farm.

Figure 8-70 VP H15 – Looking west to north-west toward the existing Macarthur Wind Farm

Figure 8-71 shows an enlargement of the view looking towards the north-west.

Figure 8-71 VP H15 – Enlargement of view to the north-west toward Macarthur Wind Farm

The nearest turbines within the Macarthur Wind Farm are at a distance of approximately 8.5 km and visible above the shelterbelt vegetation intervening in the view. Although visible, the turbines are not dominant features within views.

Landscape Character

Viewpoint H15 is located within the Plains Farmland landscape. Several minor creek lines run through this area, partly a product of narrow rivers of the Mount Rouse lava flow. Vegetation within shelterbelts screens and filters views to these waterway features.

Project Visibility

A low but subtle rise in the landscape to the south of this location would likely screen most turbines within the Project. Vegetation located along roadsides, property boundaries, and fence lines would further limit views of the Project.

The shelterbelts provide a patchwork screening effect to broader views across the landscape. Project turbines at this distance may be noticeable but would not be dominant elements in the landscape. The overall visual impact would be **Negligible** – **Nil**.

Cumulative Considerations

While both the Project and the existing Macarthur Wind Farm have the potential to both be visible at this location, the cumulative impact would be Negligible. This is attributed to the low visual prominence of turbines within the Macarthur Wind Farm and few viewer numbers and the distance and likely visibility of the Project turbines.

VIEWPOINT H15 – Penshurst – Warrnambool Road (54H 614824, 5786563)			
Distance	To Project: 13 km SW (T54) To Macarthur Wind Farm: 8.5km W	**ZVI**	**Noticeable, but will not dominate the landscape**
Landscape Unit	LU3 – Plains Farmland	**Sensitivity**	Low
Viewer Type	Road users	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Negligible – Nil**		

8.3.16 VP H16 – Penshurst–Warrnambool Road / Nardoo Road

Viewpoint H16 is located at the intersection of Penshurst–Warrnambool Road and Nardoo Road to the east of the Project. This location is approximately 850 m south of Hawkesdale Township.

The nearest Project turbine is approximately 9.8 km to the south-west.

The existing Macarthur Wind Farm is approximately 11.2 km to the north-west. The approved Hawkesdale and Woolsthorpe Wind Farms are to the east and south-east.

Figure 8-72 shows the view looking south-west to west along Nardoo Road toward the Project.

Figure 8-72 VP H16 – View west toward the Project

Figure 8-73 shows the view looking west to north-west along Nardoo Road toward the Project and the Macarthur Wind Farm.

Figure 8-73 VP H16 – View north-west toward the existing Macarthur Wind Farm

Figure 8-74 shows an enlargement of the central section of the view that includes the existing turbines of the Macarthur Wind Farm approximately 11.2 km to the north-west. The degree of enlargement is evident through the image cropping (removal) of the farming areas in the foreground of the view.

Figure 8-74 VP H16 – Enlarged view northwest toward the existing Macarthur Wind Farm

When on-site, the existing turbines within the Macarthur Wind Farm are noticeable where breaks in vegetation along the roadside and farming areas permit, however they are not visually dominant features. This enlarged view also shows the influence of topography and the screening effect of even gentle undulations in the landscape over distance.

Figure 8-75 shows the view looking east from the same location towards the approved Hawkesdale and Woolsthorpe Wind Farms. This view also shows the extent and height of roadside vegetation along the eastern edge of the road reserve.

Figure 8-75 VP H16 – View to the east towards Hawkesdale and Woolsthorpe (approved, not constructed) Wind Farms

Looking east there would be filtered views of the approved wind farms.

Landscape Character

Viewpoint H16 is located within the Plains Farmland landscape. Several minor creek lines run through this area, partly a product of narrow rivers of the Mount Rouse lava flow. Vegetation within shelterbelts screens and filters views to these waterway features. The gentle undulations and topographical changes would screen views as road users travel throughout the landscape, concealing and revealing turbines where vegetation permit.

Project Visibility

There is the potential for the Project turbines to be visible above the windbreak and hedgerow plantings in the landscape to the south-west and west of this location. At a distance of approximately 9.8 km, the nearest turbine would be a noticeable feature where visible but would not likely be dominant.

The visual impact from this location would be **Low** due to few viewer numbers, distance, vegetation, and the low sensitivity of the surrounding landscape to visual change. This location is not one of visual significance, rather it is a transitory view where a break in roadside vegetation allows for views towards the Project.

Cumulative Considerations

The existing Macarthur Wind Farm is visible in the background of views where vegetation and topography allow views. Where visible, the turbines are noticeable, however, they are not dominant. There are two other approved wind farms to the east and in proximity to this viewing location. Should they proceed, the turbines of both projects would be visible, albeit filtered through existing roadside vegetation.

For these reasons, there would be the potential for simultaneous views of turbines located in several wind farms in the area. There would also be sequential views for road users travelling along the Penshurst Warrnambool Road. The cumulative impact would be **Low**. This is attributed to the low visual prominence of turbines within the Macarthur Wind Farm, few viewer numbers and the distance and likely visibility of the Project turbines.

VIEWPOINT H16 – Penshurst – Warrnambool Road (54H 615825, 5779762)			
Distance	To Project: 9.8km SW (T54)	**ZVI**	**Noticeable, and can dominate the landscape**
Landscape Unit	LU3 – Plains Farmland	**Sensitivity**	Low
Viewer Type	Road users	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Low**		

8.3.17 VP H17 – Penshurst–Warrnambool Road / Willatook-Warrong Road

Viewpoint H17 is located at the intersection of Penshurst–Warrnambool Road / Willatook-Warrong Road near the locality of Warrong.

The nearest Project turbine is located approximately 8.1 km to the north-west.

There are many landscape plantings along paddock and property boundaries as well as roadside vegetation in the area surrounding this location and to the north-west.

Figure 8-76 shows the view looking north-west toward the Project.

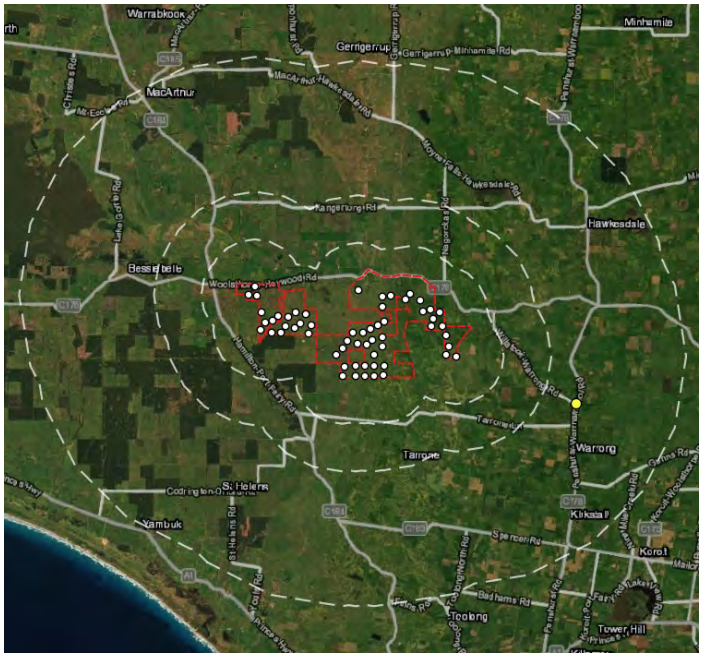


Figure 8-76 VP H17 – Penshurst–Warrnambool Road / Willatook–Warrong Road view looking north-west

The landscape rises gently away from the coastline to the north and north-west in the direction of the Project creating a nearby low horizon within the farming area immediately north-west. Vegetation located within road reserves and nearby farming areas further filters and screens views to the west and north and towards the Project.

Landscape Character

Viewpoint H17 is located within the Plains Farmland landscape. Several minor creek lines run through this area, partly a product of narrow rivers of the Mount Rouse lava flow. Vegetation within shelterbelts screens and filters views to these waterway features. The gentle undulations and topographical changes would screen views as road users travel throughout the landscape, concealing and revealing turbines where vegetation permit.

Project Visibility

At a distance of approximately 8.1 km, the nearest turbine would be a noticeable feature where visible, however would not likely be dominant. There is the potential for the Project turbines to be visible above the nearby low rise and existing vegetation and limited to the tips of the turbines only. The overall visual impact would be **Negligible** if visible to **Nil**.

Cumulative Considerations

The approved wind farms of Hawkesdale and Woolsthorpe would be to the north of this location and screened by topography and vegetation. The approved Ryan Corner Wind Farm to the east would also be screened. The cumulative impact would be **Negligible-Nil**. This is attributed to the approved wind farms of Hawkesdale, Woolsthorpe and Ryan Corner likely being screened from this location.

VIEWPOINT H17 – Penshurst–Warrnambool Road / Willatook–Warrong Road (54H 615179, 5770639)			
Distance	To Project: 8.1km NW (T59)	**ZVI**	**Noticeable, and can dominate the landscape**
Landscape Unit	LU3 – Plains Farmland	**Sensitivity**	Low
Viewer Type	Road users	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Negligible - Nil**		

8.3.18 Summary of major roads viewpoints

This section has considered the visual impact of the Project from several viewing locations located along major roads within the study area. The selected locations demonstrate the range of views and viewing angles, distances, and key approaches towards the Project within the region.

Overall, the visual impact of the Project in views from major roads would be assessed as **Low**. This is due to the majority of views towards the Project being limited by vegetation within roadsides, plantation areas, and adjoining farming properties, screening afforded by nearby and surrounding topography and limited transitory views where a break in roadside vegetation allows for views towards the Project.

Major roads to the east and west of the Project are frequently used by locals as they go about their daily lives in the area and have a medium number of road users. Views from major roads vary from open clear views towards the Project to those that are more discreet and localised with gently undulating topography screens or limited views across the landscape. These visual characteristics are demonstrated through the existing wind farms of Yambuk and Codrington to the south and the Macarthur Wind Farm towards the northern end of the Project.

Table 8.6: Major Roads viewpoint summary

VP	Distance to nearest turbine	Landscape Unit	Visual impact Assessment
VP H1 – Princes Highway #1	15.4km NE (T4)	LU9 – Coastal Landscape	**Negligible-Nil**
VP H2 – Princes Highway #2	16.3km NE (T20)	LU3 – Plains Farmland	**Low-Negligible**
VP H3 – Hamilton–Port Fairy Road #1	11.8 km SE (T2)	LU3 – Plains Farmland, Plantation Forest	**Negligible-Nil**
VP H4 – Hamilton–Port Fairy Road/ Kangertong Road	5.6km SE (T2)	LU3 – Plains Farmland	**Low**
VP H5 – Hamilton–Port Fairy Road #2	3.1km SE (T1)	LU3 – Plains Farmland	**Low**
VP H6 – Hamilton–Port Fairy Road/ Woolsthorpe–Heywood Road	2.4km SE (T1)	LU3 – Plains Farmland	**Low**
VP H7 – Hamilton–Port Fairy Road #3	1.7km E (T4)	LU3 – Plains Farmland	**Low**
VP H8 – Hamilton–Port Fairy Road #4	2.7km NE (T7)	LU3 – Plains Farmland, Plantation Forest	**Low**
VP H9 – Hamilton–Port Fairy Road #4	7.3km N (T20)	LU3 – Plains Farmland, Lava Flows: Agricultural	**Low**
VP H10 – Woolsthorpe–Heywood Road #1	9.9km E (T1)	LU3 – Plains Farmland	**Low-Negligible**
VP H11 – Woolsthorpe–Heywood Road #2	2.2km S (T14)	LU3 – Plains Farmland	**Low-Medium**
VP H12 – Woolsthorpe–Heywood Road / Tarrone North Road	1.2km SE (T48)	LCU 6a – Lava Flows: Farmland, Swamps, and Wetlands	**Low-Medium**

VP H13 – Woolsthorpe–Heywood Road #3	5.3km SW (T54)	LCU 6a – Lava Flows: Farmland, Swamps, and Wetlands	**Low**
VP H14 – Penshurst–Warrnambool Road #1	26.7km SW (T48)	LCU 6a – Lava Flows: Farmland, Swamps, and Wetlands	**Nil**
VP H15 – Penshurst–Warrnambool Road #2	13 km SW (T54)	LU3 – Plains Farmland	**Negligible-Nil**
VP H16 – Penshurst–Warrnambool Road/ Nardoo Road	9.8km SW (T54)	LU3 – Plains Farmland	**Low**
VP H17 – Penshurst–Warrnambool Road/ Willatook–Warrong Road	8.1km NW (T59)	LU3 – Plains Farmland	**Negligible-Nil**

8.4 Local roads

Four viewpoint locations have been selected as representative of view that are likely to be afforded from local roads within the study area. Viewer numbers are considered to be low while the landscape sensitivity would vary depending on the location of the viewpoint.

The location of each viewpoint in proximity to the project is shown in Figure 8-77.

Figure 8-77 Map: Local Roads Viewpoints

The location, co-ordinates, distance to the nearest turbine and prevalent landscape unit towards the wind farm are described in Table 8.7.

Table 8.7: Local Roads Viewpoints

VP	Distance to nearest turbine	GPS Co-ordinates	Landscape Unit
VP L1 – Kangertong Road/ Nagorkas Road	5.7km SW (T48)	54H, 606906, 5782986	LU3 – Plains Farmland

VP L2 – Kangertong Road	5.5km SW (T28)	54H 603139, 5783094	LU6a – Lava Flows: Agricultural Landscape / Lava Flows: Wetlands, Rural Wind Farm (Inland)
VP L3 – Tarrone North Road	Nearest project turbine: 1.9km NW (T44) Onsite substation: 1.8km NW	54H 604938, 5772632	LU6a – Lava Flows: Agricultural Landscape / Lava Flows: Wetlands, Rural Wind Farm (Inland)
VP L4 – Faulkners North Road (Tarrone)	5.0km NW (T43)	54H 604264, 5767578	LU6a – Lava Flows: Agricultural Landscape / Lava Flows: Wetlands, Rural Wind Farm (Inland)

8.4.1 VP L1 – Kangertong Road / Nagorkas Road

Viewpoint L1 is located at the intersection of Kangertong Road and Nagorkas Road.

The nearest Project turbine is located approximately 5.7 km to the south-west.

Figure 8-78 shows the view looking south toward the Project.

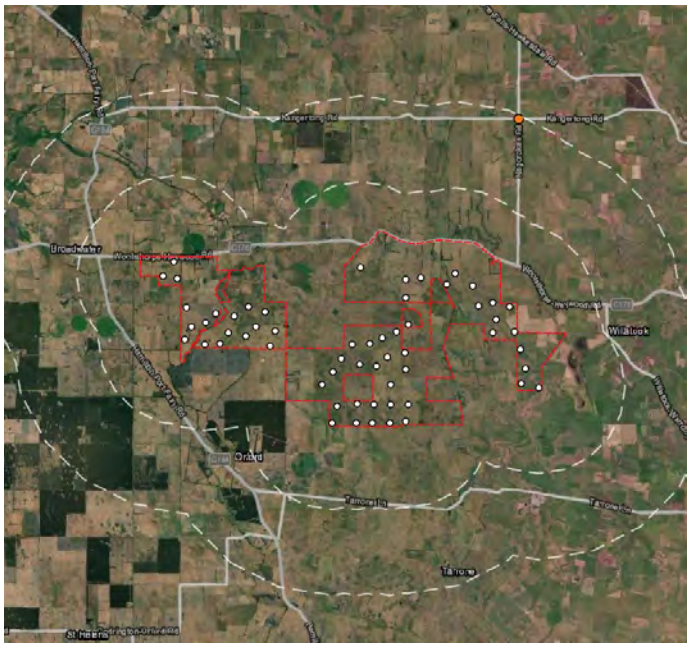


Figure 8-78 Viewpoint L1 – view south toward the Project

The constructed Macarthur Wind Farm is approximately 2.5km to the north of this viewpoint and at a similar distance or setback. The view north is shown in Figure 8-79.

Figure 8-79 Viewpoint L1 – view north toward Macarthur Wind Farm

The existing turbines within the Macarthur Wind Farm are visible landscape plantings and native roadside vegetation that is setback from the view. As mentioned in other view assessments within this report, the Project turbines would be up to 100 m taller than those within the Macarthur Wind Farm.

Landscape Character

Viewpoint L1 is located within the Plains Farmland landscape with a low sensitivity to visual change. Vegetation within shelterbelts and road verges screen and filters views broader landscape features along this road.

Project Visibility

This location is not one of visual significance, rather it is a transitory view from a local road where a break in roadside vegetation allows for views towards the Project.

At a distance of approximately 5.7 km, the turbines would likely be a dominant element in the landscape and would be a visual change in the landscape. However, given the low viewer numbers, and low sensitivity of the landscape in views towards the Project, the overall visual impact is assessed as **Low-Negligible**.

Cumulative Considerations

The Macarthur Wind Farm is visible to the north-west with the closest turbine approximately 2.5km north-west. The Willatook turbines have the potential to be a dominant element in views to the south with the closest turbine approximately 5.7km south-west. At this location there is the ability to see both wind farms as you travel west along Kangertong Road.

While both the Project and the existing Macarthur Wind Farm would be visible at this location, the cumulative impact would be **Low**. This is attributed to the filtering of views to Macarthur to the north by existing vegetation, and few viewer numbers.

VIEWPOINT L1 – Kangertong Road / Nagorkas Road (54H 606906, 5782986)			
Distance	To Project: 5.7km SW (T48) To Macarthur Wind Farm: 2.5km NW	**ZVI**	**Highly visible and will usually dominate the landscape**
Landscape Unit	LU3 – Plains Farmland	**Sensitivity**	Low
Viewer Type	Local Road users	**Viewer numbers**	Low
OVERALL VISUAL IMPACT	**Low-Negligible**		

8.4.2 VP L2 - Kangertong Road

Viewpoint L2 is located along Kangertong Road to the north of the Project and adjacent to the Macarthur Wind Farm grid connection and transmission line.

This viewpoint is located within the Mount Rouse Lava flows. Features of this landscape include low stony-rises, limited native trees, and linear cultural plantings. This landscape type is clearly defined both on-site and in aerial photography as demonstrated in the viewpoint map (right).

The nearest Project turbine is located approximately 5.5 km south-west.

The nearest turbine within the Macarthur Wind Farm is approximately 2.0 km to the northwest.

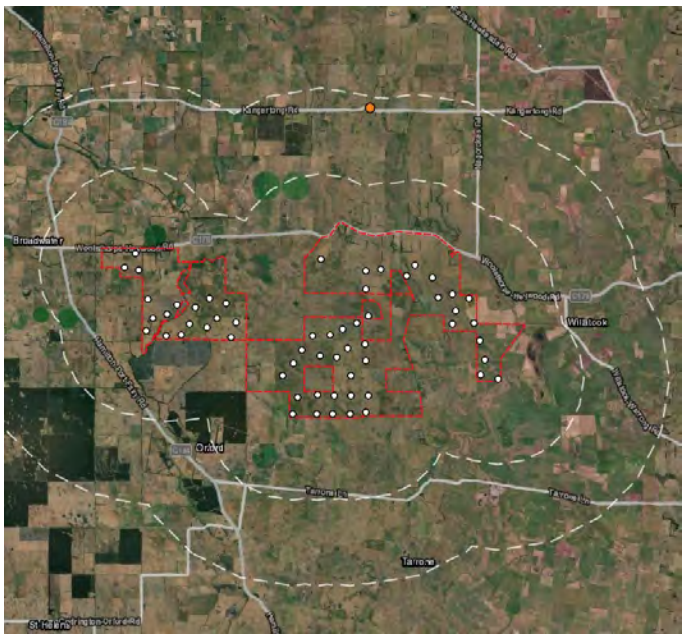


Figure 8-80 shows the view south towards the Project.

Figure 8-80 Viewpoint L2 – view south toward the Project

Figure 8-81 shows the view northwest to northeast towards the existing Macarthur Wind Farm.

Figure 8-81 Viewpoint L2 – View north toward the existing Macarthur Wind Farm and Transmission Line

Figure 8-82 shows an enlargement of the view inclusive of the nearby wind turbines and transmission towers. The view is taken from the road edge which is slightly elevated above the lower agricultural plains and nearby vegetation.

Figure 8-82 Enlargement of view north toward existing Macarthur turbines and transmission line

Vegetation seen to the far right of this image demonstrates the height required and ability for vegetation to screen wind turbines that are close to a viewing location and where there is a difference in level.

The difference in visual scale does not significantly alter the visual impact of a wind turbine or wind farm. This is evidenced by the turbines at Yaloak South and Moorabool Wind Farms where there are two different height turbines nearby. The turbines within the Moorabool Wind Farm are approximately 170 m in height, and those in the nearby Yaloak South Wind Farm are approximately 130 m. Similar to the area surrounding the Project, as a viewer moves through the landscape, the scale or height of the turbines is not discernible nor are the Project boundaries. In some locations, there are clear and open views, from most locations however views to the turbines are completely screened by either topography, vegetation, or both.

Landscape Character

This viewpoint is within the Mount Rouse Lava Flow. Limited roadside and shelterbelt vegetation allow opens clear views across the undulating lava flow landscape.

The Macarthur Wind Farm is clearly visible to the north, which contributes to the Rural Wind Farm landscape character at this location. There are few, albeit regular road users along this road.

Project Visibility

This location is not one of visual significance, rather it is a transitory view where a break in roadside vegetation allows for views towards the Project.

The Project would be clearly visible and would likely be a dominant element in views at this location. However, due to the low viewer numbers, and low-medium sensitivity of the landscape in views towards the Project, the overall visual impact is assessed as **Low-Negligible**.

Cumulative Considerations

The Macarthur Wind Farm is visible to the north with the closest turbine approximately 2.0km north-west. The Willatook turbines would be a dominant element in views to the south with the closest turbine approximately 5.5km south-west. At this location there is the ability to see both wind farms as you travel along Kangertong Road.

Views to the north and south also include the existing transmission line. While both the Project and the existing Macarthur Wind Farm would be visible at this location, the cumulative impact would be **Low**.

VIEWPOINT L2 – Kangertong Road (54H 603139, 5783094)			
Distance	To Project: 5.5km SW (T28) To Macarthur Wind Farm: 2.0km NW	**ZVI**	**Highly visible and will usually dominate the landscape**
Landscape Unit	LU6a – Lava Flows: Agricultural Landscape / Lava Flows: Wetlands, Rural Wind Farm (Inland)	**Sensitivity**	Low-Medium
Viewer Type	Local Road users	**Viewer numbers**	Low
OVERALL VISUAL IMPACT	**Low-Negligible**		

8.4.3 VP L3 – Tarrone North Road

Viewpoint L3 is located on Tarrone North Road approximately 500m south of Riordans Road.

This view has been selected as it allows for clear views to the Project from a break in roadside vegetation.

The nearest Project turbine is approximately 1.9 km to the north-west. The on-site substation would be located approximately 1.8 km north-west and north of the existing Tarrone Terminal Station.

The approved Hawkesdale Wind Farm would be approximately 11 km to the north-east.

Figure 8-83 shows the view looking west through north toward the Project.

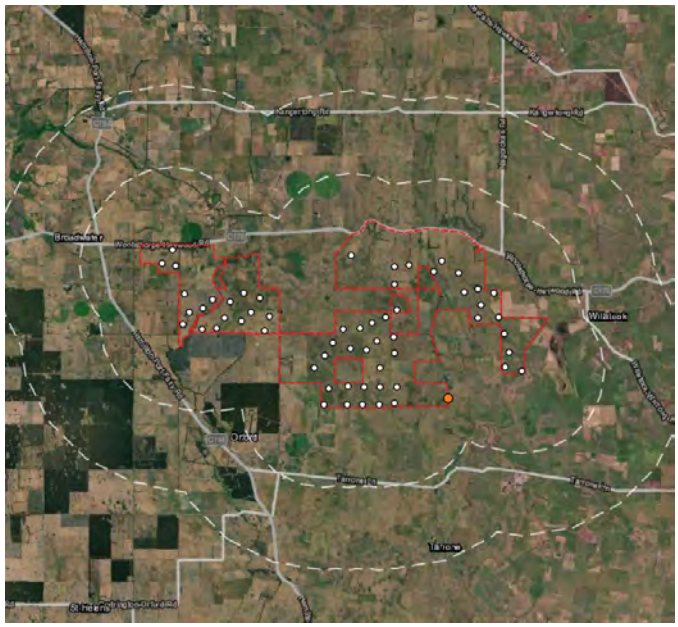


Figure 8-83 VP L3 – Tarrone North Road looking west through to north towards the Project

The existing Tarrone Terminal station is visible central to the view.

Figure 8-84 shows the view looking north through north-east towards the Project. The closest turbine to the north-east is T57 approximately 2.3km.

Figure 8-84 VP L3 – Tarrone North Road looking north through to north-east towards the Project

Landscape Character

Viewpoint L3 is located within the Lava flows landscapes and includes predominately agricultural areas. Limited roadside and shelterbelt vegetation allow open clear views across the undulating lava flow landscape. The lava flow landscape is gently undulating, which can assist to screen views from lower-lying areas.

Project Visibility

The Project would likely be highly visible from this location due to the clear and expansive views over the clear farmland to the west. The nearest Project turbine, which is approximately 1.9 km to the north-west, would

likely be a dominant visual feature however it would be perpendicular to this view. Views to the north-west would include the existing Tarrone Terminal station and transmission line.

Due to the relatively few viewers who would take in this view and the low-medium sensitivity of the landscape in the view towards the proposed turbines, the overall visual impact would be **Low**.

Cumulative Considerations

Views to the north-west would include the existing Tarrone Terminal station and transmission line and would include the proposed Tarrone Gas Fired Power Station. Views to the onsite substation to the north of Tarrone terminal station would likely be filtered or screened by intervening topography and vegetation located along Riordans Road and further north along Tarrone North Road.

The approved Hawkesdale Wind Farm would be approximately 11 km to the north-east and would be located behind the proposed Project turbines to the north-east.

The cumulative impact from this location would be **Low**. This is due to the Project turbines being located behind the existing transmission line, Tarrone Terminal Station, and proposed Tarrone Gas-Fired Power Station.

VIEWPOINT L3 – Tarrone North Road (54H 604938, 5772632)			
Distance	Nearest project turbine: 1.9km W (T44) Onsite substation: 1.8km NW	**ZVI**	**Will always be visually dominant**
Landscape Unit	LU6a – Lava Flows: Agricultural Landscape / Lava Flows: Wetlands, Rural Wind Farm (Inland)	**Sensitivity**	Low-Medium
Viewer Type	Local Road users	**Viewer numbers**	Low
OVERALL VISUAL IMPACT	**Low**		

8.4.4 VP L4 - Faulkners North Road (Tarrone)

Viewpoint L4 is located on Faulkners North Road, near the locality of Tarrone. This location was selected as representative of the clear open views from the open plains to the south of the Project.

Screening vegetation such as shelterbelt, roadside, and riparian vegetation is limited in this area allowing for clear and long-range views particularly to the north.

The nearest Project turbine is approximately 5.0 km to the north-west.

The approved Ryan Corner Wind Farm would be approximately 5.2 km to the south-west.

Figure 8-85 shows the view looking north toward the Project.

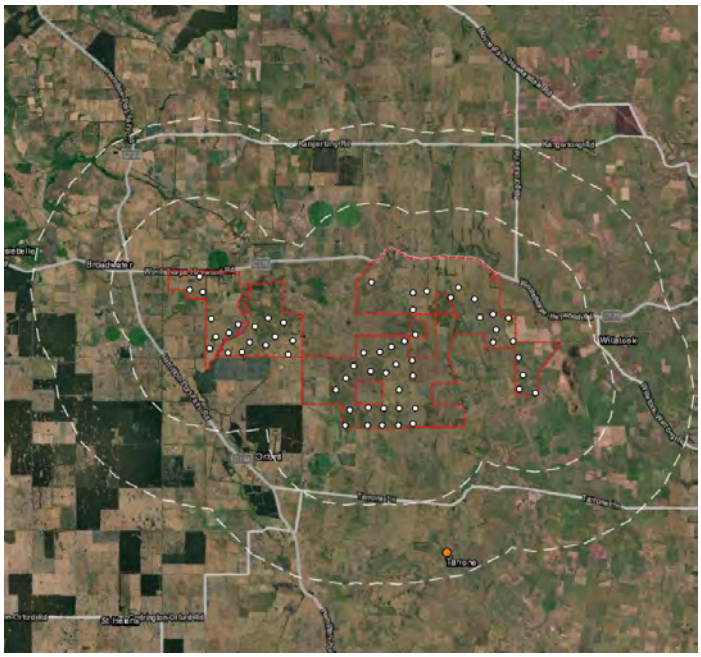


Figure 8-85 VP L4 – Faulkners North Road (Tarrone) looking north towards the Project

Landscape Character

Viewpoint L4 is located within the Lava flows landscapes and includes predominately agricultural areas with a mosaic of creek lines and local wetlands. Screening vegetation is the area is limited with small-medium trees except for select locations.

The lava flow landscape is gently undulating, which can assist to screen views from lower-lying areas.

Project Visibility

The Project would likely be highly visible from this location due to the clear and expansive views over the clear farmland. The nearest Project turbine, which is approximately 5.0 km to the north, would likely be a dominant visual feature on the horizon.

However, due to the relatively few viewers who would take in this view, the transient nature of the view and the low-medium sensitivity of the landscape in the view towards the proposed turbines, the overall visual impact would be **Low-Negligible**.

Cumulative Considerations

The approved Ryan Corner Wind Farm is located approximately 5.2km to the southwest of this viewpoint. Simultaneous views would not be possible, however, there is the potential for sequential views. The

cumulative impact would be **Low-Negligible** from this location, due to views being for a limited number of people due to the local nature of the road and relatively few users.

VIEWPOINT L4 – Faulkners North Road (Tarrone) (54H 604264, 5767578)			
Distance	To Project: 5.0km NW (T43) To Ryan Corner Wind Farm: 5.2km SW	**ZVI**	**Highly visible and will usually dominate the landscape**
Landscape Unit	LU6a – Lava Flows: Agricultural Landscape / Lava Flows: Wetlands, Rural Wind Farm (Inland)	**Sensitivity**	Low-Medium
Viewer Type	Local Road users	**Viewer numbers**	Low
OVERALL VISUAL IMPACT	**Low-Negligible**		

8.4.1 Summary of local roads viewpoints

Table 8.8: Local Roads Viewpoint Summary

VP	Distance to nearest turbine	Landscape Unit	Visual Impact Assessment
VP L1 – Kangertong Road/ Nagorkas Road	5.7km SW (T48)	LU3 – Plains Farmland	**Low-Negligible**
VP L2 – Kangertong Road	5.5km SW (T28)	LU6a – Lava Flows: Agricultural Landscape / Lava Flows: Wetlands, Rural Wind Farm (Inland)	**Low-Negligible**
VP L3 – Tarrone North Road	Nearest project turbine: 1.9km NW (T44) Onsite substation: 1.8km NW	LU6a – Lava Flows: Agricultural Landscape / Lava Flows: Wetlands, Rural Wind Farm (Inland)	**Low**
VP L4 – Faulkners North Road (Tarrone)	5.0km NW (T43)	LU6a – Lava Flows: Agricultural Landscape / Lava Flows: Wetlands, Rural Wind Farm (Inland)	**Low-Negligible**

The assessment of views and visual impacts from local roads reviewed several locations from and range of distances and viewing angles towards the Project. The assessment of these views concluded that overall, the visual impact from local roads would be **Low -Negligible**. This assessment considered the viewer numbers, landscape sensitivity, distance, availability, and duration of views, and was supported by imagery from the site.

8.5 Construction Impacts

Construction activities include the excavation and pouring of the turbine foundations, transportation and assembly of the various turbine components, construction of the substation and grid connecting infrastructure, upgrading and construction of new access tracks, and establishment of the operations and maintenance facilities.

Key pre-construction and construction activities include:

- site assessment and geotechnical investigations. Geotechnical assessments generally require the presence and operation of plant equipment on-site
- civil works for the construction of on-site access roads and access points
- temporary construction compounds and facilities, including demountable structures, compounds, and laydown areas
- presence of heavy-vehicle traffic, including the transport of Project components, cranes, and other construction vehicles and plant equipment
- excavation and earthworks
- construction activities, including the erection of wind turbines, masts, and works associated with electrical infrastructure including the on-site terminal station, on-site battery facility, cabling, and transmission infrastructure.

Construction activities would be short in duration and confined to discrete areas across the Project site as construction of the Project progresses across the area.

The construction activities associated with wind farms tend to attract a lot of positive interest with regard to the construction techniques and methods unique to wind farm construction. For some viewers who do not like the appearance of wind farms this impact would be **High**, for many others this impact would **Low - Positive**, albeit temporary.

9. Cumulative visual impacts

Cumulative visual impact can be defined as the combined effect of changes brought about by a proposed development in conjunction with other similar developments in an area. Cumulative visual impacts may result in changes to the perceptions of the local community or a visitor to the region due to the presence of multiple power-generating infrastructures, transmission lines, and/or substations in the Project area.

Cumulative visual impact can occur either by:

- sequential views to multiple wind farms
- simultaneous views to wind turbines from publicly accessible viewpoints or private viewing locations.

The greatest potential for cumulative visual impacts to occur is in areas where the study area (distance at which a project is a discernible visual feature) of one or multiple constructed or approved wind farm projects overlap. Three operating wind farms are located within 20km of the Project (Macarthur, Yambuk, and Codrington) and the three approved wind farms are within 10km of the Project (Woolsthorpe, Hawkesdale, and Ryan Corner). The presence of existing high-voltage transmission towers or other similar elevated infrastructure may contribute to the potential for cumulative impacts.

Sequential cumulative impacts may occur over greater distances, such as driving along roads and viewing multiple wind farms or transmission infrastructure over the course of a journey. For this reason, the wind farms in the broader region outside of the study area will also be considered.

9.1 Operating or approved wind farms

Operating wind farms within the study area include:

- Macarthur Wind Farm (operating)
- Codrington Wind Farm (operating)
- Yambuk Wind Farm (operating)

Approved wind farms within the study area include:

- Hawkesdale Wind Farm (approved)
- Woolsthorpe Wind Farm (approved)
- Ryan Corner Wind Farm (approved)

Other wind farms exist outside the study area of the Project but may potentially be visible from areas within the study area. These are:

- Morton's Lane Wind Farm (operating)
- Mortlake South Wind Farm (approved, under construction)
- Portland Wind Farms (Cape Nelson, Cape Sir William Grant, Cape Bridgewater)

The wind farms in the region of the Project are summarised in Table 9.

Table 9 Operating or approved Wind Farms in the region

Wind Farm Name	Operating	Approved	Approved or constructed Maximum Turbine Height (blade tip azimuth)	Approximate distance to the Project (boundary to boundary)
Macarthur Wind Farm			145m	5.8 km
Codrington Wind Farm			86m	14.6 km
Yambuk Wind Farm			105m	14.5 km
Ryan Corner Wind Farm			180m	7.4 km
Hawkesdale Wind Farm			180m	6.3 km
Woolsthorpe Wind Farm			180m	11.4 km
Morton's Lane Wind Farm			150m	37.8 km
Mortlake South Wind Farm			186m	49.3 km
Portland Wind Farms: (Cape Nelson, Cape Sir William Grant, Cape Bridgewater)			106m	46.1km

Operating wind farms and existing high voltage transmission lines in proximity to the Project are shown in Figure 9-1.

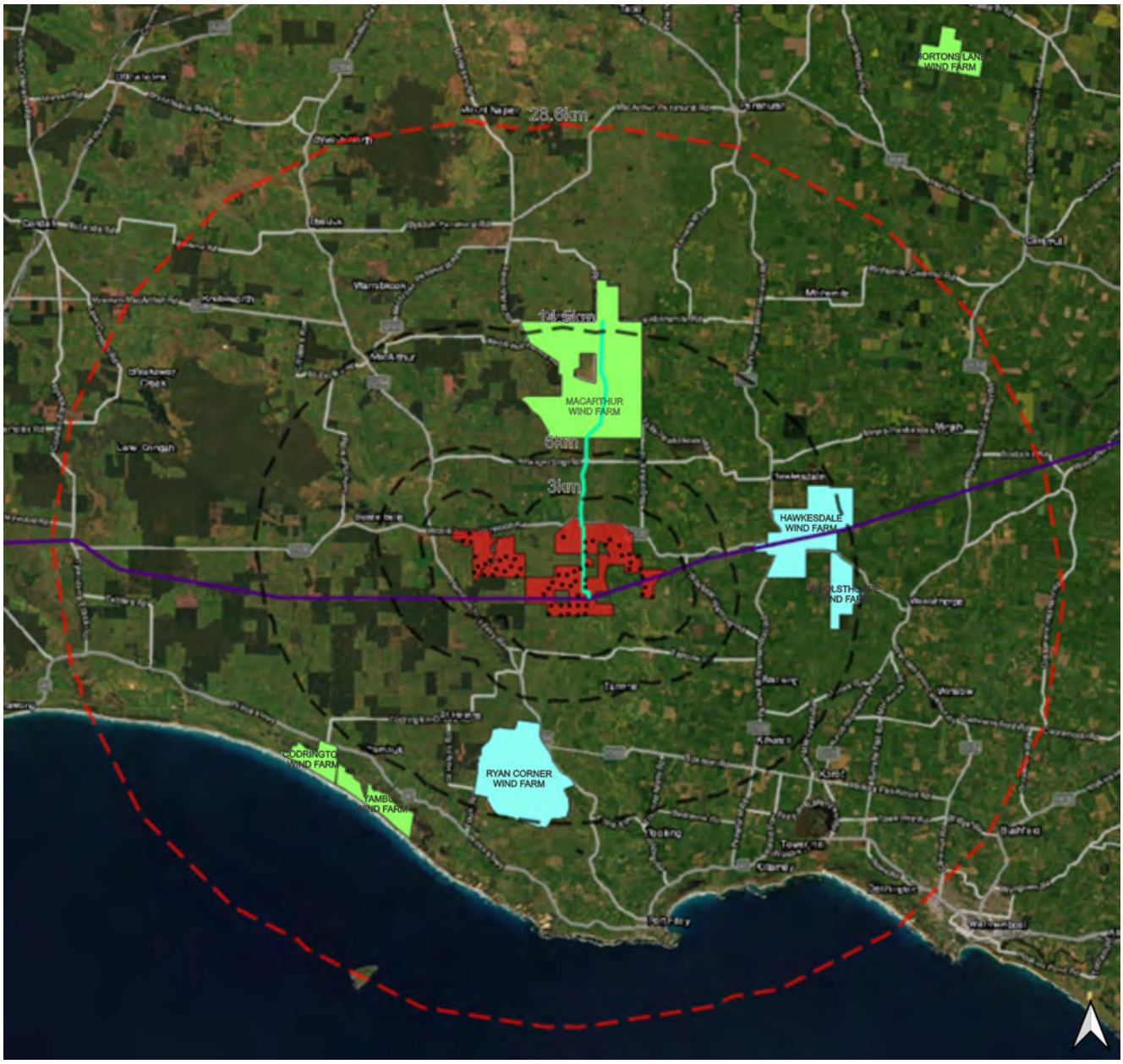


Figure 9-1 Existing operating or approved Wind Farms and Transmission Infrastructure

Proposed or approved gas-fired power station projects are also present within the Project boundary. These include Shaw River Gas-Fired Power Station (approved) to the southwest of the site, and Tarrone Gas-Fired Power Station (approved) to the southeast, adjacent to the existing Tarrone substation. These are shown in Figure 9-2.

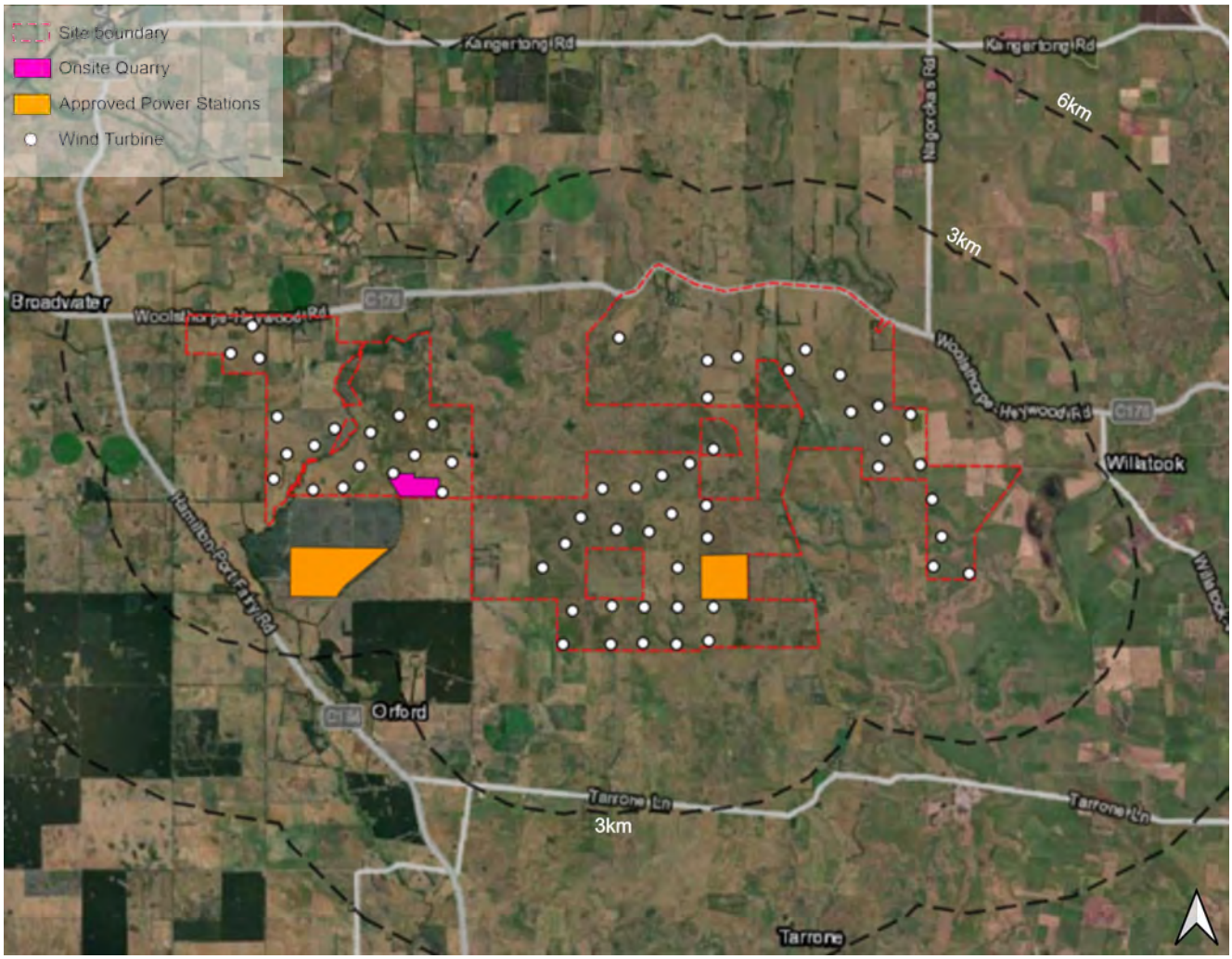


Figure 9-2 gas-fired power stations

A view to the existing Codrington and Yambuk Wind Farm from the viewing platform adjacent to the Princes Highway is shown in Figure 9-3. Views to the Macarthur Wind Farm and the associated transmission line are shown in Figure 9-4.

Figure 9-3 Codrington and Yambuk Wind Farm, Princes Highway viewing platform

Figure 9-4 shows the view looking southwest towards turbines within the Macarthur Wind Farm and associated transmission lines.

Figure 9-4 Views toward the Macarthur Wind Farm and transmission line

9.2 Existing high-voltage transmission infrastructure

The 132 kV Macarthur Wind Farm high voltage transmission link bisects the site, north to south, linking to the 500kV Moorabool to Heywood transmission line at the Tarrone Terminal Station that is within the site and to the south of Woolsthorpe-Heywood Road. Both transmission lines utilise steel lattice transmission towers.

Depending on the viewer's location, and features in the landscape, transmission lines can appear as a 'string' in the landscape. They may visually fragment the landscape; particularly where multiple lines converge.

Figure 9-5 Existing 500 kV Moorabool to Portland transmission line

9.3 Power stations

None of the power station projects identified within the study area have been constructed, nor do they have advertised plans to begin construction. Both gas-fired power stations are proposed within the Project boundary.

An example of a gas-fired power station is the Mortlake Open Cycle Gas Turbine (OCGT) power station, constructed in 2012, is shown in Figure 9-6. This power station is located 35km to the northeast and is outside of the study area.

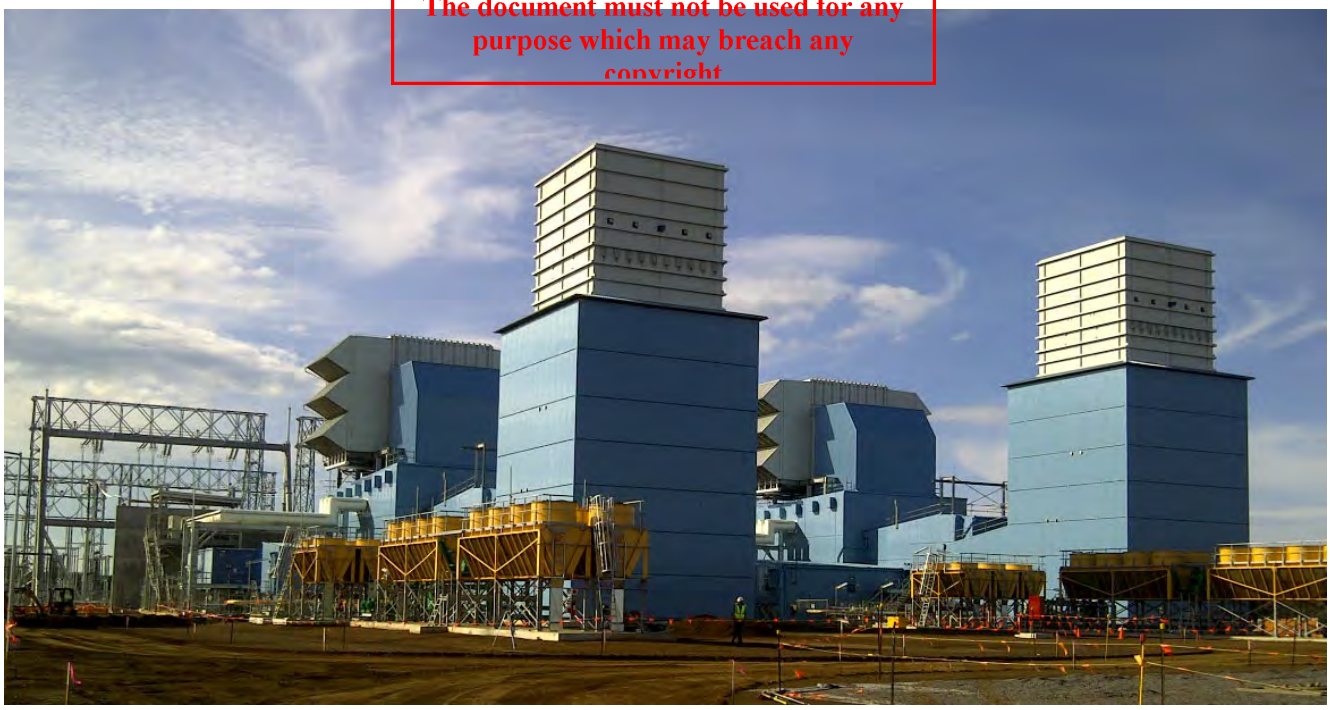


Figure 9-6 Example gas-fired power station: Mortlake OCGT

This image shows two gas turbine exhaust stacks, with the air intake behind them. A switchyard can be seen in the background to the left. Proposed or approved power stations are described below.

Tarrone Gas-Fired Power Station

The Tarrone Gas-Fired Power Station was approved in 2012. This Project was determined to not require an EES. This project proposed up to four gas turbines, each with an exhaust stack of up to 45 m, as well as other supporting infrastructure including a gas pipeline, to be built adjacent to the existing Tarrone substation and high voltage transmission lines. This location is a south-eastern corner of the Project boundary.

The EES *reasons for decision* (referral number: 2009R00019) noted that *the construction of the proposed power station and ancillary works would not have significant adverse* impacts *on landscape… as they would be located on mostly cleared farmland.*

This project is yet to be constructed, with the developer (AGL) currently stating the initiation of the project will depend on market conditions.

Shaw River Gas-Fired Power Station

The Shaw River Gas-Fired Power Station was approved in 2010 but has since been on hold. This project would be located to the southwest of the Project site, in an area zoned SUZ5 – Shaw River Power Station.

9.4 Cumulative impacts summary

Section 8 assessed views and visual impact from representative viewing locations across a range of viewing angles and distances towards the Project. The selected locations were from areas identified as having theoretical visibility of the Project turbines in the SAA described in Section 8 of this report. In most cases, views were selected where a break in roadside vegetation would permit views in the direction of the Project. Where relevant, the representative views also described the change in views where the Project turbines would include turbines of operating and approved wind farms. These observations support the following summary of the cumulative visual impacts of the Project.

9.4.1 Sequential visual impact

Highways

Princes Highway to the south, and the Hamilton Highway to the north are the only highways within the study area. The Princes Highway is the only highway with potential visibility of the Project and is a major east-west tourist route that follows the coastline. Parts of this route are recognised in several strategic documents including the CLAS.

The Princes Highway runs to the north of the operating Codrington and Yambuk Wind Farms. The approved Ryan Corner Wind Farm would be located to the northwest of Port Fairy and the north of the Princes Highway and would be visible.

Figure 9-7 shows a wireframe view of the proposed Willatook turbines and Ryan Corner turbines.

Figure 9-7 VP H2 – Wireframe view of the proposed Willatook turbines and Ryan Corner turbines

Figure 9-8 shows a wireframe view of the proposed Willatook turbines

Figure 9-8 VP H2 – Wireframe view of the proposed Willatook turbines

There may be locations where a visitor travelling along the Princes Highway may notice the Project turbines, however, due to the distance to the nearest wind turbine they would not be dominant visual features. This is discussed in the viewpoints assessed at Sections 8.3.1 and 8.3.2.

The nearby operating wind farms are highly visible features for viewers travelling along the Princes Highway. The approved turbines within the Ryan Corner Wind Farm would also be highly visible. The turbines located within the operating Macarthur Wind Farm are not visible. It is anticipated that the turbines within the approved Hawkesdale and Woolsthorpe Wind Farms would not be visible.

Therefore, the cumulative visual impact bought about by sequential views along the Princes Highway is assessed as **Nil-Negligible**.

Connector roads

Connector roads that link coastal areas to inland locations such as Hamilton and Dunkeld. The Hamilton – Port Fairy Road runs along the western edge of the Project, the Penshurst – Warrnambool Road runs to the west.

Road users travelling north-south along the Hamilton – Port Fairy Road take in views of the operating Codrington and Yambuk Wind Farms towards the south and views of the Macarthur Wind Farm where topography and breaks in roadside vegetation allow toward the north. There would be locations where views along the Hamilton – Port Fairy Road would include turbines at Macarthur Wind Farm and the Project, with turbines of the approved Ryan Corner, Hawkesdale, and Woolsthorpe Wind farms in the distance. There are no formal roadside stops or locations where road users are encouraged to stop and take in views of notable landscape features. As such, these views would be transient and limited. Similar views would be obtained for road users travelling along the Penshurst – Warrnambool Road.

Figure 9-9 shows the photomontage view at H13 on Woolsthorpe-Heywood Road east of the project. The Red line shows the proposed Willatook turbines with the closest turbine approximately 5.3 km away, green outlines the modelled Hawkesdale wind farm turbines approximately 3 km away, yellow is Ryan Corner Wind Farm approximately 17 km away and Macarthur in blue approximately 9 km away.

Figure 9-9 VP H13 - Photomontage

This is a landscape that contains several operating and approved wind farms. The addition of the Project to these views would not alter a viewer's perception of the landscape. Therefore, the cumulative visual impact bought about by sequential views along the connector roads is assessed as **Low**.

Local roads

Figure 9-10 show the photomontage from a local road on the outskirts of Hawkesdale at Viewpoint T2. Turbines modelled for Hawkesdale wind farm are shown in green approximately 2 km away behind a small rise to the left of the image and visible turbines at Macarthur to the right shown in blue approximately 10km away. The Willatook turbines are shown central to the view with the closest turbine approximately 10.6 km south-west. An enlargement of the view can be found in Appendix B.

Figure 9-10 VP T2- Photomontage

Sequential views to the Project may occur from a few locations within the local road network such as along the Kangertong Road where the Macarthur Wind Farm is also visible. The major impact on views would be from the immediately adjacent proposed wind turbines and the additional impact created by the visibility of the Macarthur Wind Farm would be **Negligible**.

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

9.4.2 Simultaneous visual impact

The potential for simultaneous visual impact to occur is limited to locations where two or more projects are visible from the same location. This would require two or more wind farms to be within the same view cone or

direction, or they can be in different directions. Simultaneous visual impacts are generally limited to fixed viewing locations such as elevated scenic lookouts. There are few publicly accessible nearby elevated lookouts. These include Budj Bim National Park, Mount Rouse, and Tower Hill.

The overlap of multiple operating or approved project's study areas would occur along a section of the Princes Highway, inland connector roads and a number of local roads.

In these instances, the nearest wind farm is the most obvious contributor to views. The impact brought about by another wind farm in the distance does not alter the level of impact.

For example, if a viewer is close to the Yambuk and Codrington Wind Farms, the impact created by the Project turbines would be **Negligible**. Similarly, if the same viewer was located near to the Project and the turbines within the Macarthur Wind Farm were also visible, the difference in the visual impact brought about by the addition of the Project wind turbines would be **Low - Medium**.

Therefore, the simultaneous visual impact of the Project is assessed as **Medium - Negligible**.

The impact to residential dwellings however would depend partly on visibility of one or more wind farm developments from the dwelling and the proximity of that dwelling with regards to distance and therefore visual scale. This assessment can only be undertaken on a case-by-case basis and if a particular concern has been raised.

9.4.3 Landscape Values

Landscape Character is defined by several factors these include but are not weighted the underlying zoning and recognition of significant areas, features or protected landscapes, topography, vegetation, and land-use. None of which will alter through the inclusion of the proposed wind turbines. What will change is views across these areas which from some locations will include wind turbines. For some this impact may be considered to be positive as a recognition or transition to renewable energy and a positive response or affirmative action towards climate change, for others this exact same view may be considered to be negative.

From publicly accessible locations there were no significant landscape features, areas, or views where the addition of the Project would bring about a visual impact that was assessed greater than low. This was partly due to the location of the Project being sufficiently set back from significant features and landscapes, tourism routes, viewing corridors and vantage points, townships, and populated locations.

10. Lighting impacts

This section will discuss the potential lighting impacts that may occur from the presence of either aviation obstacle lighting or other lighting around on-site facilities.

10.1 Aviation obstacle lighting

The Aviation Risk Assessment (*SGS Hart Aviation, 2017*) undertaken for the Project considered the need for the Project to include the construction and operation of aviation obstacle lighting. The Aviation Risk Assessment determined that this lighting would not be required by the Project. However, the proponent has requested an assessment of the impacts of lighting should it be a planning permit requirement.

10.2 Aviation obstacle lighting: precedents

Both the Hawkesdale and Ryan Corner Wind Farm have approvals which include aviation obstacle lighting requirements. Aviation obstacle lighting was further reviewed during the hearing for the then proposed, and subsequently approved increase in turbine heights.

The Hawkesdale Wind Farm proposed lighting to be installed on up to 16 turbines. The Supplementary Panel report discussed lighting for up to 15 Turbines. The aviation lighting plan provided to the Panel proposed lighting for up to 26 turbines.

The Panel assessed the original proposal for lighting at both the Hawkesdale Wind Farm and Ryan Corner Wind Farms, concluding that:

In general terms, the Panel is thus satisfied that provided *individual lighting installations (a set of two lights on each turbine nacelle) are installed and shielded to the maximum degree allowed under the relevant CASA Advisory Circular and Section 9.4.7 of the Manual of Standards Part 139, that the visual impact of any one lit turbine will be relatively low.*

Section 9.4 of the CASA Manual of Standards currently require wind turbines to be lit with steady red low intensity lighting at night, where lighting is deemed necessary by CASA.

Although these updated requirements remove the need to provide flashing lights, it is apparent from previous trials, and observations of other projects where lighting has been installed that the rear of the turbine blades would still be illuminated as they pass through the shielded light resulting in a light strobing effect.

The Hawkesdale and Ryan Corner Panel (24 October 2017) considered the impact of aviation obstacle lighting, should it be required to operate at the Hawkesdale and Ryan Corner Wind Farms. Considering both Wind Farms, the panel concluded: *lighting, if required will not cause detriment and is, in any case, required for safety purposes.*

10.3 Aviation obstacle lighting: visual description

Consistent with other projects, this assessment considers aviation hazard lighting to be installed on the nacelles of wind turbines along the perimeter of the Project. Lights assessed would be of medium intensity (2,000 cd) red hazard beacons which would be continuous output (i.e., not blinking) and would only be on for a short time period of around thirty minutes while aircraft are in the vicinity of the Project. Figure 10-1 shows an example of aviation obstacle lighting at a wind farm.

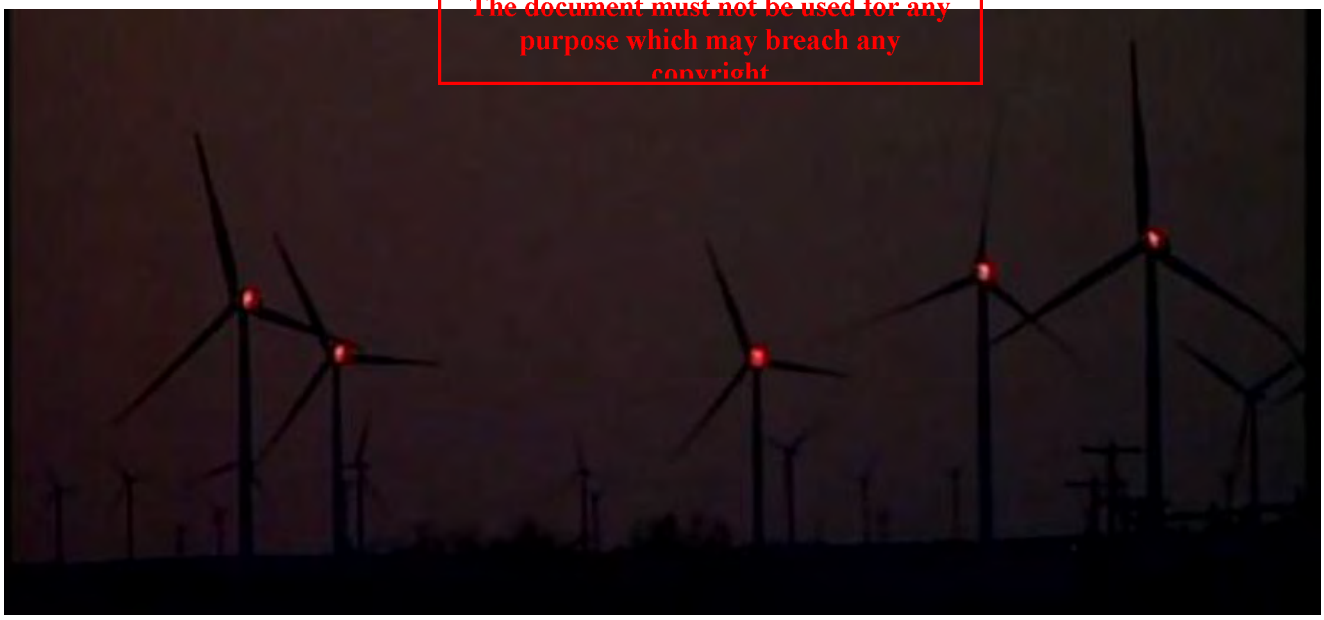


Figure 10-1 Aviation obstacle lighting example

When on site, it is apparent that aviation hazard lights are obvious elements in night views. This is due to their contrast against the dark sky and the limited light sources around the wind farm. Should turbine lighting be required for the Project, it would be an obvious addition to the night panorama. However, few contributing light sources is indicative of few viewers.

Common concerns for aviation obstacle lighting in rural areas include that the presence of elevated lighting would detract from the 'pristine' night sky.

10.4 Visual impact from roads

Aviation obstacle lighting would be most noticeable from users of the inland connector roads to the east and west of the Project and the fewer local road users. These views are transient and often screened or filtered by vegetation in the surrounding landscape and road verges.

For road users at night, light sources contributing to night views include tail and head lamps of other vehicles and road users, distant towns and the few residential dwellings and structures in the surrounding farming properties. Seasonal changes would include lights associated with cropping activities which can take place over several weeks. These light sources are typically of greater intensity than the aviation obstacle lighting. These impacts would only be experienced when lighting is triggered by nearby aircraft.

The overall visual impact of the aviation hazard lighting from the road network is assessed as **Low**.

10.5 Visual impact from urban settings

For locations in townships such as Hawkesdale and Macarthur, there are many existing light sources that include streetlights, shop fronts, residential dwellings, and vehicles. From many locations the larger coastal towns of Warrnambool and Port Fairy contribute to light glow. This effect is exacerbated in atmospheric conditions such as low cloud, fog, or sea haze. These distant light sources contribute to night lighting however they would not appreciably alter the visual impact from existing lighting within townships.

For these reasons the overall visual impact of the aviation hazard lighting from residential properties in townships is assessed as **Low - Negligible**.

10.6 Visual impact from residences in rural areas

Residential dwellings in farming areas would be able to see aviation obstacle lighting. These dwellings are also located in areas removed from other sources of light. Light glow emanating from the coastal towns of

Warrnambool and Port Fairy is more noticeable from these dwellings due to the fewer sources of light found in urban areas or local towns.

When the aviation obstacle lighting is activated, there would be a change to the existing night views. On these occasions, the visual impact must be assessed in context and would be influenced by the following:

- The hazard lighting proposed would only be operational intermittently and would not be a permanent feature of the night sky.
- When curtains or blinds are closed, there is also no visibility to the proposed lights in the surrounding area.
- The landscape mitigation for daytime views from residential properties or existing vegetation would also reduce, or screen, night-time visual impact.
- Further, when inside at night, it is typical that internal lighting is on. When window coverings are open, windows act like mirrors, reflecting the interior of the house and reducing views to the aviation hazard lighting.

For these reasons the overall visual impact of the aviation hazard lighting from rural properties is assessed as **Low.**

10.7 Other lighting

Security lighting is proposed for areas including the operations and maintenance facilities and on-site substation. Impacts of this lighting may be mitigated by ensuring that installed lighting meets the requirements of Australian Standard AS 4282: *Control of the obtrusive effects of outdoor lighting.* Mitigation measures include:

- ensuring lighting is baffled and directed to the ground
- installing motion-trigger mechanisms to reduce the duration of lighting
- installing perimeter landscaping to intervene in views to lighting from identified sensitive receptors (residential dwellings).

Residential dwellings in proximity to the proposed on-site substation and facilities are low in number and at a distance where most views would be screened or filtered by existing vegetation. Implementing the above mitigation measures would result in a **Negligible – Nil** visual impact as a result of this lighting.

11. Mitigation Measures

Approvals for recent Victorian wind farm projects have included a model condition requiring permit holder to develop an Off-Site Landscaping Program which provides for off-site landscaping or other treatments to reduce the visual impact of the turbines where a turbine is visible from the dwelling. A recent example is the approvals for the Delburn Wind Farm, comprising 33 turbines up to 250 m in height in the La Trobe Valley. For Landscape and Visual Impacts, including residential dwellings in farming areas, the Panel for the Delburn Wind Farm concluded that:

- *The Project will be a visually dominant element in the landscape, visible for many kilometres for residents, visitors and tourists; for some it will be a negative element.*
- *For most residents the views to wind turbines can be screened by vegetation but for some landowners the impact will be high and cannot be mitigated.*
- *The relevant planning schemes, the FZ and rural residential zones do not recognise landscape values and sensitivity to change in the areas around the Project.*
- *Assessed against this policy* context*, the landscape and visual impacts are acceptable.*
- *The DELWP draft permit* conditions *with the amendments proposed by the Applicant are generally appropriate, as set out in Appendix D.*

In arriving at the above, the Panel for the Delburn Wind Farm concluded that *the objective of minimising and managing potential adverse effects for the community on landscape and visual amenity can be achieved.*

The Off-site screening program must be approved by the responsible authority, implemented to the satisfaction of the responsible authority, and not be altered or modified without the written consent of the responsible authority.

The model conditions require offsite screening to be offered to all neighbouring residential dwellings within the zone where a visible turbine has the potential to be 'highly visible and will usually dominate the landscape". Section 4.1 of this assessment has established this zone to extend to 6.0 km from the base of a turbine.

Photomontages included in the assessment of views from publicly accessible locations demonstrate the views of turbines and vegetation from a range of viewing angles, distances and landscape settings from the areas surrounding the Project. The photomontages, and vegetation seen in existing views demonstrate that landscape mitigation can be effective at screening or filtering views towards the proposed wind turbines, including viewing locations that are near to the proposed turbines and areas that include dwellings.

The following section sets out the considerations and requirements for the screening of views from neighbouring residential dwellings.

11.1 Placement and screening

Figure 11-1 shows an example of existing vegetation and placement of new landscaping to assist with screening views to turbines. This example is based on the owner's desire that the views to wind turbines should be screened or filtered.

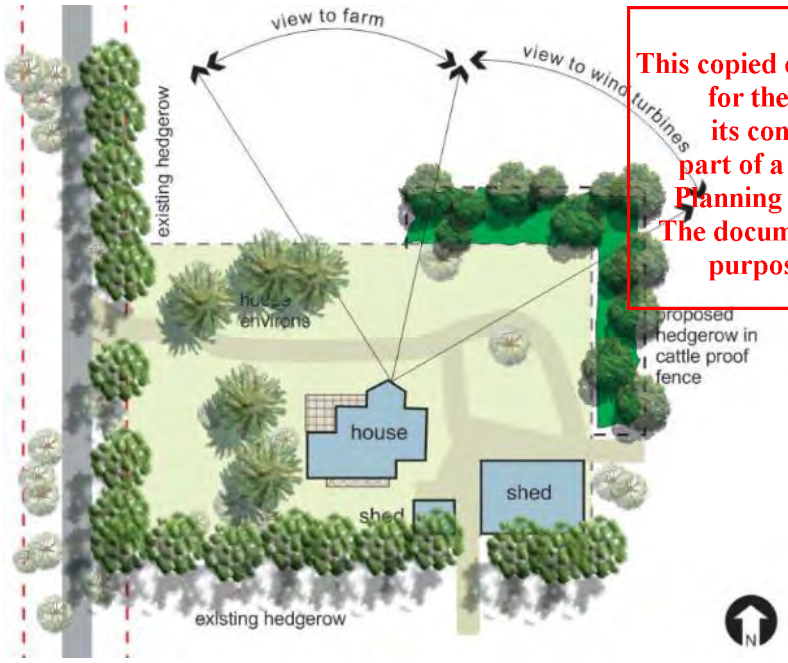


Figure 11-1: Potential Landscape Mitigation Measure

Alternatives may include careful placement of single trees or clusters to screen views to the nearest and most visually noticeable turbine.

11.2 Vegetation heights

Vertical view angles consider the overall height of the turbines and the distance of the dwelling to the turbine, and this is relevant to determining the heights that vegetation would be required to achieve screened views. Similar to the discussions on determining the Zones of Visual Influence discussed throughout this report, the view angle or visual scale of turbines will change over distance. The greater the distance between a viewing location and a turbine the smaller the turbine will appear, similarly the closer the viewing location the larger the turbine will appear.

By analysing view angles for a 250 m high turbine, it is possible to determine the approximate height that landscape mitigation would be required to achieve to ameliorate visual impacts from residential dwellings.

To be conservative, the following will describe the view angle at a distance of 1.0 km from a turbine and how this translates to landscape mitigation.

For dwellings located within a Bushfire Management Overlay (BMO), it will be important to consider design requirements such as canopy separation, defendable space, and distance from the dwelling. For these reasons, vegetation has been shown at varying distances from the dwelling assuming flat terrain. These heights are shown in Table 10.1.

Table 11.1: Landscape mitigation indicative heights

Nearest Turbine Distance	Vegetation height at 20m from dwelling	Vegetation height at 30m from dwelling	Vegetation height at 50m from dwelling
1.0km	6.6m	9.2m	14m
1.5km	5.0m	6.6m	10m
2.0km	4.1m	5.3m	7.8m
2.5km	3.6m	4.6m	6.6m
3.0km	3.4m	4.1m	5.9m

Nearest Turbine Distance	Vegetation height at 20m from dwelling	Vegetation height at 30m from dwelling	Vegetation height at 50m from dwelling
3.5km	3.1m	3.8m	5.2m
4.0km	2.8m	3.5m	4.7m
4.5km	2.8m	3.3m	4.4m
5.0km	2.6m	3.1m	4.1m
5.5km	2.5m	3.0m	3.9m
6.0km	2.5m	2.9m	3.7m

11.3 Bushfire considerations

For properties located within the Bushfire Management Overlay (BMO), any landscape mitigation must not increase bushfire risk to the dwelling and broader landscape. The BMO is triggered by the presence of a tree canopy in excess of five hectares in size. Any property within the BMO is in close proximity to an area of vegetation that could generate extreme bushfire behaviour.

To ensure there is no increase in bushfire risk to an existing dwelling, any landscape mitigation should only consist of trees and shrubs that are in a single row and not introduce multiple layers of vegetation (e.g., canopy, mid-story, and understorey).

Where possible, plantings against existing forested areas should be avoided.

If landscape mitigation is required, a 20-metre buffer between any landscape mitigation planting and existing vegetation, and a 10-metre buffer from the residence should be maintained.

11.4 Summary of Mitigation Measures

The preceding chapters and supporting photographs demonstrate that vegetation in the region is capable of exceeding the heights required to screen or filter the proposed 250 m high turbines.

Many established dwellings in proximity to the Project are set within established landscaped gardens comprising mature trees, orchard plantings and shrubs. This vegetation, while established for other purposes, will assist in screening or filtering views to the Project.

There are many planted windbreaks and hedgerows, vegetation within road reserves and property boundaries which provided filtering and screening of views. Areas to the west of the project also include managed timber plantations, and vegetation within conservation areas.

However, as also shown in the preceding residential assessment, views and visual impact are unique and diverse from property to property and vary across the site and there may also be constraints or locations where landscape screening may not be suitable or successful. It is recognised that not all landowners may wish to screen views of turbines either through a preference to see the turbines, the impact of removing views that are enjoyed from the dwelling. Accordingly, mitigation measures should be determined on a case-by-case basis and in consultation with landholders - to minimise adverse impacts.

12. Residential viewpoints

A key consideration of the EES scoping requirements for LVIA is to *assess the landscape and visual effects of the project on…. private views* and to *Outline and evaluate any potential design and siting options that could avoid and minimise potential effects on landscape and visual amenity of neighbouring residences and communities and additional management strategies that may further minimise potential effects.*

This requirement is also supported by Clause 52.32 which requires wind farm proponents to *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.*

The assessment of the visual impact from residential dwellings is based upon visibility of turbines, scale of wind turbines through distance and the view from which the turbines may be visible, before considering the feasibility of landscape mitigation to filter or screen views towards the Project. The assessment is not altered or influenced by perceptions of the individual viewer; sensitivity is always considered to be high.

It is recognised that views from dwellings are not fleeting or occasional like views from the local road network, rather they are static views from living areas or attached areas of private open space which are used for entertaining, relaxation or respite.

The analysis of visual impact from residential properties is based on the following assumptions:

- An occupant of a residential dwelling will have a high degree of sensitivity to the change in their immediate landscape.
- Visitor numbers do not apply to residences.
- Farmers may be able to see the wind turbines as they move around their property. These areas may be used as much in daylight hours as the living areas of their residences.
- Landscaping can be designed to mitigate the visual impact when located near a fixed viewpoint, such as a residence, with far greater ease than that can be achieved along the road network.

It is also recognised that Landholders that farm the land may also be impacted as they work on their property. The assessment of views and visual impact in previous wind farm hearing places great weight on the impacts from dwellings as opposed to working areas of a property. For example, the panel for Stockyard Hill wind farm observed as follows:

'This is a property where the central homestead area does not seek to embrace external views but instead a sense of enclosure is created by plantings which could be further supplemented. While we were shown more open areas of the farm away from the central homestead area from which there would be much greater turbine visibility, we take the same approach as other panels that the impacts on these working areas of the farm are less critical than on the homestead core — which is potentially the most heavily used area'.

This point was reiterated by the Berrybank wind farm panel:

'Submitters made the point at the hearing that much time is spent both in paddocks on the farm, and in the area near to the house but outside the existing screening, and the visual impact on these areas should be given due consideration. The Panel notes this concern but considers from a visual impact point of view, the focus in policy and previous panel reports has been on visual impacts from dwellings rather than workplaces'.

12.1 Dwelling Selection

The purpose of the landscape and visual assessment is to demonstrate potential impacts from a range of views through examples that are representative of view from residential properties and examples of the potentially most impacted properties to identify and evaluate mitigation and management strategies for visual impacts.

The greatest potential for visual impact of the Project is from neighbouring (non-participating) residential dwellings are those within 6.0 km of a 250 m high turbine. This distance is defined in section 4.1 of this assessment as the zone where a 250m high turbine has the potential to be *Highly visible and will usually dominate the landscape* where the whole of a turbine would be visible. This zone is consistent with the area

within which previous wind farm projects have been required to offer landscape screening to dwellings in the areas surrounding approved wind farm projects.

12.1.1 Number of dwellings

There are 170 dwellings within 6.0 km of a proposed turbine, 29 of these dwellings are participating landowners, six (6) of which are dilapidated or not- inhabitable dwellings. Wind Prospect have legally binding agreements with all dwellings, inhabited or not inhabited, within 1km of a proposed wind turbine providing their consent of the Project.

For the 141 neighbouring dwellings within 6.0 km of a turbine where there are no agreements in place:

- There are no dwellings within 1.5 km of a proposed turbine.
- 42 are between 1.5 and 3.0 km of a proposed turbine; and
- 99 are between 3.0 and 6.0 km of a proposed turbine.

Table 12-1 summarises the status of dwellings and their relative distance to the nearest turbine. The location of dwellings relative to the Project are shown in Figure 12-1.

Table 12-1: Residential dwellings within 6.0 km of a turbine

Distance to nearest turbine	Participating dwelling	Dilapidated dwelling (participating)	Neighbour dwelling	TOTAL
0-1.0 km	6	5	-	**11**
1.0-1.5 km	7	1	-	**8**
1.5-2.0 km	1	-	20	**21**
2.0-3.0 km	3	-	22	**25**
3.0-6.0 km	6	-	99	**105**

This setting is similar to the approved Golden Plains Wind Farm which has approval for 215 turbines of up to 230 m high. The Golden Plains Wind Farm is also located on flat farmland, however approximately 135 dwellings within 3.0 kilometres of a turbine.

12.1.2 Dwelling locations

The location of dwellings within 6.0 km of a proposed turbine is shown in Figure 12-1. Dwelling data and mapping have been based up information provided by Wind Prospect.

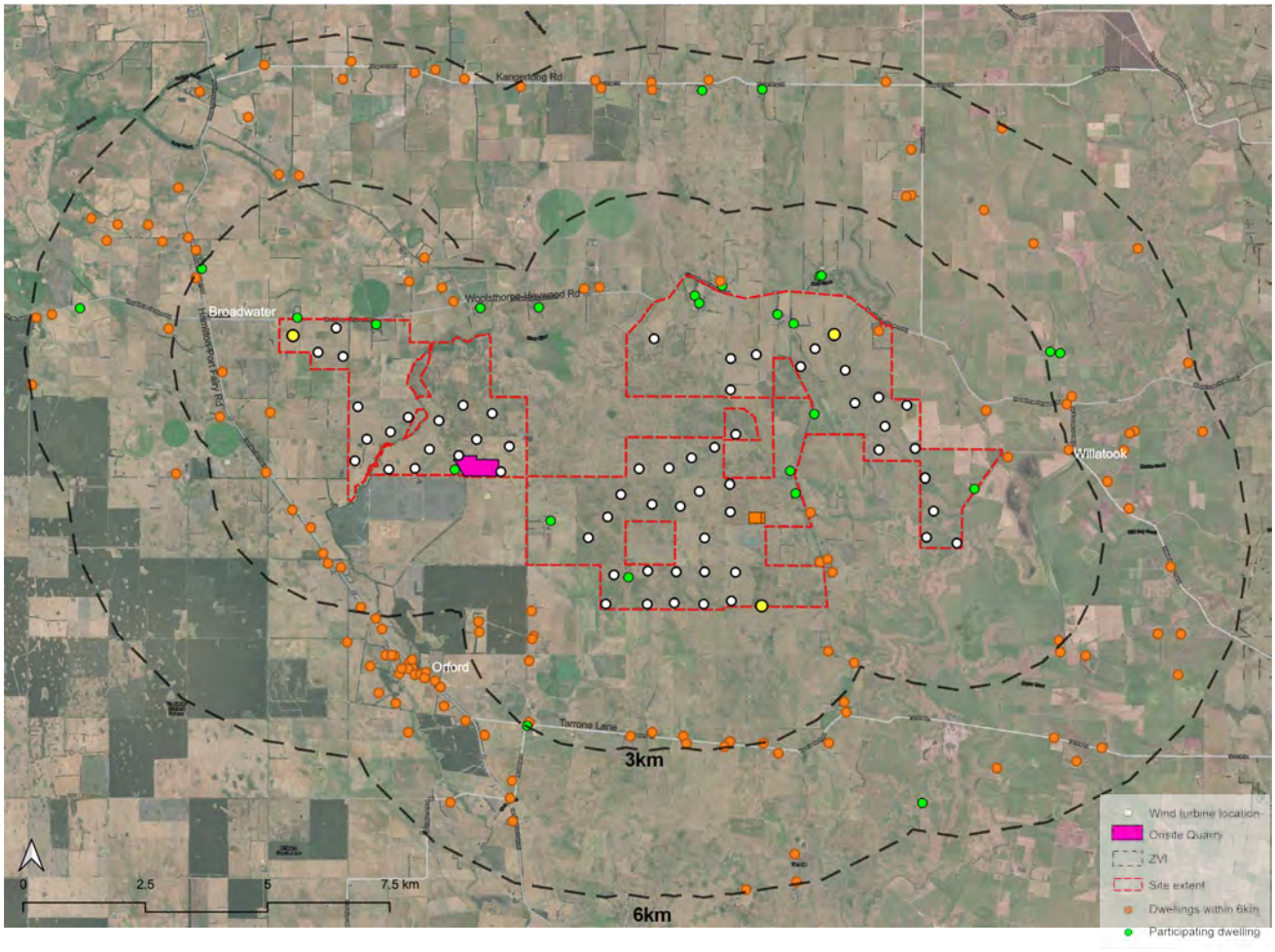


Figure 12-1 Dwellings in proximity to the Project

Participating dwellings are shown in Green. Neighbouring dwellings area shown in Orange. The majority of dwellings are situated to the south-west near the locality of Orford and north-west near the locality of Broadwater.

The majority of dwellings to the north of the Project are located along Kangertong Road, while those to the south are situated generally along Tarrone Lane.

12.1.3 Theoretical Visibility

The SAA set out in Section 7 shows theoretical turbine visibility based on key project infrastructure and topography of the surrounding landscape.

The SAA which shows high level patterns of theoretical turbine visibility demonstrates the influence of topography in partially screening turbines across the landscape such as the areas around the localities of Orford and Broadwater to the west and Willatook to the east. The majority of the area to the north along Kangertong Road and south along Tarrone Lane has the potential to see either part or all of the 59 turbines. This model is theoretical only and does not include features such as vegetation, buildings, structures, or micro topographical changes such as the low stony rises of the Mount Rouse Lava Flows.

Figure 12-2 shows dwellings within 6.0 km of a turbine overlaid with the results of the SSA in Section 7. Participating dwellings are shown in Green. Neighbouring dwellings area shown in Orange.

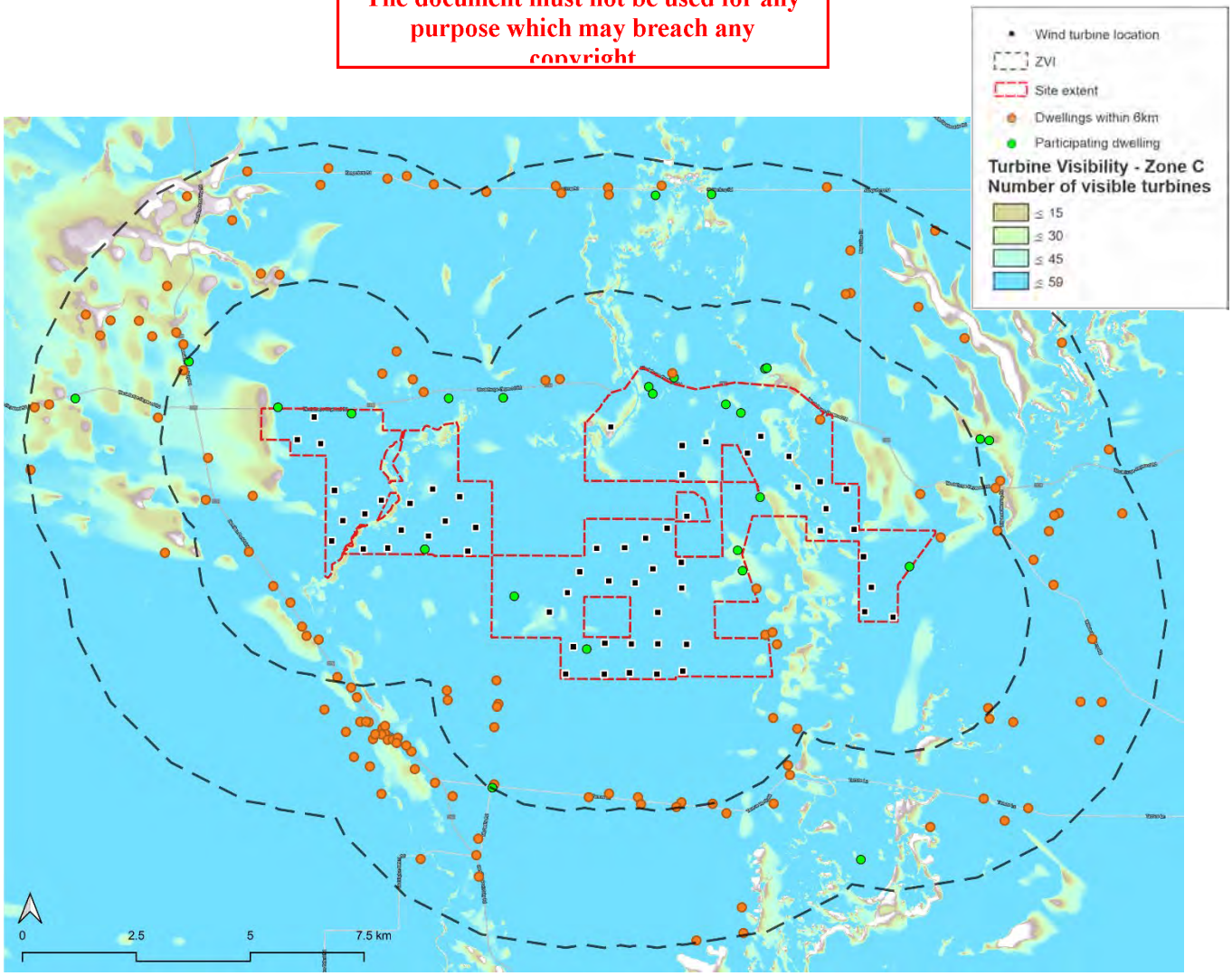


Figure 12-2 Dwellings overlaid with the SAA

The landscape in the area surrounding the Project, particularly within 6.0 km of the proposed turbines is low lying to gently undulating with limited topographical variation that would materially alter the assessment. For this reason, fewer dwellings are required to be assessed to consider the design and siting options that could avoid and minimise potential effects on landscape and visual amenity of neighbouring residences and communities and additional management strategies that may further minimise potential effects.

Dwellings included in the assessment were identified through a desktop review of dwellings within 6.0 km of a turbine through Google Earth, Google Earth Street View, VicPlan Aerial Imagery and publicly accessible locations.

It was considered that the visual impact from dwellings within 6.0 km of the Project that had little to no vegetation would be high. This is based on the assumption that there are clear views towards the project, where turbines would be dominant structures due to distance and visible from sensitive areas at the dwelling.

12.1.4 Assessed Dwellings

Dwellings included in this assessment were selected where:

- the setting, orientation of views or influence of vegetation which cannot be determined through a desktop review or views from the roadside. For example, Eucalypts in the area can allow views through cleared trunks and higher canopies, while vegetation such as cypress, poplars, blackwood's and acacias can provide partial screening or filtering of views.

- dwellings appear to be representative of views from a cluster of dwellings, and
- residents have specifically requested a visual assessment to be undertaken through the proponent.

Twenty five dwellings allowed access to their properties for the purposes of assessing the landscape and visual impacts of the Project in the private domain. Figure 12-3 shows the proximity of dwellings visited as during the assessment of views from the Private domain.

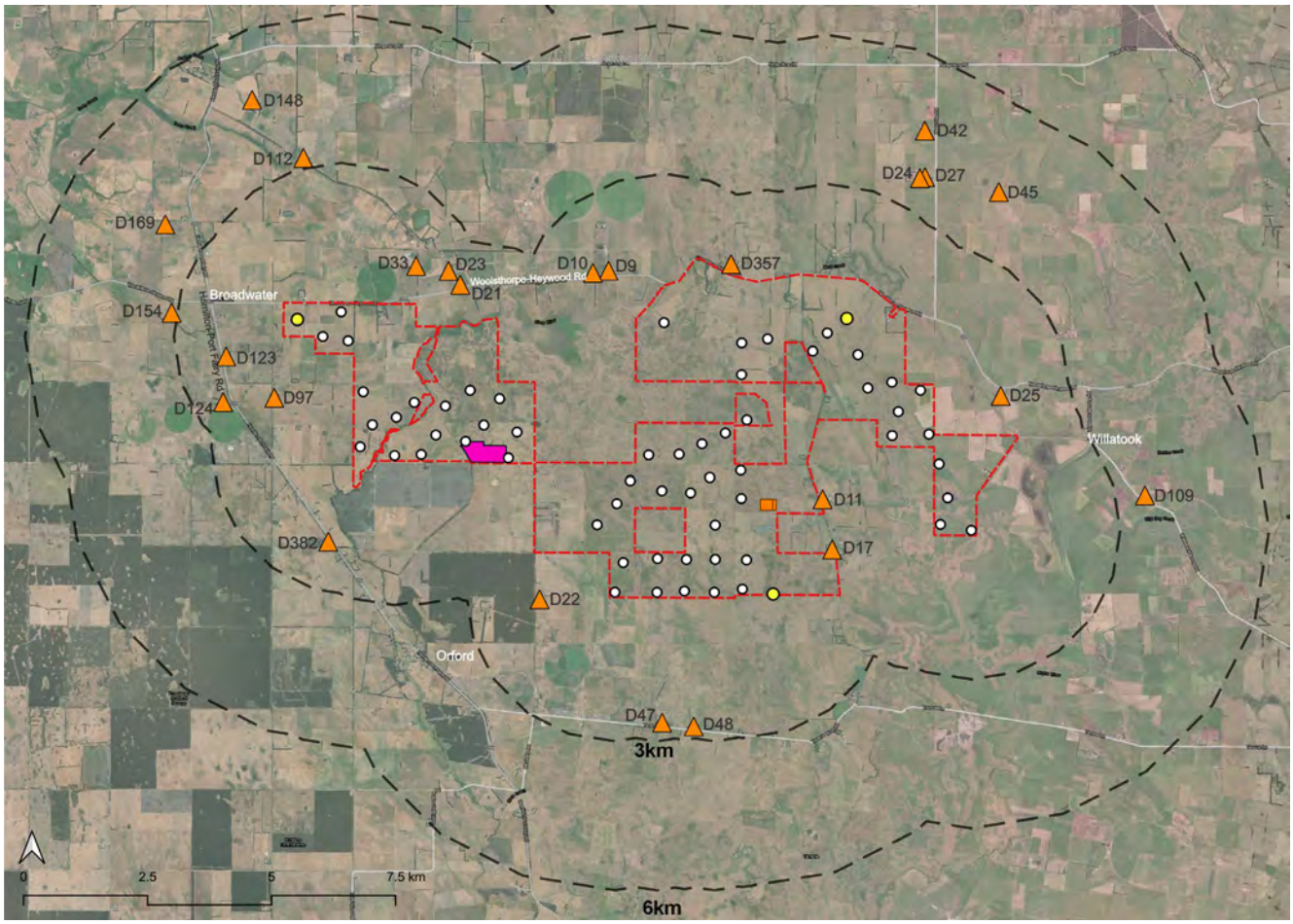


Figure 12-3 Assessed Dwellings

Several properties to the north of the Project that were visited during this assessment have not provided their consent for the assessment to be included in this report. These include properties at Dwelling IDs D9, D10, D21, D23, D33, D112, D123, D124, D148, D154, D169 and D357. Although the assessments have not been included in this report, the observations and findings from the assessment of these dwellings have supported the conclusions and recommendations for landscape mitigation. These include the properties at dwelling ID

The majority of assessed dwellings visited and assessed were between 1.5 and 3.0 km of a turbine. Table 3 of this report determined that turbines within this distance *will always be visually dominant in the landscape* where visible.

Table 3 of this report determined that between 3.0 and 6.0 km, turbines where visible would be *Highly visible and will usually dominate the landscape.* Eight dwellings were visited and assessed from a range of viewing angles at within these distances. All dwellings assessed are neighbouring properties and not associated with the Project.

Many of the dwellings visited in this distance band are located in a setting that includes extensive wind break and shelter plantings, with ornamental gardens closer to the dwelling. In most cases, these plantings prohibit or inhibit views in the direction of the Project and other approved wind farms. These observations also

support the recommendations and suitability for landscape mitigation to assist with reducing impacts on private domain views.

The assessment of residential dwellings is supported by the photomontages included at the following viewpoints:

- Viewpoint H5 – Hamilton-Port Fairy Road, approximately 3.1 km to the northwest
- Viewpoint H8 – Hamilton-Port Fairy Road, approximately 2.7 km to the southwest
- Viewpoint H13 – Woolsthorpe- Heywood Road, approximately 5.3 km to the east.

All photomontages include nearby vegetation which demonstrates the ability for landscape to be effective at screening or filtering views to turbines over distances relative to setback of dwellings assessed in this section.

The photomontage and wireframe view from Viewpoint H2 on the Princes Highway is approximately 16.0 km to the south. This view demonstrates that turbines have the potential to be visible across cleared flat areas. Where visible, they would be background elements and not visually dominant.

Viewpoint T2 – Hawkesdale Township, approximately 10.6 km to the east, shows that turbines within the Willatook Wind Farm would be largely screened by topography, or that vegetation can effectively screen turbines if required.

Based on the above considerations, the following assessment of residential dwellings is considered to be conservative, recognising that the majority of assessed dwellings are within 3.0 km of a turbine, and representative of the range of views and visual impacts that might be afforded by residential dwellings in proximity to the project.

12.2 Dwelling D11

Dwelling D11 is located within the eastern residential cluster. The nearest turbine is approximately 1.6 km west (T40).

Figure 12-10 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

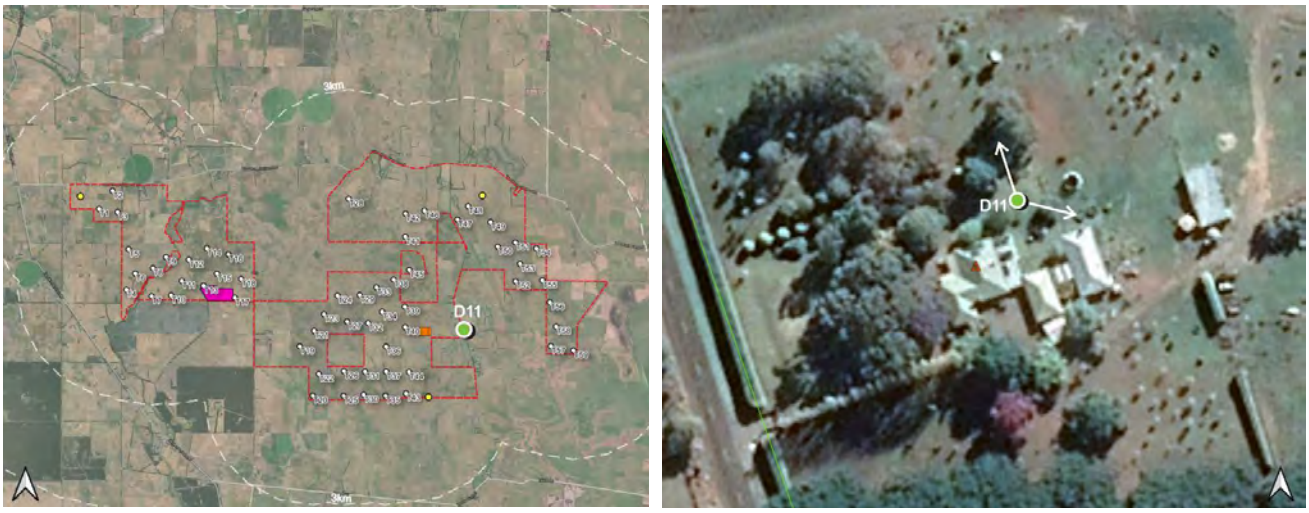


Figure 12-4: Dwelling D11 context map

Figure 12-11 shows the view looking generally southwest to northwest from the lawn area east of the dwelling.

Figure 12-5 View looking west to north west

Turbines to the south-west through north are partially screened and filtered by existing vegetation to the west and north of the dwelling. This view also shows the vegetation in the area directly north of the dwelling.

The nearest visible turbine is T52 approximately 1.8 km to the north-east. Figure 12-12 shows the north-eastern elevation of the dwelling which faces the Project.

Figure 12-6: Dwelling D11 – Existing view of dwelling - North-eastern facade

Figure 12-13 shows the existing view looking north to east from the rear of the dwelling.

Figure 12-7: Dwelling D11 – Existing view looking north from the rear of the dwelling

Figure 12-14 shows the existing view looking north from the northern edge of the garden to Macarthur Wind Farm.

Figure 12-8: Dwelling D11 – Existing view looking north from the northern edge of the garden to Macarthur Wind Farm

Existing views in the direction of the turbines from the northern open space and lawn areas of the dwelling are over the lawn areas with predominantly native trees. A pergola structure has been constructed to the north-east of the dwelling with climbers growing up the posts.

Existing views to the south-east are over shedding and include the existing transmission line.

Table 12-2: Dwelling D11 assessment summary

Dwelling D11	
Willatook turbine visibility	Views to the north and north-east are partially filtered through to open views. Turbines would be visible through breaks in vegetation and structures.
Key View	Private open space / lawns to the north-east of the dwelling.
Cumulative considerations	The existing high voltage transmission line is visible in views to the south-east. Macarthur turbines are visible to the north from the northern edges of the property. The closest constructed turbine is approximately 10.8 km north. At this distance they are noticeable, however they are not a dominant element in the view. The approved Hawkesdale wind turbines would be approximately 10km north-east and have the potential to be visible. If visible, they would be noticeable but not a dominant element in the view. The approved Ryan Corner turbines would be located approximately 10km south. They would not likely be visible due to topography and vegetation.
Mitigation	If required, new plantings along the northern and eastern boundaries of the house yard would assist to filter or screen views to turbines to the north and east. This is demonstrated by existing vegetation in the areas to the west and north west of the dwelling.
Overall Visual Impact Assessment	The overall visual impact would be **Moderate-High** prior to mitigation, reducing to **Low** following mitigation

12.3 Dwelling D17

Dwelling D17 is located within the south-eastern residential cluster. The nearest turbine is approximately 1.7 km west (T44).

Figure 12-15 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

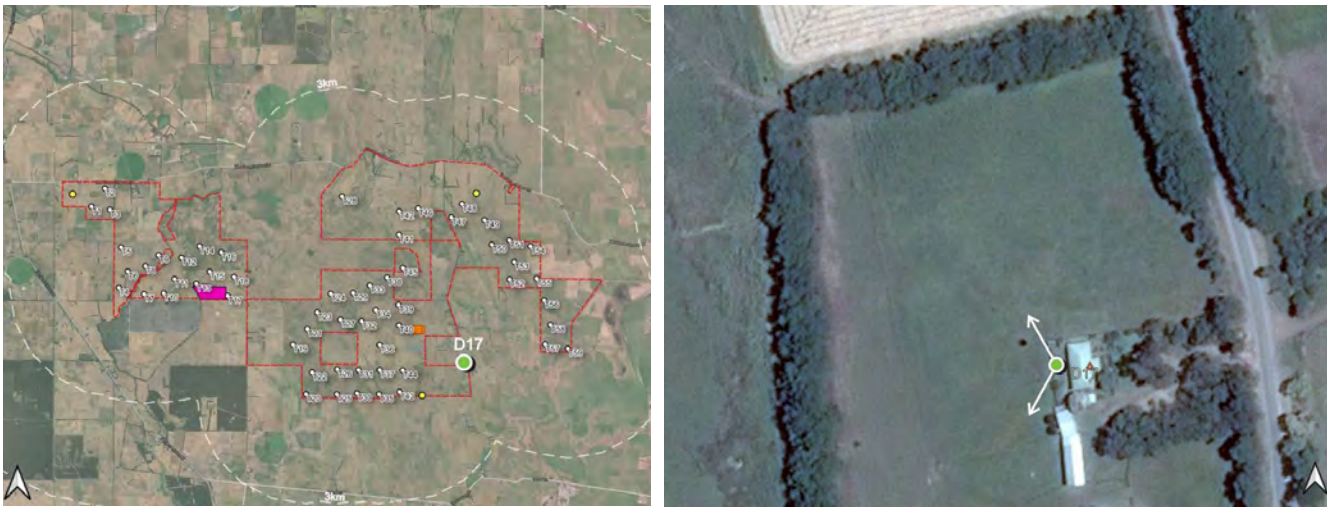


Figure 12-9: Dwelling D17 context map

Figure 12-16 shows the western elevation of the dwelling which faces the Project.

Figure 12-10: Dwelling D17 – Existing view of dwelling - Western facade

Figure 12-17 shows the existing view looking west through north from the clothesline to the west of the dwelling.

Figure 12-11: Dwelling D17 – Existing view looking west through north from the clothesline

Existing views in the direction of the turbines from the clothesline and yard west of the dwelling are over galvanised fencing, cleared paddocks and windbreak plantings set back from the dwelling.

Table 12-3: Dwelling D17 assessment summary

Dwelling D17	
Willatook turbine visibility	The majority of turbines to the west and north would be screened by existing vegetation. Turbines to the north-west would be partially filtered, however blades would likely to be visible over the section of lower vegetation seen central to Figure 12-17.
Key View	View is from the rear of yard and clothesline. Not a primary view.
Cumulative considerations	The existing 500kV transmission line is located approximately 750m north. The Tarrone Terminal Station is approximately 1.2km north-west. Neither the transmission line nor the terminal station are visible in the view. The approved Ryan Corner turbines would be located approximately 9.9 km south-west and would not likely be visible due to existing vegetation and distance. The closest constructed turbine within the Macarthur Wind Farm is approximately 11.5 km north. Turbines within the Macarthur Wind Farm were not apparent when on site. The approved Hawkesdale Wind Farm turbines would be located approximately 10.5 km north-east. Turbines within the Hawkesdale Wind Farm would likely be filtered by existing vegetation. If visible, at this distance they would not be a dominant element in the view.
Mitigation	If required, new plantings in the cleared areas beyond the immediate fencing to the west and north of the house yard would assist to filter or screen views to turbines. This would be supplementary to the windbreaks which are set-back from the dwelling which would screen the majority of turbines to the west and north.
Overall Visual Impact Assessment	The overall visual impact would be **Low** prior to mitigation, reducing to **Negligible-Nil** following mitigation.

12.4 Dwelling D22

Dwelling D22 is located within the south-western residential cluster. The nearest turbine is approximately 1.5km east (T20).

Figure 12-21 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

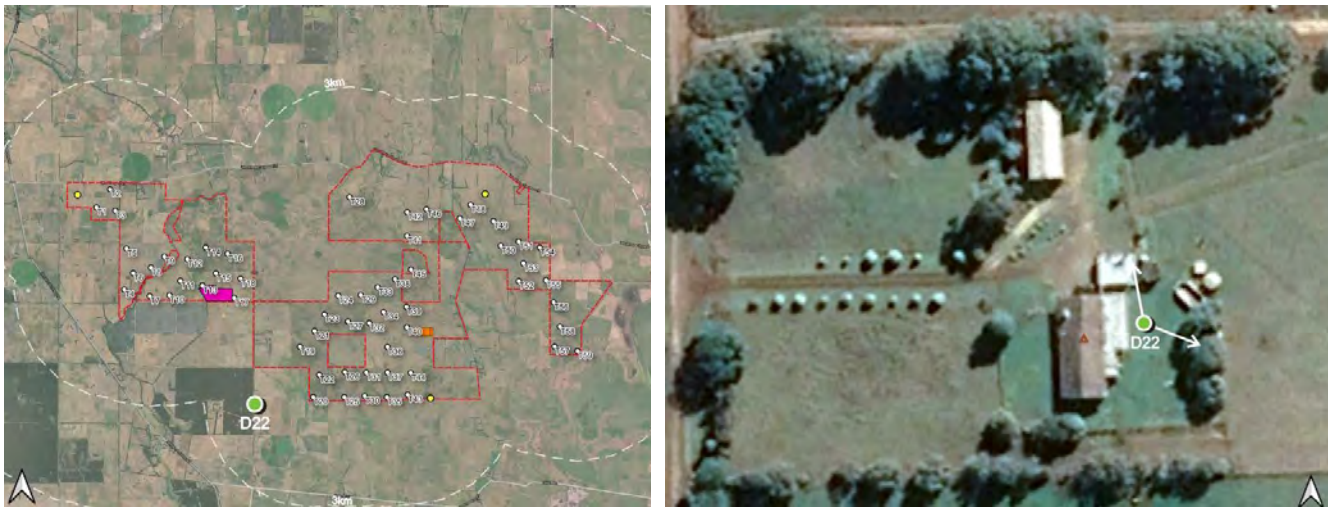


Figure 12-12: Dwelling D22 context map

Figure 12-22 shows the existing view looking north through east from the alfresco area on the eastern side of the dwelling.

Figure 12-13: Dwelling D22 – Existing view looking north through east from the alfresco area

Existing views in the direction of the turbines from the outdoor undercover entertaining area to the east of the dwelling are over lawn areas to tanks and vegetation along the fence line.

Vegetation to the east of the dwelling is predominantly native with exotic shrubs located along the northern fence line.

Table 12-4: Dwelling D22 assessment summary

Dwelling D22	
Willatook turbine visibility	The closest turbines to the east will be partially filtered by the existing vegetation along the eastern fence line. Views to the north-east will include turbines visible over the water tank. Turbines to the north-west will be screened by the garage and existing vegetation.
Key View	View from the outdoor undercover entertaining area and living spaces on the eastern side of the dwelling.
Cumulative considerations	The existing high voltage transmission line is located approximately 1.2 km north. A transmission tower is visible central to the view in Figure 12-22. The closest constructed turbine within the Macarthur Wind Farm is approximately 12.6 km north-east. When on site turbines within the Macarthur Wind Farm were not apparent, if visible would not be a dominant element. The approved Hawkesdale Wind Farm would be located approximately 16.5 km north-east and would likely be screened by existing vegetation. If visible at this distance would not be a dominant element in the view. The approved Ryan Corner Wind Farm would be located approximately 7.3 km south and would not likely be visible due to existing vegetation.
Mitigation	Landscape mitigation may include strategic plantings to support existing trees, or mid-height shrubs in a similar location.
Overall Visual Impact Assessment	The overall visual impact would be **High** prior to mitigation, reducing to **Low** following mitigation.

12.5 Dwelling D24

Dwelling D24 is located within the north-eastern residential cluster and on the same property as dwelling D27 below. Dwelling D27 is the primary residence at this property. The nearest turbine is approximately 3.6 km south-west (T48).

Figure 12-32 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

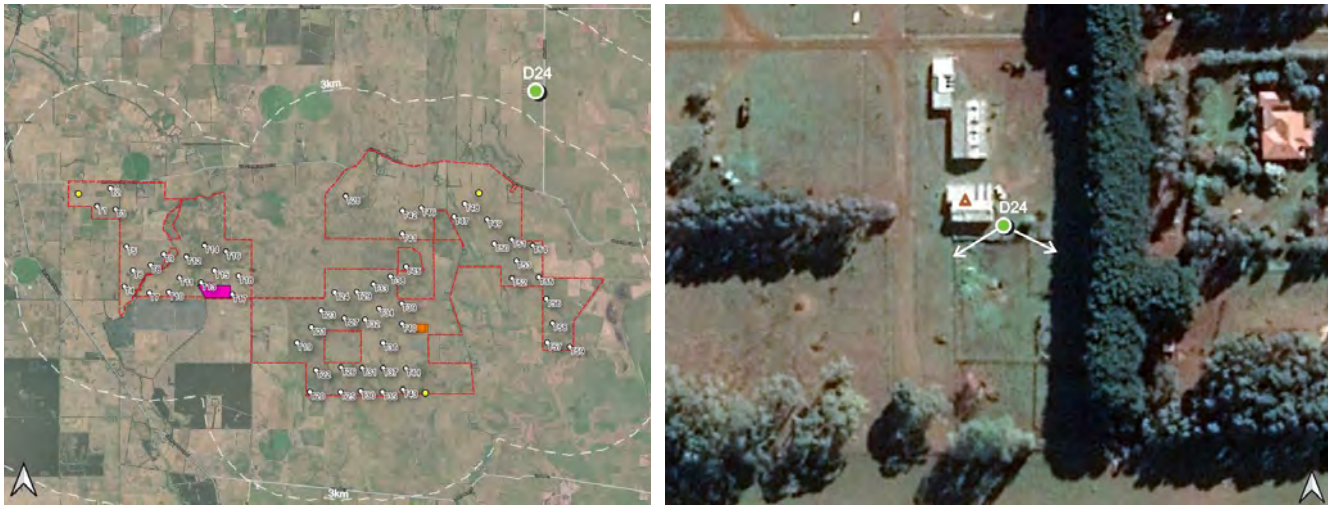


Figure 12-14: Dwelling D24 context map

Figure 12-27 shows the southern elevation of the dwelling which faces the Project.

Figure 12-15: Dwelling D24 – Existing view of dwelling - Southern facade

Figure 12-28 shows the existing view looking south from the southern side of the dwelling.

Figure 12-16: Dwelling D24 – Existing view looking south

Existing views in the direction of the turbines from the habitable areas of the shearer's quarters are over the working yards and through existing vegetation to the south. Vegetation comprises a mix of poplars which are deciduous and evergreen trees to the south-east and south-west.

Table 12-5: Dwelling D24 assessment summary

Dwelling D24	
Willatook turbine visibility	Turbines would be visible through the existing vegetation on the southern boundary of the yards. This vegetation is of a scale and height that would partially filter views to turbines even when the deciduous trees are not in leaf.
Key View	View taken from the southern side of the shearer's quarters, which would be similar to that experienced from the living areas within the shearer's quarters.
Cumulative considerations	The closest constructed turbines within the Macarthur Wind Farm are approximately 4.4 km north-west. When on site, the turbines within the Macarthur Wind Farm were not apparent. The closest turbine within the approved Hawkesdale Wind Farm would be approximately 9.5km south-east. The closest turbine within the approved Ryan Corner wind farm would be approximately 17 km south-west. At these distances, if visible the turbines would not be a dominant element in the view.
Mitigation	Supplementary plantings installed along the southern boundary of the sheep yards would assist to further filter these views if required. This is supported by existing vegetation to the south of the existing dwelling assessed at D27 to the east.
Overall Visual Impact Assessment	The overall visual impact would be **Moderate-Low** due partly to filtering provided by existing vegetation and limited views in the direction of the Project from key areas. This would reduce to **Low** to negligible should mitigation ne implemented.

12.6 Dwelling D25

Dwelling D25 is located within the north-eastern residential cluster. The nearest turbine is approximately 1.6 km west (T54).

Figure 12-29 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

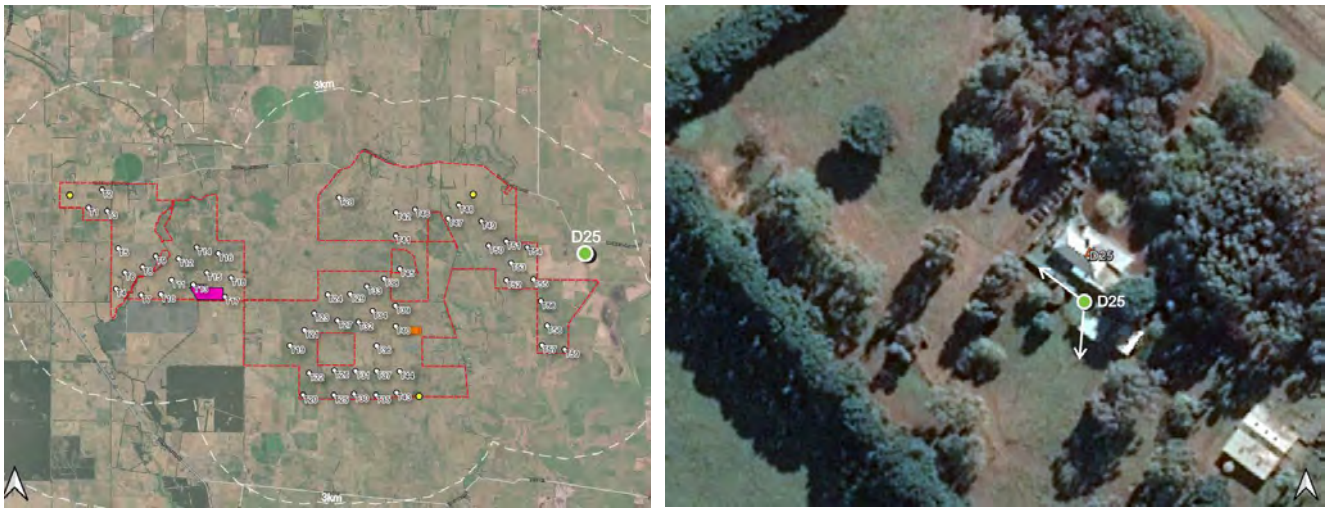


Figure 12-17: Dwelling D25 context map

Figure 12-30 shows the western elevation of the dwelling which faces the Project.

Figure 12-18: Dwelling D25 – Existing view of dwelling - Western facade

Figure 12-31 shows the existing view looking west from the deck on the western side of the dwelling.

Figure 12-19: Dwelling D25 – Existing view looking west from the deck

Existing views in the direction of the turbines from the deck and entertaining area to the west of the dwelling are over a studio and water tank.

Vegetation within the garden to the west comprises a mix of exotic and natives and several fruiting trees. The Cypress hedgerow seen in the background of Figure 12-31 is located on the neighbouring property.

Table 12-6: Dwelling D25 assessment summary

Dwelling D25	
Willatook turbine visibility	The tips of turbines would likely be visible in oblique views from the edge of the deck however not from the primary entertaining area or living spaces.
Key View	View taken from the edge of the deck on the western side of the dwelling.
Cumulative considerations	The closest constructed turbines within the Macarthur Wind Farm are approximately 9.1 km north-east and were not visible due to existing vegetation and structures within the view. The approved Hawkesdale Wind Farm would be located approximately 6.5 km east and would not likely be visible due to existing vegetation.
Mitigation	Landscape mitigation would not be required in the short term. However, landscaping on the adjoining property currently provides part of the screening of views from this dwelling. It is acknowledged that this vegetation may be nearing the end of its useful life. For this reason, replacement planting within the landowners dwelling may be beneficial along the western edge to succeed this vegetation on the adjoining landowner's property should it be required.
Overall Visual Impact Assessment	The overall visual impact would be **Negligible** due to screening afforded by existing vegetation.

12.7 Dwelling D27

Dwelling D27 is located within the north-eastern residential cluster. The nearest turbine is approximately 3.7 km south-west (T48).

Figure 12-32 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

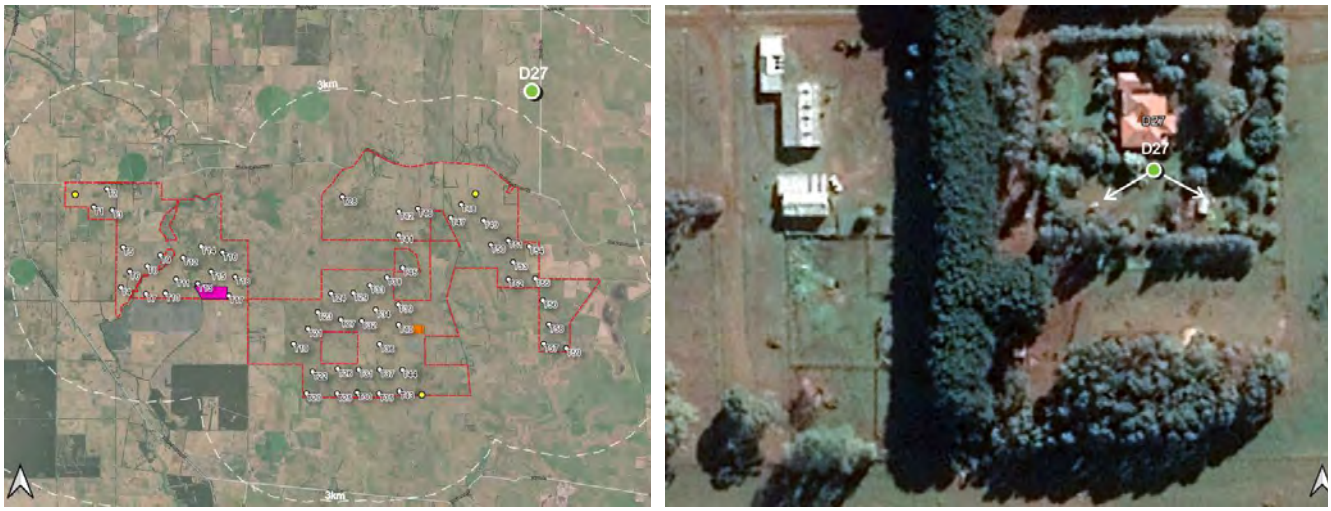


Figure 12-20: Dwelling D27 context map

Figure 12-33 shows the southern elevation of the dwelling which faces the Project.

Figure 12-21: Dwelling D27 – Existing view of dwelling - Southern facade

Figure 12-34 shows the existing view looking south from the southern side of the dwelling.

Figure 12-22: Dwelling D27 – Existing view looking south

Existing views in the direction of the turbines from the deck and entertaining area on the southern side of the dwelling is across the lawn and garden areas. Vegetation to the south of the dwelling comprises a mix of exotic and native shrubs and trees.

Table 12-7: Dwelling D27 assessment summary

Dwelling D27	
Willatook turbine visibility	Views to turbines to the south will be partially screened to filtered by existing vegetation.
Key View	View taken from the deck/entertaining area on the southern side of the dwelling.
Cumulative considerations	The closest constructed turbine within the Macarthur Wind Farm is approximately 4.4 km north-west. When on site, turbines within the Macarthur Wind Farm were not apparent. The approved Hawkesdale Wind Farm would be located approximately 9.4 km south-west and would not likely be visible due to existing vegetation.
Mitigation	Not required
Overall Visual Impact Assessment	The overall visual impact would be **Negligible** due to the screening afforded by the existing vegetation south of the dwelling.

12.8 Dwelling D33

Dwelling D33 is located within the northern residential cluster. The nearest turbine is approximately 1.7 km south-west (T2).

Figure 12-35 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

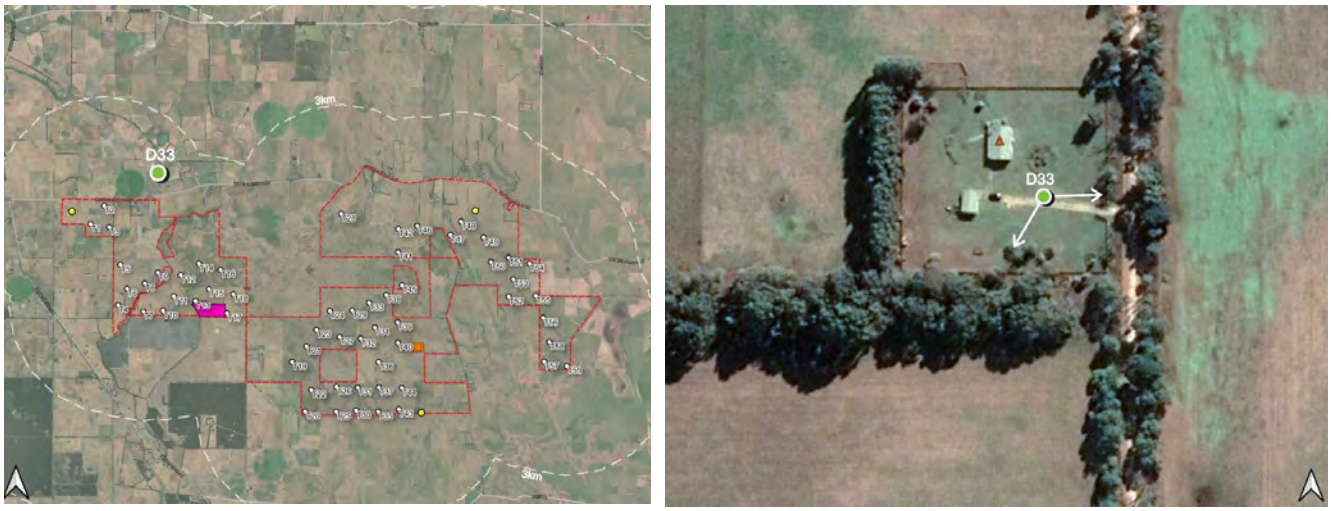


Figure 12-23: Dwelling D33 context map

Figure 12-36 shows the southern and eastern elevations of the dwelling which faces the Project.

Figure 12-24: Dwelling D33 – Existing view of dwelling – Southern and eastern facade

Figure 12-37 shows the existing view looking south from the east through south from the front of the dwelling.

Figure 12-25: Dwelling D33 – Existing view looking east through south from the front of the dwelling

Existing views in the direction of the turbines from the front veranda of the dwelling are across open lawn areas and driveway. Views to the south-east include the transmission line in the distance and old windmill in the south-eastern corner of the property. Vegetation comprises a mix of exotic and native trees and shrubs.

Table 12-8: Dwelling D33 assessment summary

Dwelling D33	
Willatook turbine visibility	The closest turbines would be located approximately 1.7 km to the south. These turbines will be filtered/screen by existing vegetation along southern edge of dwelling. The closest visible turbines would be approximately 5.0 km to the south-east and visible through a break in vegetation along the eastern edge of the house yard.
Key View	Oblique views from the front veranda and living spaces within the dwelling.
Cumulative considerations	The closest constructed turbine within the Macarthur Wind Farm is approximately 7.4 km north-west. When on site turbines within the Macarthur Wind Farm were not apparent. If visible at this distance would not be a dominant element in the view.
Mitigation	If required, new plantings along the property boundary to the south of the entrance drive would partially screen or filter views to turbines visible through the break in existing vegetation.
Overall Visual Impact Assessment	The overall visual impact would be **Moderate-Low** due to the distance to the nearest visible turbines prior to mitigation. The impact would reduce to **Low-Negligible** following mitigation.

12.9 Dwelling D42

Dwelling D42 is located within the north-eastern residential cluster. The nearest turbine is approximately 4.5 km south-west (T48).

Figure 12-38 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

Figure 12-26: Dwelling D42 context map

Figure 12-39 shows the southern and western elevation of the dwelling which faces the Project.

Figure 12-27: Dwelling D42 – Existing view of dwelling – Southern and western facade

Figure 12-40 shows the existing view looking south from the western side of the dwelling.

Figure 12-28: Dwelling D42 – Existing view looking south from the western side of the dwelling

Existing views in the direction of the turbines from the garden to the west of the outdoor patio area include a water tank, fencing, chook shed and garden areas. Vegetation to the south of the dwelling comprises a mix of native and exotic trees and shrubs.

Table 12-9: Dwelling D42 assessment summary

Dwelling D42	
Willatook turbine visibility	Views to turbines to the south-west will likely be filtered or screened by existing vegetation to the south-west of the dwelling. Several turbines would be visible through breaks in vegetation along the southern edge of the house yard from the yard and outdoor entertaining areas. Views will likely be partially screened to filtered from living areas within the dwelling.
Key View	View taken from the garden to the west of the outdoor patio area on the western side of the dwelling.
Cumulative considerations	The closest constructed turbine within the Macarthur Wind Farm is approximately 3.5 km north-west. Views to the north and north-west are screened by existing vegetation and shedding.
Mitigation	Landscape mitigation would further assist to filter or screen views to turbines if required.
Overall Visual Impact Assessment	The overall visual impact would be **Low** due to partial views from key areas within and around the dwelling prior to mitigation. This would reduce to **Negligible-Nil** following mitigation.

12.10 Dwelling D45

Dwelling D45 is located within the north-eastern residential cluster. The nearest turbine is approximately 4.3 km south-west (T54).

Figure 12-41 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

Figure 12-29: Dwelling D45 context map

Figure 12-42 shows the existing landscaping to the south of the dwelling and southern façade oriented towards the Project.

Figure 12-30: Dwelling D45 – Existing view back to dwelling from front fence south of dwelling

Existing vegetation surrounding the dwelling, particularly to the south of the dwelling will partially screen or filter views in the direction of the Project.

Figure 12-43shows the view looking south to south west from the same location seen in Figure 12-43 above.

Figure 12-31: Dwelling D45 – Existing view looking south from areas south of the dwelling, entrance drive and houseyard

From this location views in the direction of the Project would be partially screened by existing vegetation and shedding.

There will be views other locations in proximity to the dwelling. These include areas that are less sensitive to visual change such as shedding and sheep yards to the southwest of the dwelling. Figure 12-44 shows one such view looking southeast to southwest over the sheep holding yards.

Figure 12-32 view looking southeast to southwest

Existing vegetation to the south of the yards would partially screen or filter views to the turbines directly south. Turbines to the southwest would be visible beyond that yards, nearby paddocks and roadside vegetation seen in the background of the view.

Table 12-10: Dwelling D45 assessment summary

Dwelling D45	
Willatook turbine visibility	Existing vegetation within the yard and shedding to the southwest of the dwellings would partially screen or filter views in the direction of the Project from the dwelling and attached areas of open space.
Key View	Views from sensitive areas would be partially screened or filtered by existing vegetation surrounding the dwelling and shedding.
Cumulative considerations	The closest constructed turbine within the Macarthur Wind Farm is approximately 5.3 km north-west and screened from view by existing vegetation and shedding. The approved Hawkesdale wind farm would located approximately 7.3 km south-east. There is the potential for the Hawkesdale Wind Farm to be visible through a gap in vegetation where the driveway heads south-west, however at a distance of approximately 7.3 km would not be a dominant element in the view.
Mitigation	Not required from dwelling.
Overall Visual Impact Assessment	The overall visual impact would be **Negligible-Nil** from the dwelling

12.11 Dwelling D47

Dwelling D47 is located within the southern residential cluster. The nearest turbine is approximately 2.6 km north (T25).

Figure 12-45 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

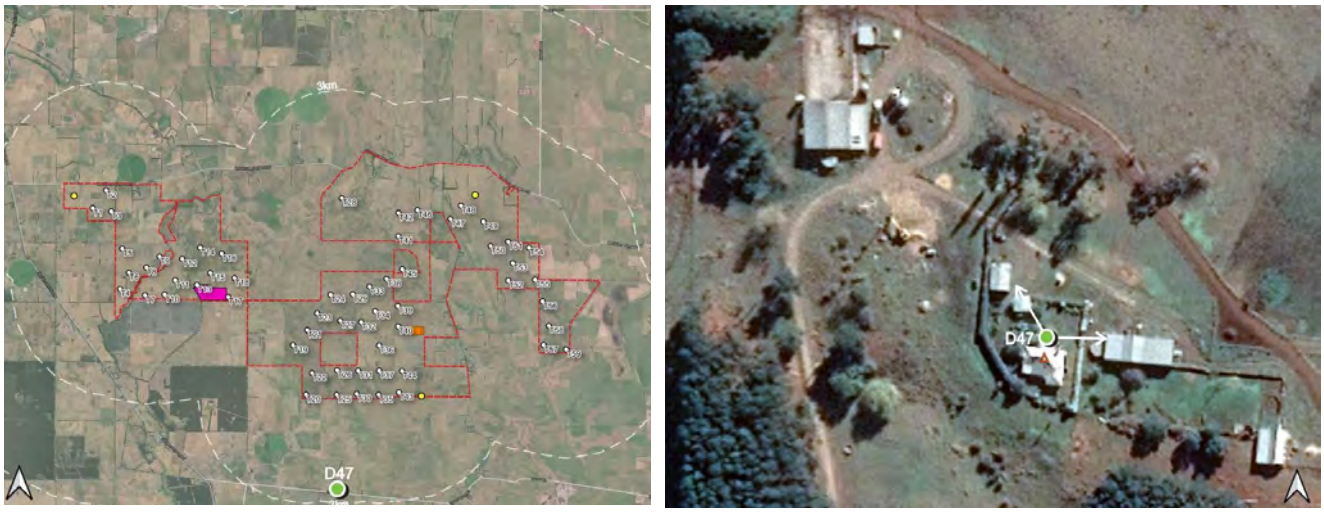


Figure 12-33: Dwelling D47 context map

Figure 12-46 shows the northern elevation of the dwelling which faces the Project.

Figure 12-34: Dwelling D47 – Existing view of dwelling - Northern facade

Figure 12-47 shows the existing view looking north from the entrance at the front of the dwelling.

Figure 12-35: Dwelling D47 – Existing view looking north from front entrance

Existing views in the direction of the turbines from the front entrance and seating area are across lawn areas with the front path and clothesline. Low exotic hedges define the cottage garden area to the north of the dwelling from the driveway and farming areas further north.

Table 12-11: Dwelling D47 assessment summary

Dwelling D47	
Willatook turbine visibility	The closest turbines to the north-east would be visible above the small hedge seen to the right of Figure 12-47. Turbines to directly north and north-west would be filtered or screened by existing vegetation and shedding.
Key View	View taken from entry with small seating area at front of house.
Cumulative considerations	The existing high voltage transmission line is located approximately 3.7 km north. The existing transmission line is visible, however is not a dominant element in the view. The approved Ryan Corner Wind Farm would be approximately 5.1 km south-west and would not likely be visible due to existing topography and vegetation.
Mitigation	Existing vegetation shows that vegetation can achieve heights needed to filter views to turbines if required. New plantings in the cleared area to the northeast of the dwelling and shedding would assist to partially screen or filter views in the direction of the turbines. Alternatively, lower height vegetation in proximity to or as a replacement to the existing clipped hedge seen in Figure 12-47 would also be effective.
Overall Visual Impact Assessment	The overall visual impact would be **High** prior to mitigation due exposed views from key areas. This would reduce to **Low-Moderate** should mitigation be implemented.

12.12 Dwelling D48

Dwelling D48 is located within the southern residential cluster. The nearest turbine is approximately 2.7 km north (T30).

Figure 12-48 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

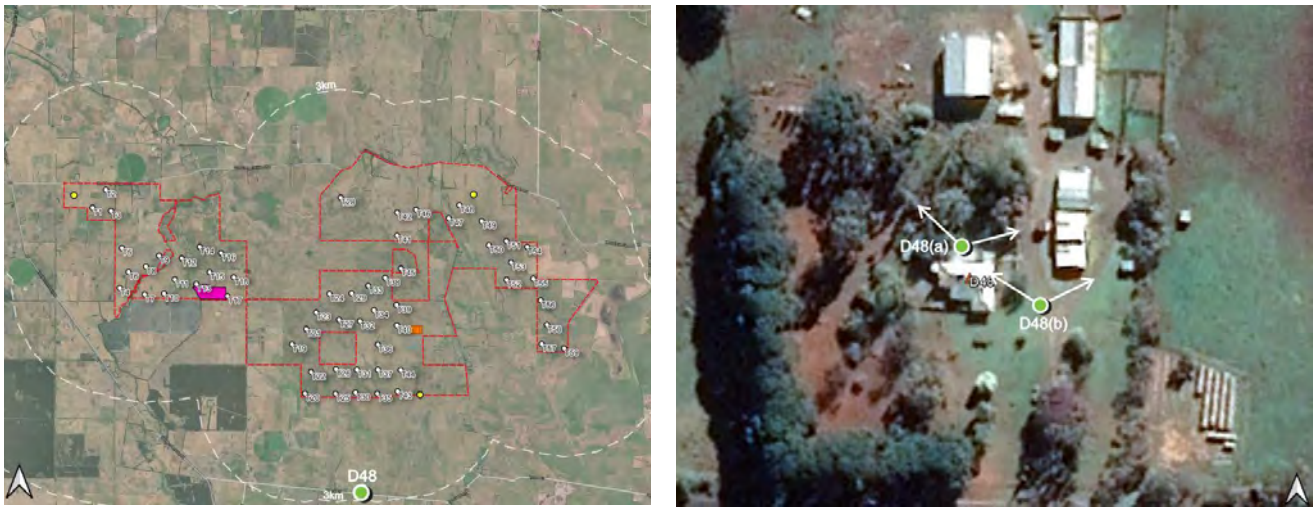


Figure 12-36: Dwelling D48 context map

Figure 12-49 shows the northern elevation of the dwelling which faces the Project.

Figure 12-37: Dwelling D48 – Existing view of dwelling - Northern facade

Figure 12-50 shows the existing view looking north from the northern edge of the dwelling.

Figure 12-38: Dwelling D48 – Existing view looking north from the northern edge of the dwelling

Figure 12-51 shows the existing view looking north from the driveway south of the dwelling.

Figure 12-39: Dwelling D48 – Existing view looking north from the driveway south of the dwelling

Existing views in the direction of the turbines from the private open space to the north of the dwelling overlook lawn areas, with aviary, clothesline and water tank through to farm shedding beyond. Vegetation to the north of the dwelling is predominantly native trees with exotic shrubs.

Existing views in the direction of the turbines from the driveway south of the dwelling are across lawn areas to the dwelling, driveway and shed. Vegetation to the south of the dwelling comprises a mix of native and exotic trees.

Table 12-12: Dwelling D48 assessment summary

Dwelling D48	
Willatook turbine visibility	Existing views from the dwelling and areas of private open space are partially screened by vegetation, sheds, and other structures to the north of the dwelling. Turbines will be visible from in and around the sheds and workshops to the north of the dwelling. These are not considered to be sensitive views.
Key View	View from the private open space to the north of the dwelling and from the entrance driveway.
Cumulative considerations	The existing high voltage transmission line is located approximately 3.4 km north. The existing transmission line is visible between breaks in vegetation and from northern areas of the property. While visible it is not a dominant element in the view. The approved Ryan Corner Wind Farm would be located approximately 5.4 km south-west and would likely be filtered from view by existing vegetation and topography south of the dwelling and Tarrone Lane.
Mitigation	Localised plantings in the area to the north of the dwelling and west of the shedding will assist to further screen or filter views of turbines where visible through breaks in existing vegetation.
Overall Visual Impact Assessment	The overall visual impact would be **Low-Negligible** due to the extent of vegetation and screening in the area to the north of the dwelling.

12.13 Dwelling D97

Dwelling D97 is located within the western residential cluster. The nearest turbine is approximately 1.6 km north-east (T1).

Figure 12-52 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

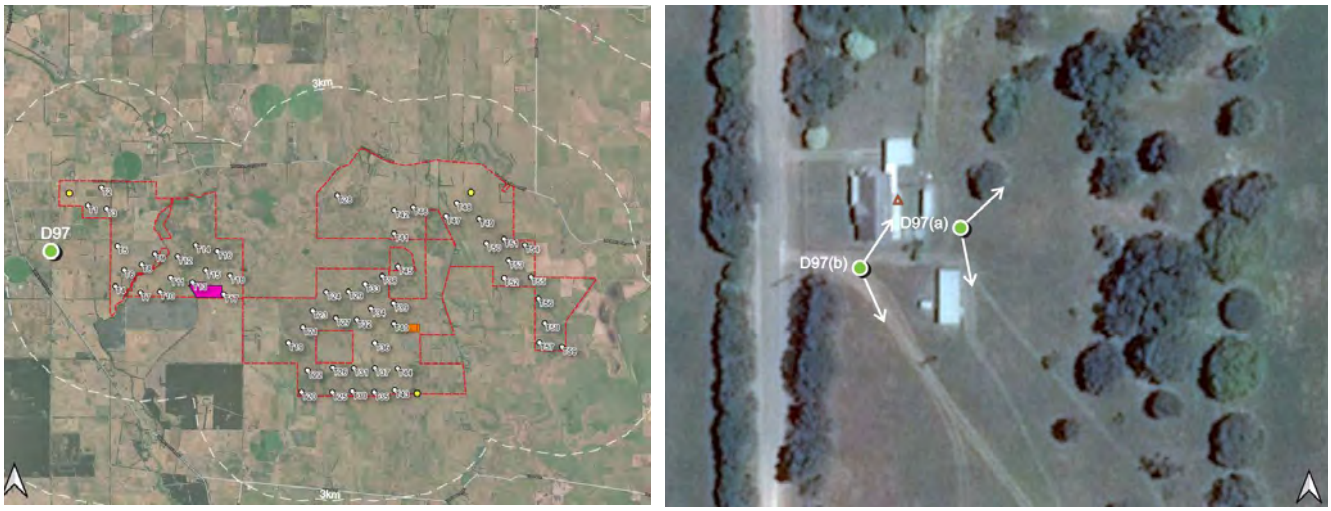


Figure 12-40: Dwelling D97 context map

Figure 12-53 shows the eastern elevation of the dwelling which faces the Project.

Figure 12-41: Dwelling D97 – Existing view of dwelling - Eastern facade

Figure 12-54 shows the existing view looking north through east from the garden to the east of the dwelling.

Figure 12-42: Dwelling D97 – Existing view looking north through east from the garden

Figure 12-54 shows the existing view looking north through east from the farm access gate immediately south of the dwelling.

Figure 12-43: Dwelling D97 – Existing view looking north through east from the farm access gate

Existing views in the direction of the turbines from the garden area to the east of the dwelling are across open lawn areas with a mix of exotic and native trees. Existing views to the east also include several sheds and power poles.

Table 12-13: Dwelling D97 assessment summary

Dwelling D97	
Willatook turbine visibility	Turbines would be partially filtered or screened by existing vegetation from the dwelling and attached areas of private open space. Turbines would be visible from areas immediately south of the dwelling through breaks in vegetation along the eastern boundary. These areas are primarily used for farm access and shedding and are not considered to be sensitive views.
Key View	Views from garden space to the east of the dwelling and the farm access gate to the south of the dwelling.
Cumulative considerations	The closest constructed turbine within the Macarthur Wind Farm is approximately 11 km north-east. When on site turbines within the Macarthur Wind Farm were filtered by existing vegetation and shedding and not apparent. If visible, at a distance of approximately 11 km would not be a dominant element in the view.
Mitigation	Not required
Overall Visual Impact Assessment	The overall visual impact would be **Negligible** from the dwelling due to screening of views from key areas by existing vegetation and outbuildings.

12.14 Dwelling D109

Dwelling D109 is located within the eastern residential cluster. The nearest turbine is approximately 3.6 km south-west (T59).

Figure 12-56 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

Figure 12-44: Dwelling D109 context map

Figure 12-57 shows the western elevation of the dwelling which faces the Project.

Figure 12-45: Dwelling D109 – Existing view of dwelling - Western facade

Figure 12-58 shows the existing view looking west from the edge of the driveway to the west of the dwelling.

Figure 12-46: Dwelling D109 – Existing view looking west from the edge of the driveway west of the dwelling

Existing views in the direction of the turbines from the driveway to the south of the dwelling are predominantly screened by existing native trees planted on the western boundary. Breaks in vegetation allow for views across flat farmland and roadside vegetation along Willatook-Warrong Road.

Table 12-14: Dwelling D109 assessment summary

Dwelling D109	
Willatook turbine visibility	Turbines would be partially filtered or screened by existing vegetation from the dwelling and attached areas of private open space. Turbines will be visible through a break in vegetation along the western boundary from the driveway south-west of the dwelling.
Key View	View from a break in vegetation along the western boundary adjacent to the driveway south-west of the dwelling.
Cumulative considerations	The approved Hawkesdale Wind Farm would be located approximately 4.4k m north-east. Views to turbines within the Hawkesdale Wind Farm will likely be filtered by vegetation and shedding located on the north-eastern side of the dwelling.
Mitigation	Landscape mitigation to the west of the dwellings would further assist to filter or screen views to turbines if required.
Overall Visual Impact Assessment	The overall visual impact would be **Low** prior to partly to key views being oriented away from the Project, and existing vegetation to the west of the dwelling. This may be further through mitigation.

12.15 Dwelling D382

Dwelling D382 is located within the south-western residential cluster. The nearest turbine is approximately 2.0 km north-east (T4).

Figure 12-80 shows the location of the dwelling in relation to the wind farm and the arrangement of the dwelling and any existing vegetation or structures within close proximity to the dwelling.

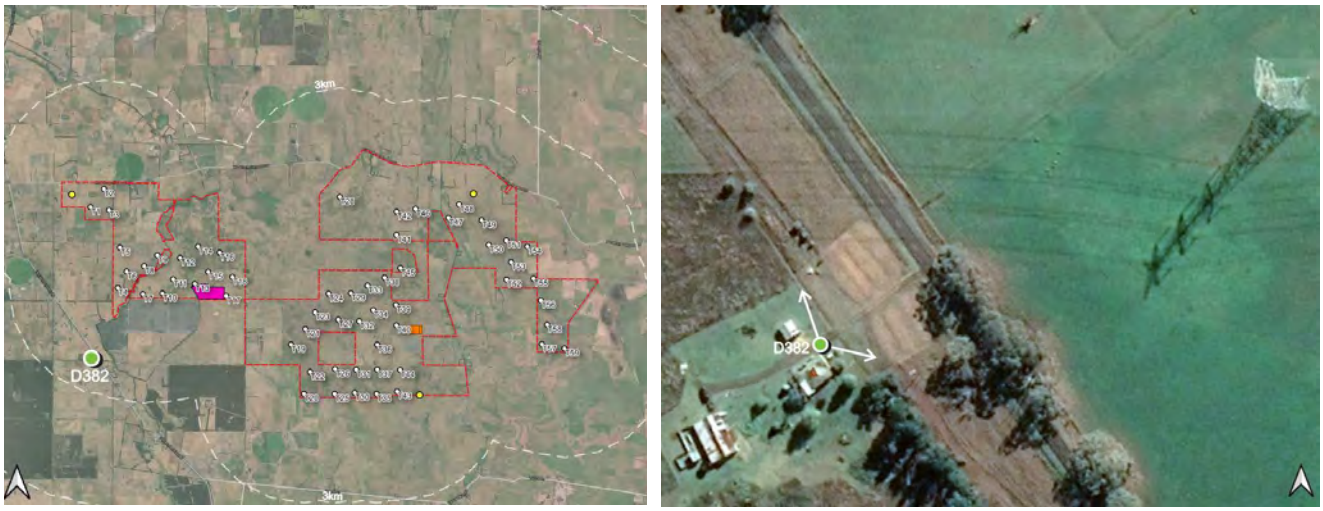


Figure 12-47: Dwelling D382 context map

Figure 12-81 shows the northern elevation of the dwelling oriented towards the Project.

Figure 12-48: Dwelling D382 – Existing view of dwelling northern facade

Figure 12-82 shows the existing view looking north through east from the driveway to the north of the dwelling, the veranda and windows seen in the figure above.

Figure 12-49: Dwelling D382 – Existing view looking north through east from the driveway

Existing views towards the turbines include the existing 500kV transmission line. Turbines to the east would be screened by the existing vegetation seen to the right of the dwelling.

Table 12-15: Dwelling D382 assessment summary

Dwelling D382	
Willatook turbine visibility	The proposed Willatook turbines would be clearly visible to the north-east where a break in existing vegetation within the area surrounding the dwelling, and nearby roadside vegetation allows views to the Project.
Key View	View from northern side of the dwelling, adjacent to the kitchen and living room windows, a covered veranda and private outdoor entertaining area to the north of the dwelling.
Cumulative considerations	The existing high voltage transmission line along northern boundary is a noticeable element in views.
Mitigation	Landscape mitigation would be possible to the north of the dwelling to filter or screen views to visible turbines.
Overall Visual Impact Assessment	The overall visual impact would be **High** prior to mitigation, reducing to **Low** - potentially positive after mitigation. The potentially positive is due to the mitigation also screening the high voltage transmission towers.

12.16 Summary of Residential Viewpoints

There are 42 neighbouring dwellings between 1.5 and 3.0 km of a proposed turbine and 99 neighbouring dwellings between 3.0 and 6.0 km of a proposed turbine. Of these dwellings, 25 have been ground-truthed and assessed from a range on locations, viewing angles, distances and settings.

The landscape within 6.0 km of the Project is generally low-lying, similar in landscape character and patterns of visibility. As such, the 25 properties that were ground truthed during this assessment provides a suitable outline of the visual impact from private realm views, sufficient to evaluate design siting options that could avoid and minimise potential effects on landscape and visual amenity of neighbouring residences and management strategies that will minimise potential effects.

Of the dwellings assessed,

- 5 were assessed as having the potential for a **High** level of visual impact from key views in proximity to the dwelling and
- 3 were assessed as having the potential for a **Moderate-High** level of visual impact.
- 1 dwelling, dwelling ID 124 was assessed as being challenging to mitigate views of the Project

It was observed that many of the established dwellings included mature plantings which include ornamental and shade trees, and established wind break and shelter belt vegetation around house yards. These plantings limit views across the landscape and in the direction of the Project. These plantings also support the ability for landscape screening to be an effective management strategy that will assist to further minimise the potential visual impact of the Project from residential properties if required.

Further, there were no views identified or assessed from dwellings that were in the key views to protected features or landscapes that would require a redesign or removal or turbines.

For dwellings in proximity to Orford, the range and nature of residential views will be dependent on the proximity and orientation of the dwelling towards the Project, the extent of existing plantings in proximity to dwellings, existing timber plantations, and vegetation across the broader landscape. For dwellings in the more elevated areas to the east of the Project, visibility will be further influenced by the orientation of the hillside and its proximity to the Project.

Table 12-27 summarises the findings of the 25 neighbouring dwellings where permission was granted for the use of imagery in the assessment of residential dwellings in proximity to the Project. This table includes the assessment of the properties at D9, D10, D21, D23, D33, D112, D123, D124, D148, D154, D169 and D357. These have been include for the benefit of the Panel should they form part of their site inspections.

Table 12-16: Residential assessment summary

Dwelling ID	Location	Distance to nearest turbine	Visual Impact Assessment	Landscape Mitigation
Dwelling D9	Northern Residential Cluster	1.5 km SE (T28)	**Negligible-Nil**	Not required
Dwelling D10	Northern Residential Cluster	1.7 km SE (T28)	**Negligible-Nil**	Not required
Dwelling D11	Eastern Residential Cluster	1.6 km W (T40)	**Moderate-High**	Mitigation would further assist to filter or screen views to turbines if required.
Dwelling D17	South-eastern Residential Cluster	1.7 km W (T44)	**Low**	Mitigation would be successful if required
Dwelling D21	Northern Residential Cluster	2.1 km S (T14)	**Moderate-High**	Mitigation along the southern edge of the house

Dwelling ID	Location	Distance to nearest turbine	Visual Impact Assessment	Landscape Mitigation
				yard would further assist to filter views of turbines if required.
Dwelling D22	South-western Residential Cluster	1.5 km E (T20)	**High**	Options may include strategic boundary plantings of trees or mid-height shrubs.
Dwelling D23	North-western Residential Cluster	2.4 km S (T14)	**Low- Moderate**	Mitigation would be successful if required
Dwelling D24	North-eastern Residential Cluster	3.6 km SW (T48)	**Moderate-Low**	Supplementary plantings installed along the southern boundary of the sheep yards would assist to further filter these views if required.
Dwelling D25	North-eastern Residential Cluster	1.6 km W (T54)	**Negligible**	Not required in the short term. Consideration should be given to succession planting.
Dwelling D27	North-eastern Residential Cluster	3.7 km SW (T48)	**Negligible**	Not required
Dwelling D33	Northern Residential Cluster	1.7 km SW (T2)	**Moderate-Low**	Mitigation would be successful if required.
Dwelling D42	North-eastern Residential Cluster	4.5 km SW (T48)	**Low**	Possible to screen/filter views if required.
Dwelling D45	North-eastern Residential Cluster	4.3 km SW (T54)	**Negligible-Nil**	May assist to further screen or filter views to turbines where visible.
Dwelling D47	Southern Residential Cluster	2.6 km N (T25)	**High**	Existing vegetation shows that vegetation can achieve heights needed to filter views to turbines if required.
Dwelling D48	Southern Residential Cluster	2.7 km N (T30)	**Low-Negligible**	Localised plantings may be required where turbines are visible through breaks in existing vegetation.
Dwelling D97	Western Residential Cluster	1.6 km NE (T1)	**Negligible**	Not required
Dwelling D109	Eastern Residential Cluster	3.6 km SW (T59)	**Low**	Mitigation would be successful if required
Dwelling D112	North-western Residential Cluster	3.2km SE (T2)	**Moderate-Low**	Plantings located along the southern edge of the drive would assist to further screen or filter views if required.
Dwelling D123	Western Residential Cluster	1.9 km NE (T1)	**High**	Plantings installed in the garden areas to the east of the dwelling would assist to further screen or filter views

Dwelling ID	Location	Distance to nearest turbine	Visual Impact Assessment	Landscape Mitigation
				to the nearby visible turbines if required.
Dwelling D124	Western Residential Cluster	2.3 km NE (T1)	**High**	Plantings would assist to partially screen or filter views to the turbines. It is recognised that mitigation would alter existing panoramic views from the north-east through to the south-east.
Dwelling D148	North-western Residential Cluster	4.6 km SE (T2)	**Low**	Selective screen planting would assist to further filter or screen views of turbines where visible between breaks in sheds and existing vegetation.
Dwelling D154	Western Residential Cluster	3.0 km SE (T1)	**Moderate**	Mitigation would further assist to screen or filter views if required.
Dwelling D169	North-western Residential Cluster	3.9 km SE (T1)	**Moderate-High**	Options may include addition trees or mid-height shrubs selectively located to provide filtered or screened views towards the Project.
Dwelling D357	Northern Residential Cluster	1.6 km SE (T42)	**Low**	Mitigation would further assist to filter or screen views to turbines if required
Dwelling D382	South-western Residential Cluster	2.0 km NE (T4)	**High**	Mitigation would be possible to the north of the dwelling to filter or screen views to visible turbines.

13. Conclusion

The preceding analysis has shown that the Project is proposed in an area that has a low sensitivity to visual change and in an area that can accommodate the visual change of the Project. The landscape within the study area has been extensively modified in predominantly broad-acre farmland comprising cropping, grazing, and timber plantations. Closer to the site and in the areas to the south and east comprises a folded and complex landscape where views change dramatically from clear long views to completely screened. These changes occur over very short distances. These are not sensitive uses.

Section 4 of Clause 52.32 (Wind Energy Facility) requires a permit application to provide a site and context analysis including specific information relevant to landscape and visual impact.

The following summary sets out the conclusions for views and visual impacts as required by Clause 52.32.

13.1 Significant landscapes and vantage points

There are many kilometres of recreational trails within the study area and areas that immediately surround the Project and include walking tracks, cycling routes, and rail trails particularly in locations towards the southern end of the Project area. Rail trails comprise well-made paths, gentle grades, and the ability to cover considerable distances for walkers, running, and cycling.

The Port Fairy to Warrnambool Rail Trail runs along part of the southern edge of the study area and allows for open and long-distance views over large areas of cleared flat farmland. The trail at its closest point is approximately 16.0 km to the nearest turbine. At this distance, even if visible, the proposed turbines would not be visually dominant features.

Elevated viewing locations such as the volcanic cones, including Budj Bim, Mount Rouse, Mount Napier, and Tower Hill are valued landscapes in part due to their expansive vistas afforded across the relatively flat volcanic plains. The visual impact from each of these locations was not assessed as being greater than **Low**

13.2 Townships and urban areas

Views from most locations within the nearby towns and locality would be filtered or screened by a combination of topography, vegetation or buildings, and other structures.

Views are typically limited to the edges or approaches to towns or areas such as recreation reserves and water bodies that allow for clear views over cleared farming areas.

There may be views from residential dwellings where breaks in vegetation have been created to take in specific views. Specific views from these or similar locations would be considered where requested or directed.

The overall visual impact from townships and urban areas would be **Low – Negligible** through to **Nil**.

13.3 Major roads (highways) and connector roads

Overall, the visual impact of the Project in views from major roads is assessed as **Negligible** through to **Low.** This is due to the many views towards the Project being limited by vegetation within roadsides, plantation areas and adjoining farming properties, and screening afforded by nearby and surrounding topography. Views of the Project from the Princes Highway and scenic coastal routes are towards the south of the Project and at a distance where even if the turbines where visible, the visual impact would be **Negligible**. Further, the more dominant views along these roads are to the open waters of Bass Straight, coastal landforms, and the existing coastal wind farms.

Major roads to the east and west of the Project are frequently used by locals as they go about their daily lives in the area and have a medium number of road users. Views from major roads vary from open clear views towards the Project to those that are more discreet and localised with gently undulating topography screens or limits views across the landscape. These visual characteristics are demonstrated through the existing wind farms of Yambuk and Codrington to the south and the Macarthur Wind Farm towards the northern end of the Project.

13.4 Local roads

Views and visibility of the proposed turbines from local roads would vary greatly depending on location and proximity to the Project. The local road network is located within a diverse landscape ranging from long views over cleared flat farmland and volcanic lava flows, to confined views from the extensively vegetated areas of timber plantations and logging coups.

The assessment of views and visual impacts from local roads reviewed locations from a range of distances and viewing angles towards the Project. The assessment of these views concluded that overall, the visual impact from local roads would be **Low**. This assessment considered the viewer numbers, landscape sensitivity, availability, and duration of views, and was supported by imagery from the site.

The overall visual impact from local roads is assessed as **Low-Negligible**. This is in part due to viewer numbers and the visibility of turbines which would be influenced by topography and vegetation, the context of the view, and few viewers.

13.5 Mitigation

The scale of effects set out in Section 2.7 of the report describes the order of magnitude of visual impacts for the Project. Mitigation is typically recommended to be applied where the visual impact is consdered to be high and where mitigation is appropriate.

There are no publicly accessible viewpoints that have been assessed as High, this is due in part to the distance, visibility of the Project, existing topography and vegetation and the distance to highly sensitive landscapes within the study area. Mitigation from publicly accessible locations is not considered to be required.

13.6 Construction impacts

Construction activities include the excavation and pouring of the turbine foundations, transportation and assembly of the various turbine components, construction of the substation and grid connecting infrastructure, upgrading and construction of new access tracks, and establishment of the operations and maintenance facilities.

Construction activities would be short in duration and confined to discrete areas across the Project site as construction of the Project progresses across the area.

The construction activities associated with wind farms tend to attract a lot of positive interest with regard to the construction techniques and methods unique to wind farm construction. For some viewers who do not like the appearance of wind farms this impact would be **High**, for many others this impact would **Low - Positive**, albeit temporary.

13.7 Cumulative impacts

There are very few locations where there is the potential for simultaneous views due to topography and how the road network transverses the landscape and how vegetation such as wind breaks, hedgerows and forested areas to the western edge of the Project completely screen, partially filter views for road users along Hamilton-Port Fairy Road to the west up through to Macarthur.

There is the potential for the Project to be visible from the Princes Highway to the south, however it would be limited to the tips or upper portions of turbines which would be visible through the closer and more visually obvious turbines in the approved Ryan Corner Windfarm. In these views the Project would be barely discernible and not a visually significant feature.

Due to the limited to no visibliity of the Project from significant landscapes and limited to fragmented views from major roads within the study area, the cumulative visual impact is considered to be **Low**.

13.8 Lighting impacts

The Aviation Risk Assessment (*SGS Hart Aviation, 2017*) undertaken for the Project considered the need for the Project to include the construction and operation of aviation obstacle lighting. The Aviation Risk Assessment determined that this lighting would not be required by the Project. However, the proponent has requested an assessment of the impacts of lighting should it be a planning permit requirement.

For road users at night, light sources contributing to night views include tail and head lamps of other vehicles and road users, distant towns and the few residential dwellings and structures in the surrounding farming properties. Seasonal changes will include lights associated with cropping activities which can take place over several weeks. These light sources are typically of greater intensity than the aviation obstacle lighting. These impacts would only be experienced when lighting is triggered by nearby aircraft. The overall visual impact of the aviation hazard lighting from the road network is assessed as **Low**.

For locations in townships such as Hawkesdale and Macarthur, there are many existing light sources that include streetlights, shop fronts, residential dwellings, and vehicles. From many locations, larger coastal towns of Warrnambool and Port Fairy contribute to light glow. This effect is exacerbated in atmospheric conditions such as low cloud, fog, or sea haze. These distant light sources contribute to night lighting however they would not appreciably alter the visual impact from existing lighting within townships. The overall visual impact of the aviation hazard lighting from residential properties in townships is assessed as **Low - Negligible**.

Residential dwellings in farming areas would be able to see aviation obstacle lighting. These dwellings are also located in areas removed from other sources of light. When the aviation obstacle lighting is activated, there would be a change to the existing night views. On these occasions, the visual impact must be assessed in context and would be influenced by the following:

- The hazard lighting proposed would only be operational intermittently and would not be a permanent feature of the night sky.
- When curtains or blinds are closed, there is also no visibility to the proposed lights in the surrounding area.
- The landscape mitigation for daytime views from residential properties or existing vegetation would also reduce, or screen, night-time visual impact.
- Further, when inside at night, it is typical that internal lighting is on. When window coverings are open, windows act like mirrors, reflecting the interior of the house and reducing views to the aviation hazard lighting.

The overall visual impact of the aviation hazard lighting from rural properties is assessed as **Low.**

13.9 Residential dwellings

The greatest potential for visual impacts would be from individual dwellings located in close proximity to the Project.

Many of the more established dwellings in proximity to the Project already include many mature trees established to protect against winds and weather extremes in the region. This vegetation, while established for other purposes, will assist to screen or filter views to the Project. It is evident that vegetation in the area can achieve the heights required to assist with reducing the visual impacts that might be brought about by the Project.

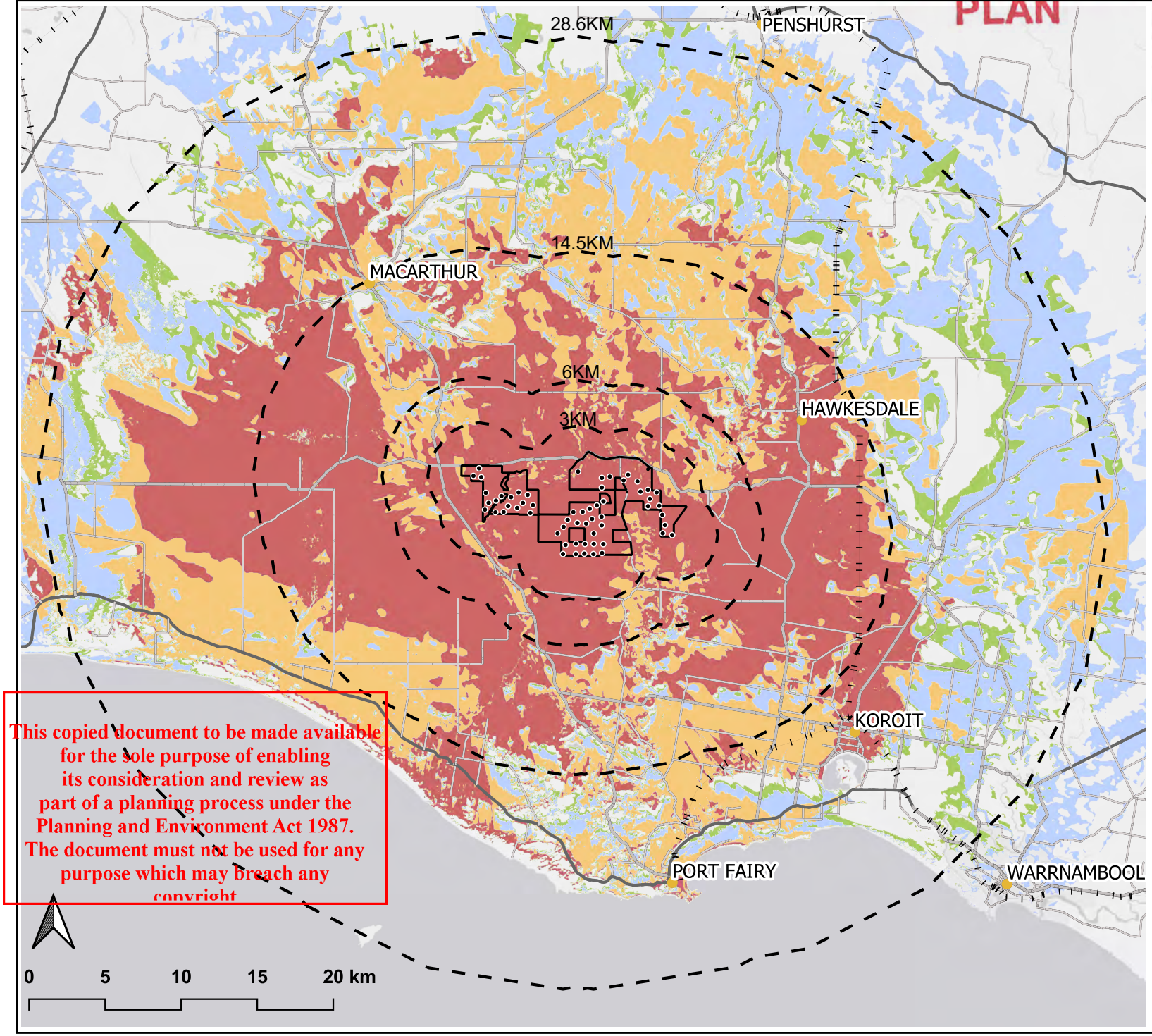
It is recommended that landscape screening be offered for residential dwellings within 6.0 km where there are views of a Project wind turbine. This distance is consistent with recent project approvals where landscaping has been required to be offered to all residential dwellings within the distance at which a turbine up to 250 m high will be ***"Highly visible and will usually dominate the landscape".*** It is noted that this recommendation in recent projects was to be offered to a distance of 5.0 km. This distance was for projects with turbine heights of up to 220 – 230 m in height.

Appendix A. Seen Area Analysis

Seen area analysis - Overall Turbine Visibility

ADVERTISED PLAN

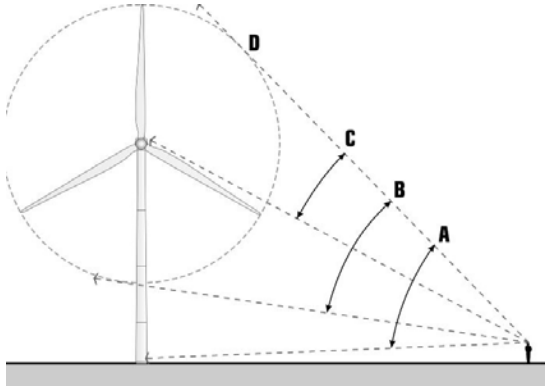
WILLATOOK WIND FARM



- Wind turbine location
- ZVI
- Site extent

Wind Turbine Visibility

- Zone A (one or more entire wind turbine visible)
- Zone B (entire rotor swept path of one or more wind turbine visible
- Zone C (at least half of the rotor swept path of one or more wind turbine visible)
- Zone D (any part of one or more wind turbine is visible)

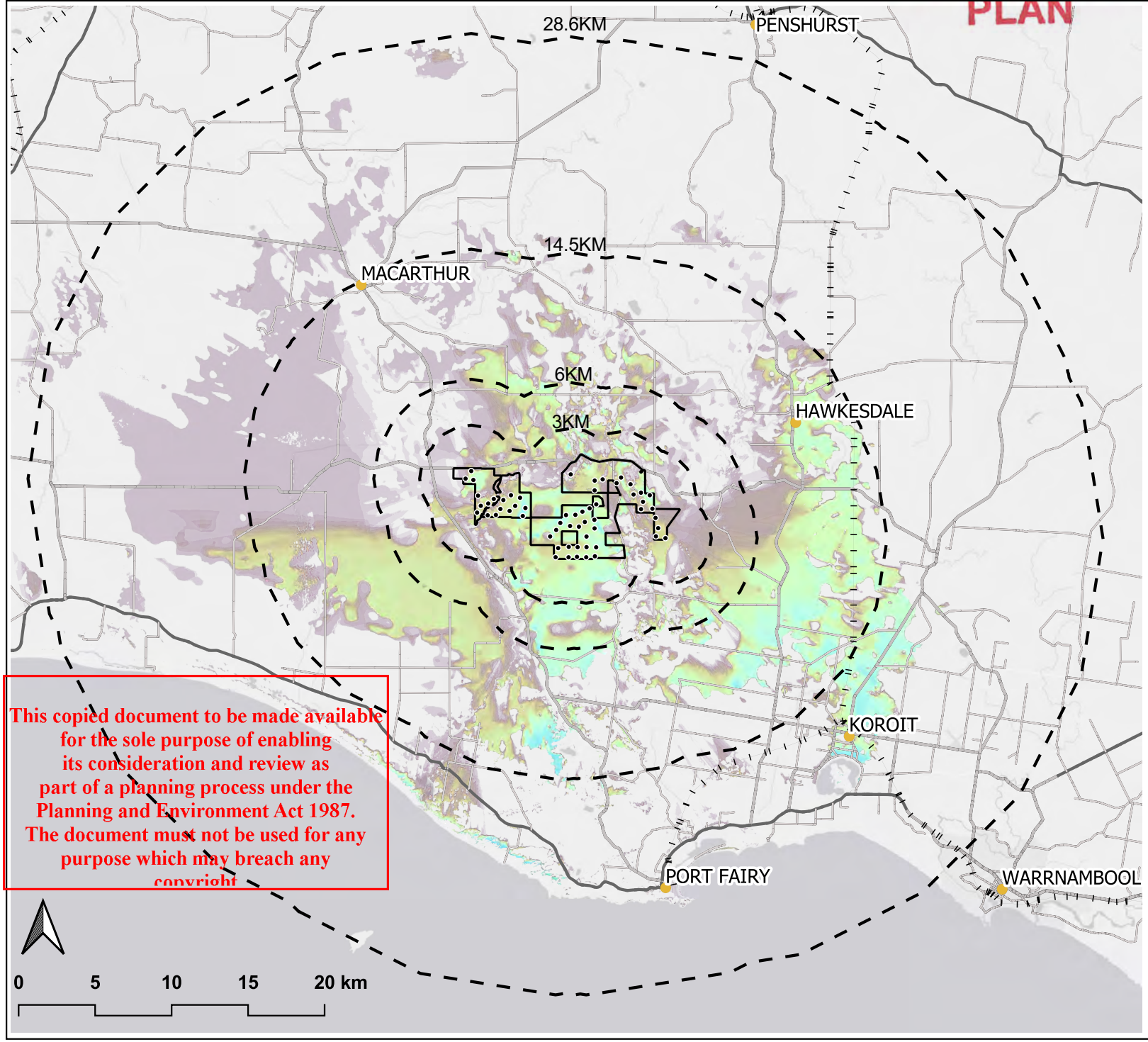


L A N D F O R M ARCHITECTS

Seen area analysis - Base of turbines

ADVERTISED PLAN

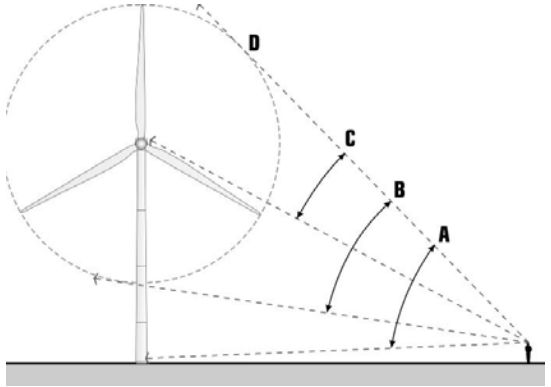
WILLATOOK WIND FARM



Wind turbine location
ZVI
Site extent

Turbine Visibility - Zone A
Number of visible turbines

- ≤ 15
- ≤ 30
- ≤ 45
- ≤ 59

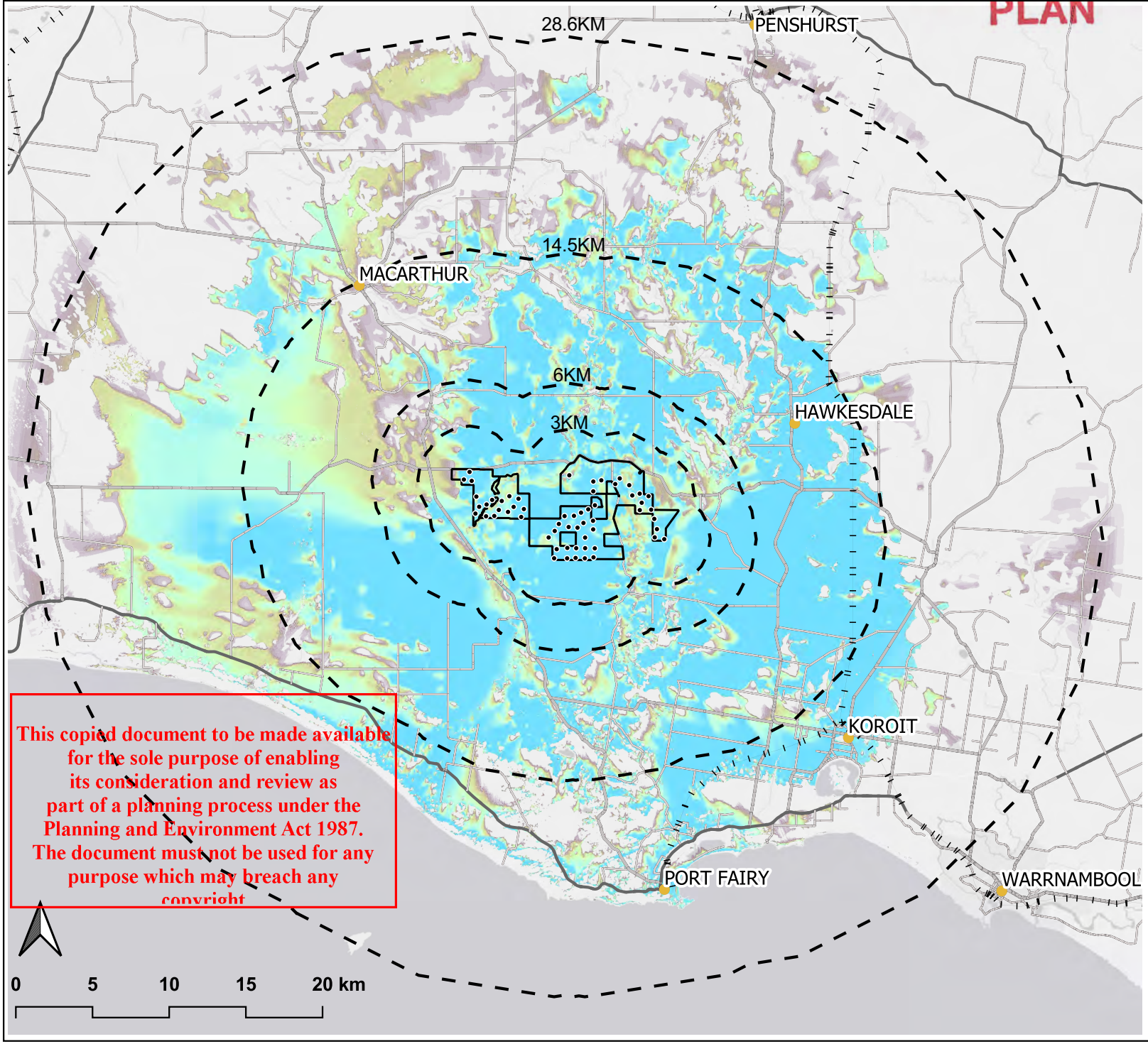


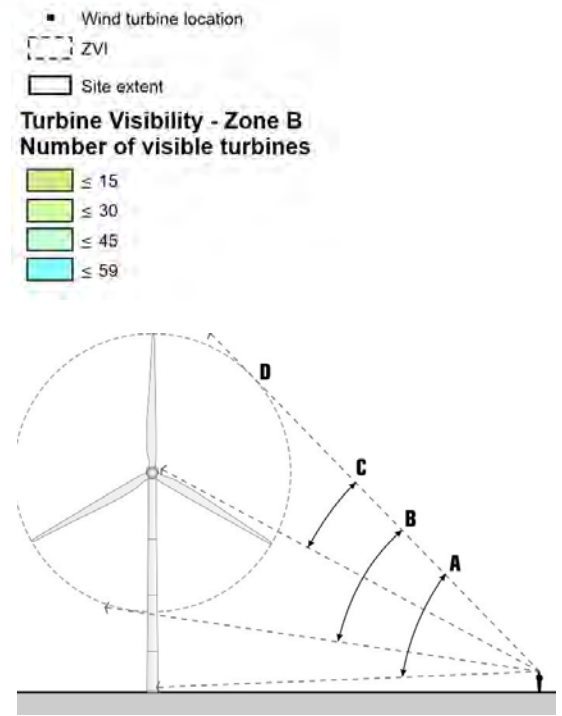
L A N D F O R M
ARCHITECTS

Seen area analysis - Entire swept path of turbines

ADVERTISED PLAN

WILLATOOK WIND FARM



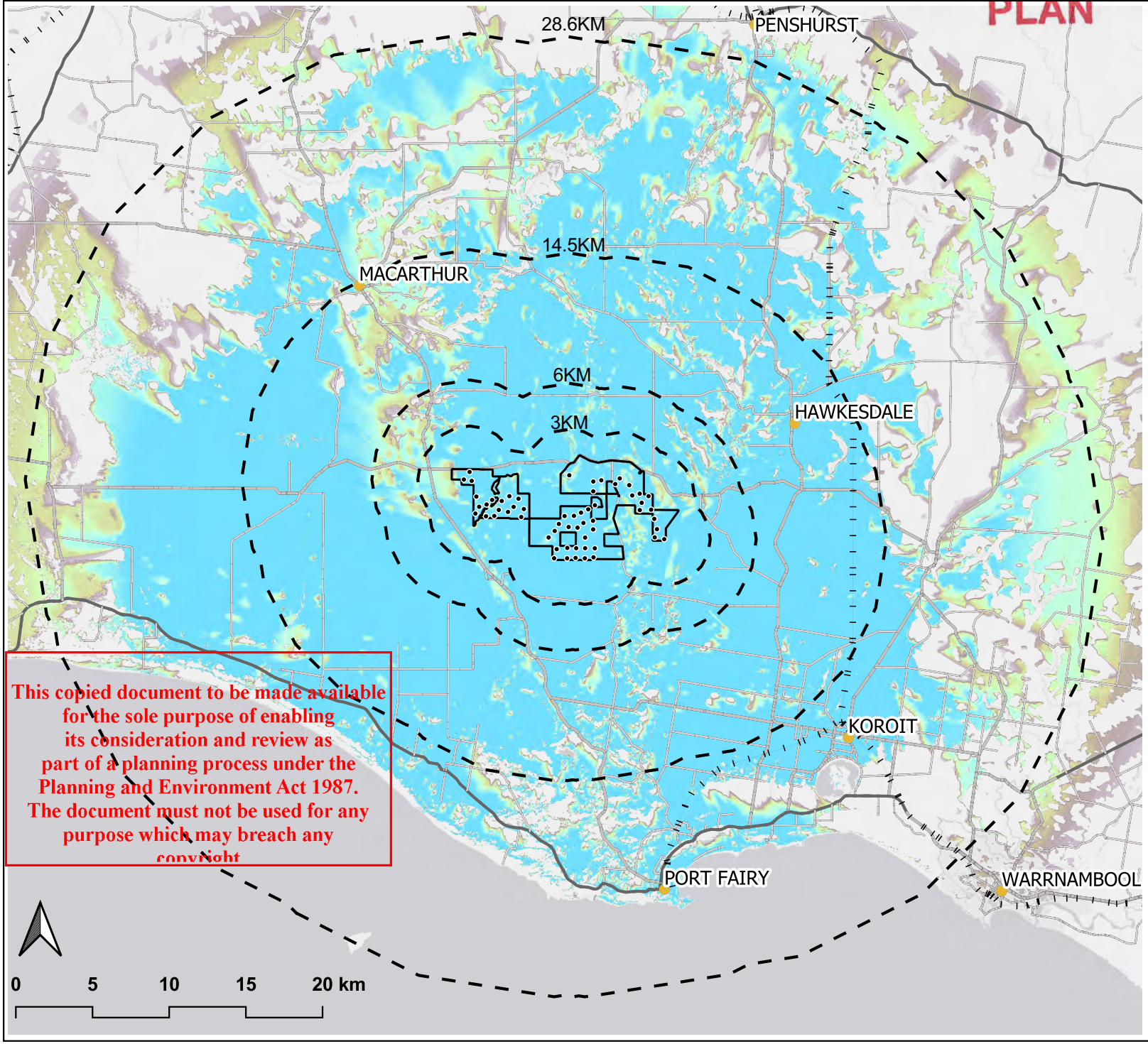


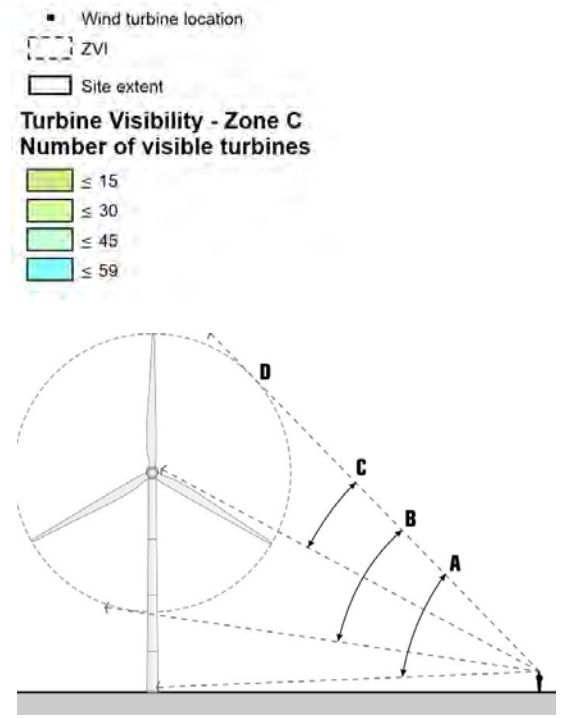
L A N D F O R M
ARCHITECTS

Seen area analysis - Nacelle and above of turbines

ADVERTISED PLAN

WILLATOOK WIND FARM



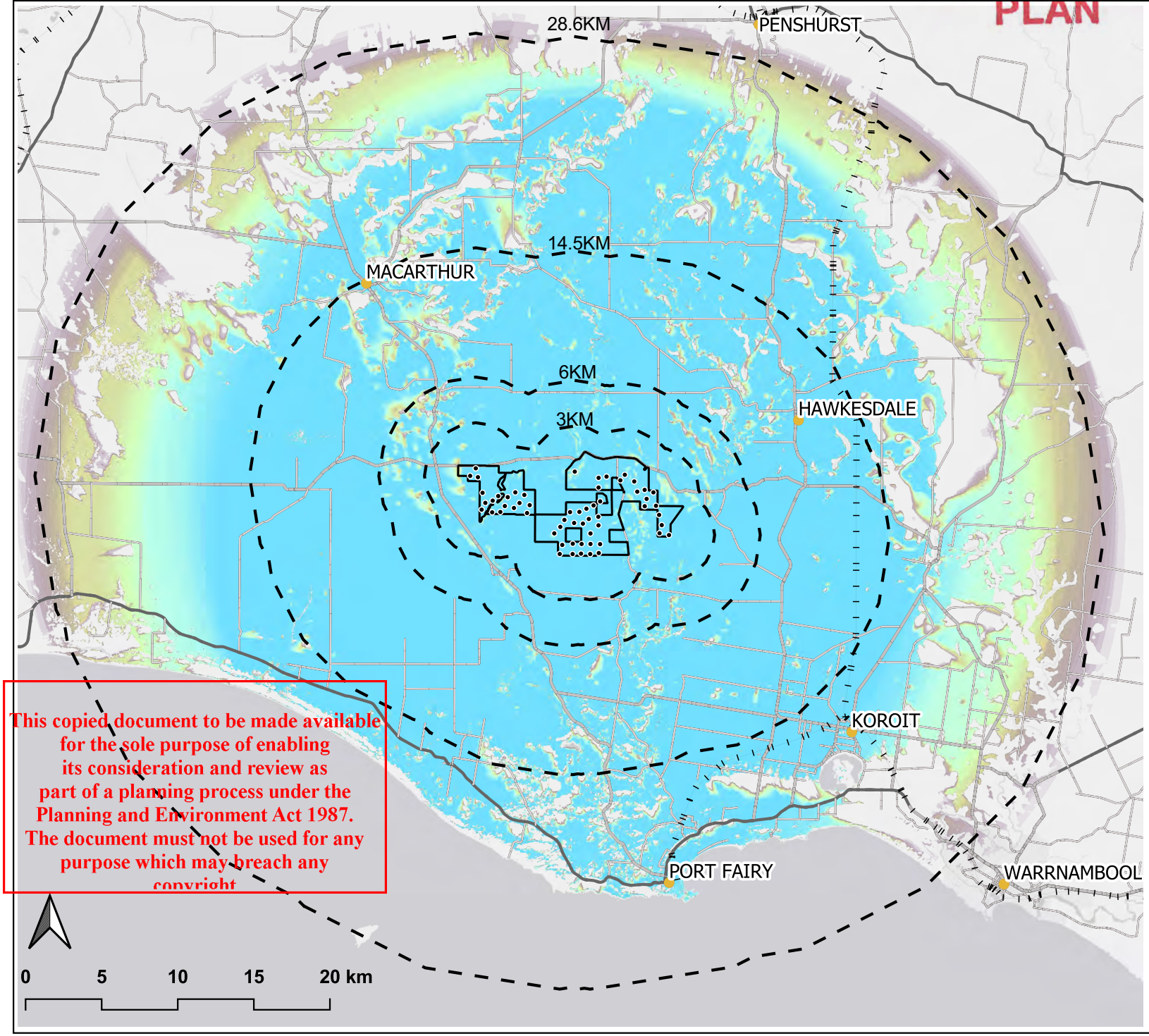


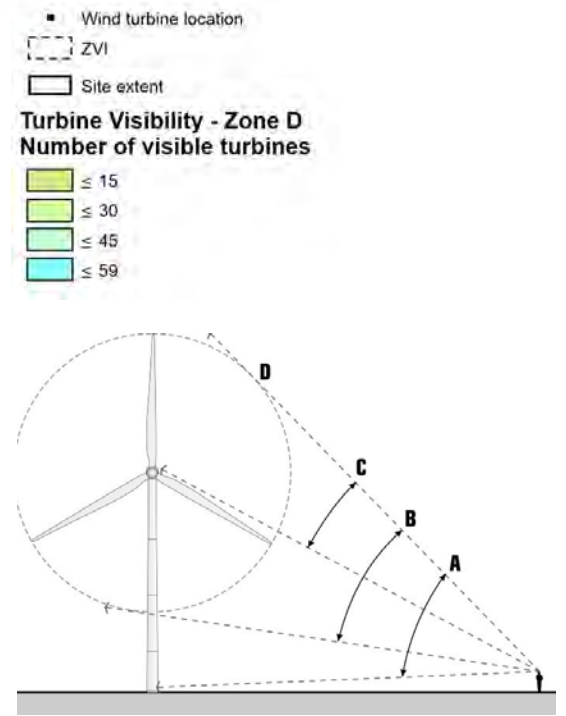
L A N D F O R M
ARCHITECTS

Seen area analysis - Any part of turbine

ADVERTISED PLAN

WILLATOOK WIND FARM





L A N D F O R M
ARCHITECTS

Appendix B. Photomontages

Willatook Wind Farm

VIEWPOINT H2

View looking north - east

(GPS 54H 595004, 5756941)

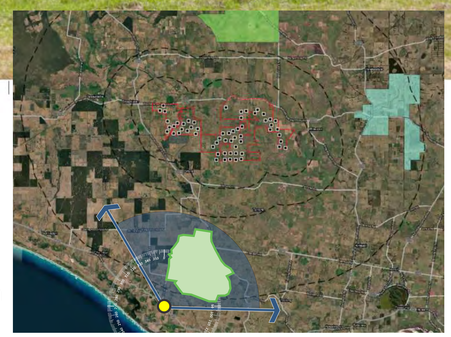
Existing view

Wireframe view - Willatook Wind Farm and Ryan Corner Wind Farm (indicative)

ADVERTISED PLAN

Wireframe Willatook only - Labelled Turbines

See Sheet 2



Viewpoint Map

Turbine locations have been sourced from publicly accessible data of permitted and approved farms.
Locations are shown as a guide only, actual turbine placement may have changed.

Viewpoint location and orientation

Indicative wind turbine location

Indicative location of Ryan Corner Wind Farm

Distance to Nearest Willatook Turbine: Approximately 16.3km Northeast (T20)

Willatook Wind Farm - Viewpoint H2
COORDINATES: 54 H 595004, 5756941
PREPARED BY: AE
SHEET: 1/2 DATE: 02/02/2022

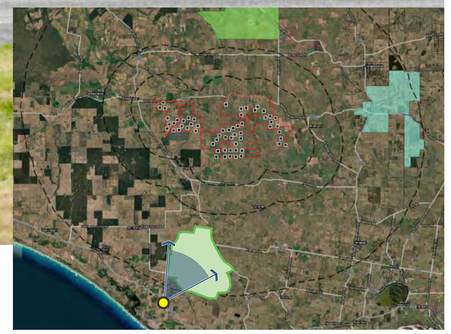
Willatook Wind Farm

60 degree view looking north - northeast

VIEWPOINT H2

(GPS 54H 595004, 5756941)

Existing View



Wireframe - Willatook Labelled Turbines

Distance to Nearest Willatook Turbine: Approximately 16.3km Northeast (T20)

Willatook Wind Farm - Viewpoint H2
COORDINATES: 54 H 595004, 5756941
PREPARED BY: AE
SHEET: 2/2 DATE: 02/02/2022

Willatook Wind Farm

View looking east - south

VIEWPOINT H5

(GPS 54 H 592053, 5779406)

Existing view

Photomontage

See Sheet 2

Viewpoint Map

Viewpoint location and orientation

Indicative wind turbine location

Distance to Nearest Turbine: Approximately 3.1km Southeast (T1)

Willatook Wind Farm - Viewpoint H5
COORDINATES: 54 H 592053, 5779406
PREPARED BY: AE
SHEET: 1/3 DATE: 02/02/2022

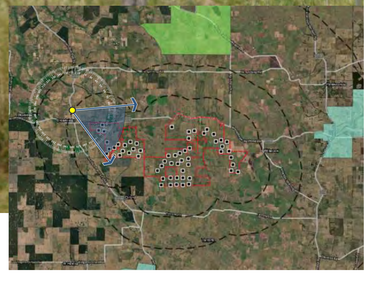
Willatook Wind Farm

60 degree view looking south-east

VIEWPOINT H5

(GPS 54 H 592053, 5779406)

Existing View



Photomontage

Willatook Wind Farm - Viewpoint H5
COORDINATES: 54 H 592053, 5779406
PREPARED BY: AE
SHEET: 2/3 DATE: 02/02/2022

Distance to Nearest Turbine: Approximately 3.1km Southeast (T1)

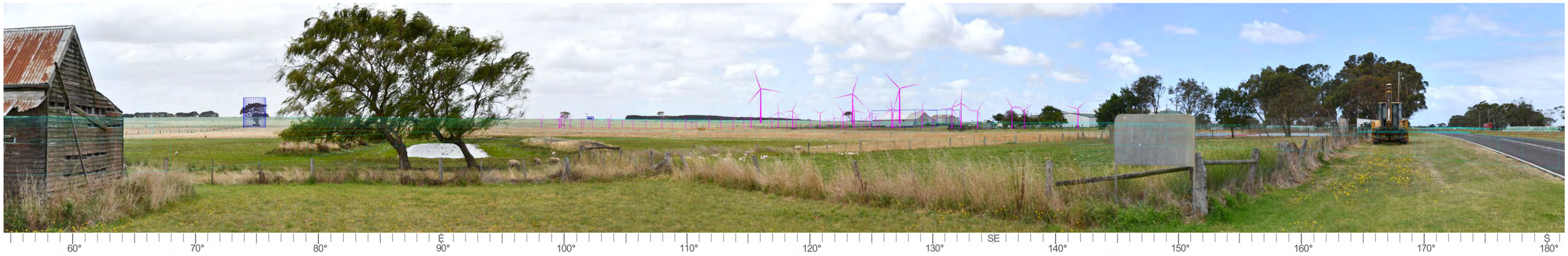
Willatook Wind Farm

View looking east - south

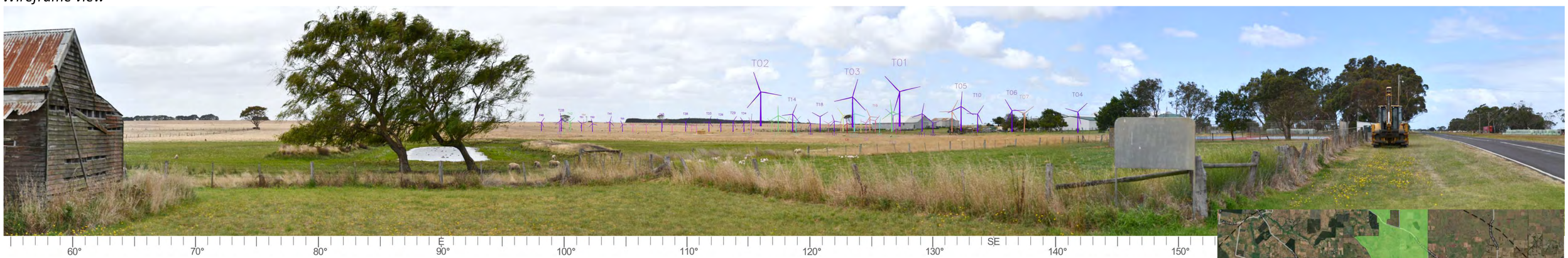
VIEWPOINT H5

(GPS 54 H 592053, 5779406)

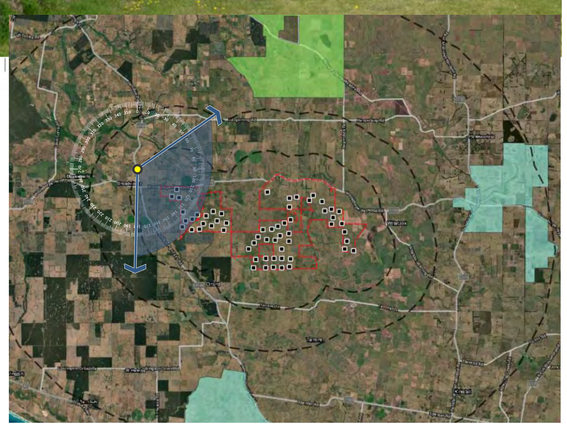
Existing view



Wireframe view



Photomontage - Labelled Turbines



Viewpoint Map

Viewpoint location and orientation

Indicative wind turbine location

Distance to Nearest Turbine: Approximately 3.1km Southeast (T1)

Willatook Wind Farm - Viewpoint H5
COORDINATES: 54 H 592053, 5779406
PREPARED BY: AE
SHEET:3/3 DATE: 02/02/2022

Willatook Wind Farm

View looking north - east

VIEWPOINT H8

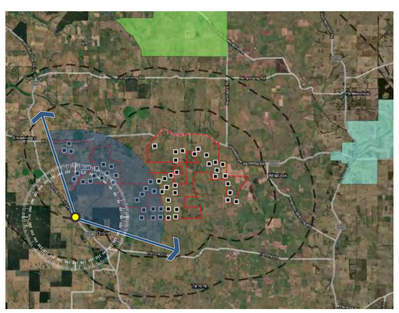
(GPS 54 H 595358, 5772493)

Existing view

Photomontage

See Sheet 2

See Sheet 3



Viewpoint Map

Viewpoint location and orientation

Indicative wind turbine location

Distance to Nearest Turbine: Approximately 2.7km Northeast (T7)

Willatook Wind Farm - Viewpoint H8
COORDINATES: 54 H 595358, 5772493
PREPARED BY: AE
SHEET: 1/4 DATE: 02/02/2022

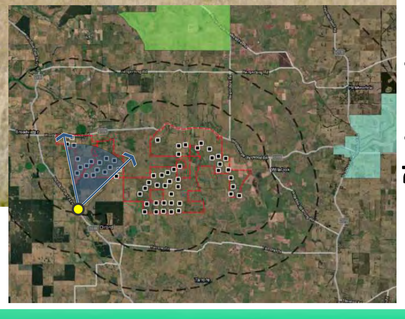
Willatook Wind Farm

60 degree view looking north - northeast

VIEWPOINT H8

(GPS 54 H 595358, 5772493)

Existing View



Photomontage

Distance to Nearest Turbine: Approximately 2.7km Northeast (T7)

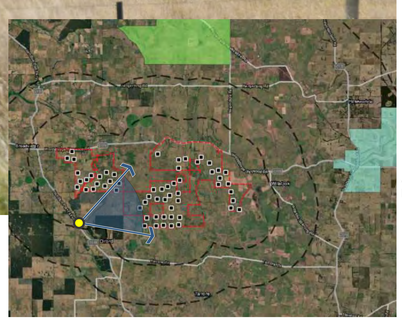
Willatook Wind Farm

60 degree view looking northeast - east

VIEWPOINT H8

(GPS 54 H 595358, 5772493)

Existing View



Photomontage

Distance to Nearest Turbine: Approximately 2.7km Northeast (T7)

Willatook Wind Farm - Viewpoint H8
COORDINATES: 54 H 595358, 5772493
PREPARED BY: AE
SHEET: 3/4 DATE: 02/02/2022

Willatook Wind Farm

VIEWPOINT H8

View looking north - east

(GPS 54 H 595358, 5772493)

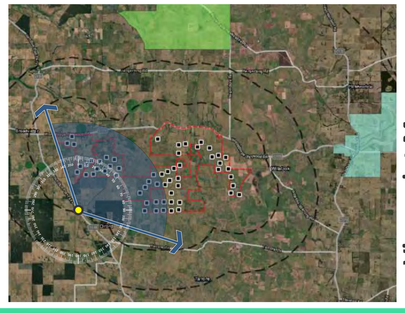
Existing view

Wireframe view

Photomontage - Labelled Turbines

Viewpoint location and orientation

Indicative wind turbine location



Viewpoint Map

Willatook Wind Farm - Viewpoint H8
COORDINATES: 54 H 595358, 5772493
PREPARED BY: AE
SHEET: 4/4 DATE: 02/02/2022

Distance to Nearest Turbine: Approximately 2.7km Northeast (T7)

Willatook Wind Farm

View looking northeast - northwest

VIEWPOINT H13

(GPS 54 H 611862, 5776981)

Existing view

Distance to Hawkesdale Wind Farm approximately 3km

Willatook Wind Farm

Distance to Ryan Corner Wind Farm approximately 17km

Distance to Macarthur Wind Farm approximately 9km

See Sheet 2

See Sheet 3

See Sheet 4

Photomontage

Turbine locations have been sourced from publicly accessible data of permitted and approved farms. Locations are shown as a guide only, actual turbine placement may have changed.

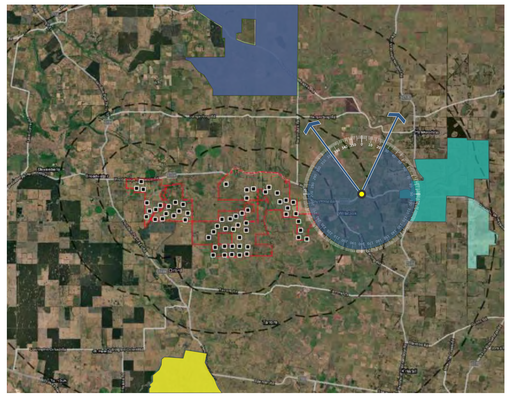
Viewpoint location and orientation

Indicative wind turbine location

Indicative location of Hawkesdale Wind Farm

Indicative location of Macarthur Wind Farm

Indicative location of Ryan Corner Wind Farm



Viewpoint Map

Distance to Nearest Turbine: Approximately 5.3km North-west (T54)

Willatook Wind Farm - Viewpoint H13
COORDINATES: 54 H 611862, 5776981
PREPARED BY: AE
SHEET: 1/5 DATE: 02/02/2022

Willatook Wind Farm

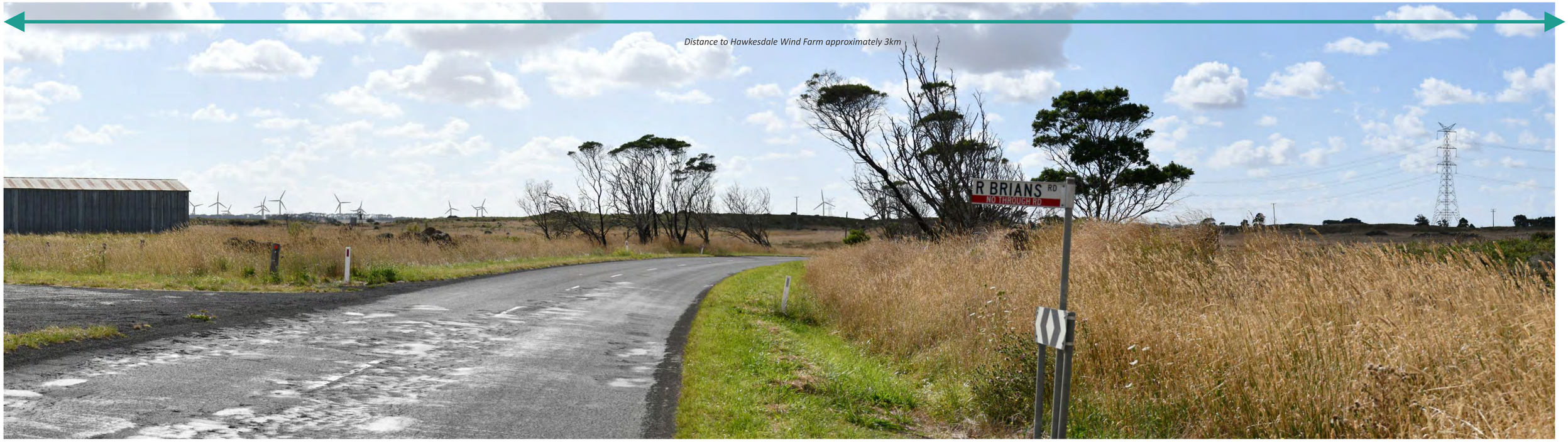
60 degree view looking east

VIEWPOINT H13

(GPS 54 H 611862, 5776981)

Existing View

70° 80° 90° 100° 110° 120°



Photomontage

Distance to Nearest Turbine: Approximately 5.3km North-west (T54)

Willatook Wind Farm - Viewpoint H13
COORDINATES: 54 H 611862, 5776981
PREPARED BY: AE
SHEET: 2/5 DATE: 02/02/2022

Willatook Wind Farm

VIEWPOINT H13

60 degree view looking south - southwest

(GPS 54 H 611862, 5776981)

Existing View

Photomontage

Willatook Wind Farm - Viewpoint H13
COORDINATES: 54 H 611862, 5776981
PREPARED BY: AE
SHEET: 3/5 DATE: 02/02/2022

Distance to Nearest Turbine: Approximately 5.3km North-west (T54)

Willatook Wind Farm

ADVERTISED
PLAN

VIEWPOINT H13

60 degree view looking west

(GPS 54 H 611862, 5776981)

Existing View

Photomontage

Distance to Nearest Turbine: Approximately 5.3km North-west (T54)

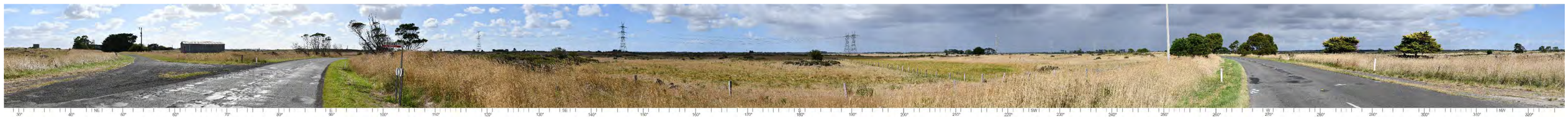
Willatook Wind Farm - Viewpoint H13
COORDINATES: 54 H 611862, 5776981
PREPARED BY: AE
SHEET: 4/5 DATE: 02/02/2022

Willatook Wind Farm

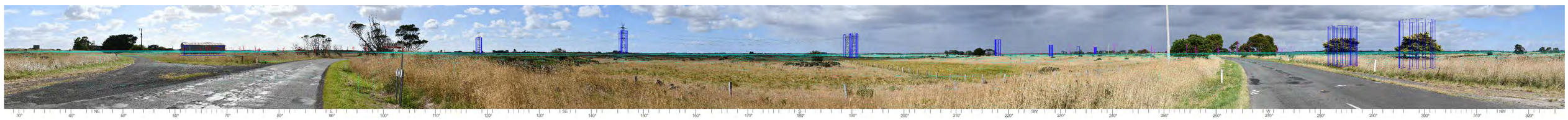
View looking northeast - northwest

VIEWPOINT H13

(GPS 54 H 611862, 5776981)



Existing view



Wireframe view

Distance to Hawkesdale Wind Farm approximately 3km

ADVERTISED PLAN

Willatook Wind Farm

Distance to Ryan Corner Wind Farm approximately 17km

Distance to Macarthur Wind Farm approximately 9km

Photomontage - Labelled Turbines

Turbine locations have been sourced from publicly accessible data of permitted and approved farms. Locations are shown as a guide only, actual turbine placement may have changed.

Viewpoint location and orientation

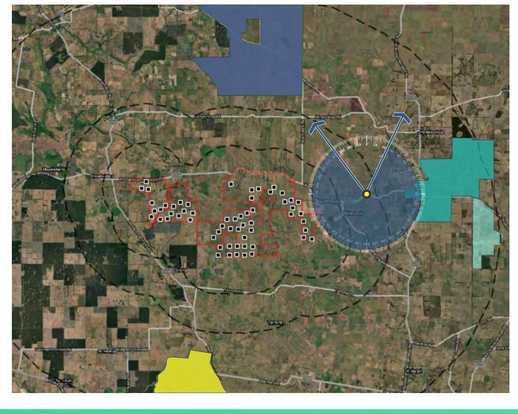
Indicative wind turbine location

Indicative location of Hawkesdale Wind Farm

Indicative location of Macarthur Wind Farm

Indicative location of Ryan Corner Wind Farm

Distance to Nearest Turbine: Approximately 5.3km North-west (T54)



Viewpoint Map

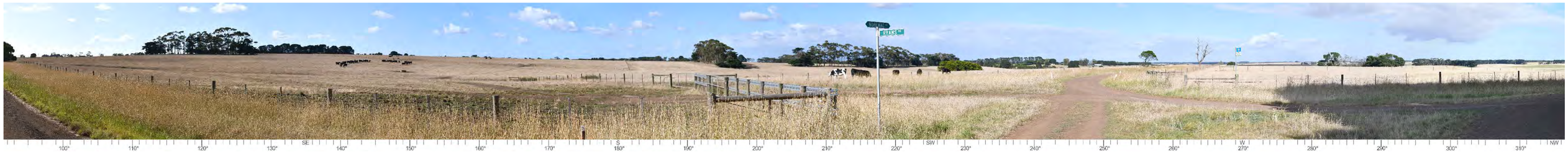
Willatook Wind Farm - Viewpoint H13
COORDINATES: 54 H 611862, 5776981
PREPARED BY: AE
SHEET: 5/5 DATE: 02/02/2022

Willatook Wind Farm

View looking east - north west

VIEWPOINT T2

(GPS 54 H 615006, 5780573)

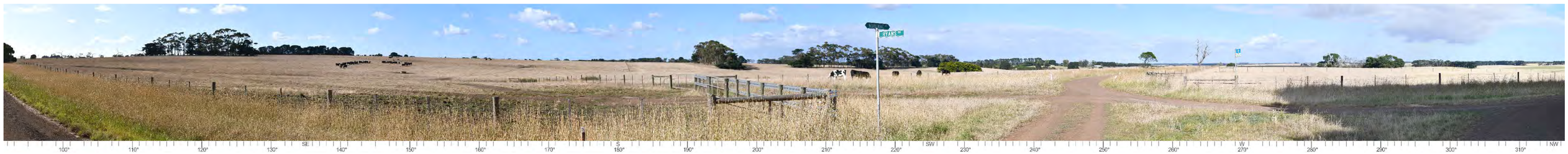


Existing view

Distance to Hawkesdale Wind Farm approximately 2km

Willatook Wind Farm

Distance to Macarthur Wind Farm approximately 10km



See Sheet 2

See Sheet 3

See Sheet 4

Photomontage

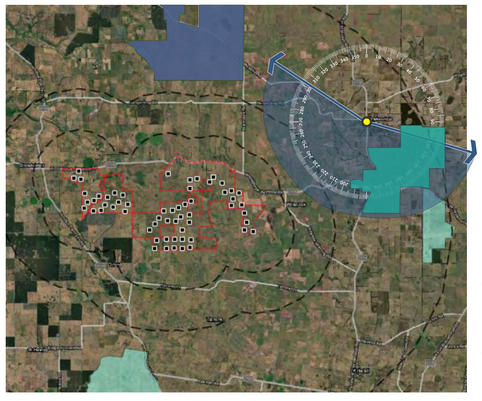
Turbine locations have been sourced from publicly accessible data of permitted and approved farms.
Locations are shown as a guide only, actual turbine placement may have changed.

Viewpoint location and orientation

Indicative wind turbine location

Indicative location of Hawkesdale Wind Farm

Indicative location of Macarthur Wind Farm



Viewpoint Map

Distance to Nearest Turbine: Approximately 10.6km Southwest (T54)

Willatook Wind Farm

60 degree view looking east - southeast

VIEWPOINT T2

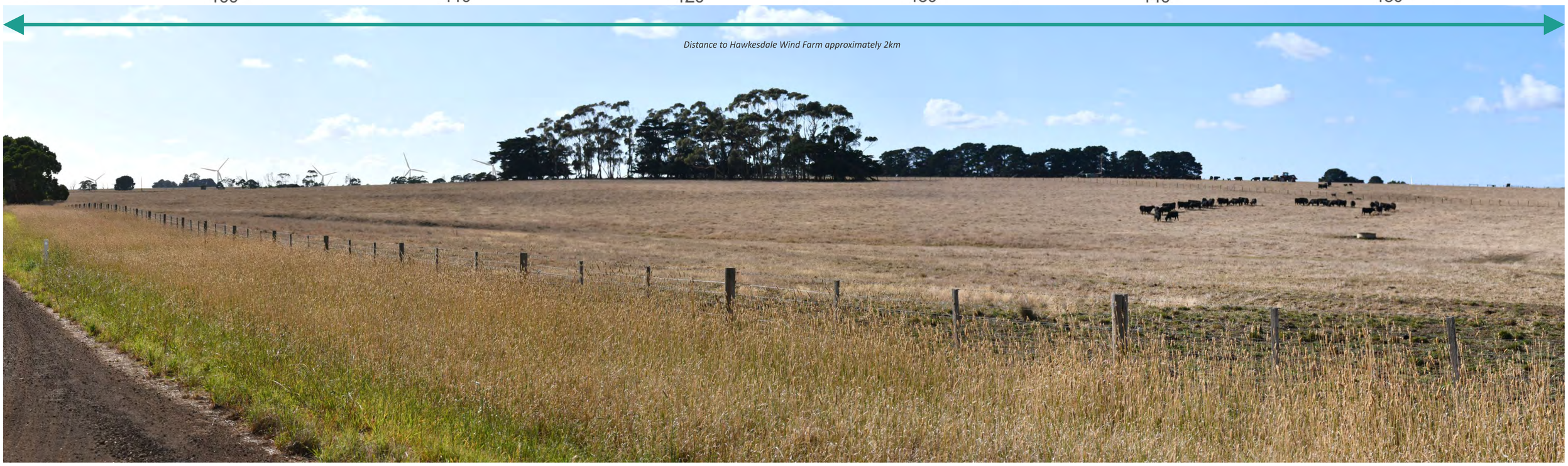
(GPS 54 H 615006, 5780573)

Existing View

SE

100° 110° 120° 130° 140° 150°

Distance to Hawkesdale Wind Farm approximately 2km



Photomontage

Willatook Wind Farm - Viewpoint T2
COORDINATES: 54 H 615006, 5780573
PREPARED BY: AE
SHEET: 2/5 DATE: 02/02/2022

Distance to Nearest Turbine: Approximately 10.6km Southwest (T54)

Willatook Wind Farm

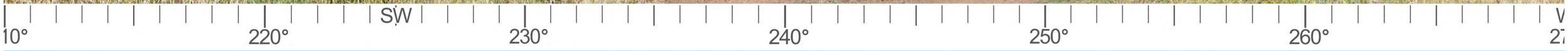
ADVERTISED PLAN

VIEWPOINT T2

60 degree view looking southwest

(GPS 54 H 615006, 5780573)

Existing View



Photomontage

Distance to Nearest Turbine: Approximately 10.6km Southwest (T54)

Willatook Wind Farm - Viewpoint T2
COORDINATES: 54 H 615006, 5780573
PREPARED BY: AE
SHEET: 3/5 DATE: 02/02/2022

Willatook Wind Farm

60 degree view looking west - northwest

VIEWPOINT T2

(GPS 54 H 615006, 5780573)

260° 270° 280° 290° 300° 310° W NW

Existing View

Photomontage

Willatook Wind Farm - Viewpoint T2
COORDINATES: 54 H 615006, 5780573
PREPARED BY: AE
SHEET: 4/5 DATE: 02/02/2022

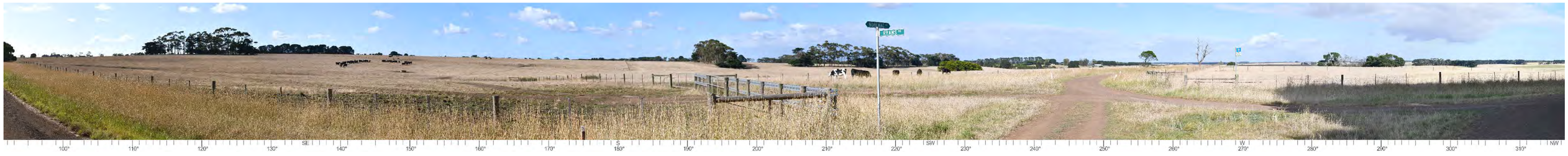
Distance to Nearest Turbine: Approximately 10.6km Southwest (T54)

Willatook Wind Farm

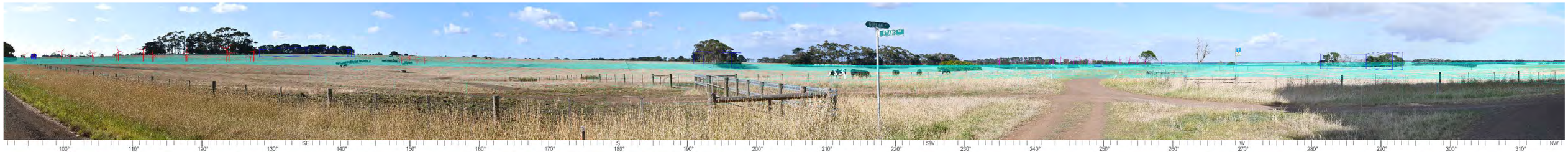
View looking east - north west

VIEWPOINT T2

(GPS 54 H 615006, 5780573)



Existing view

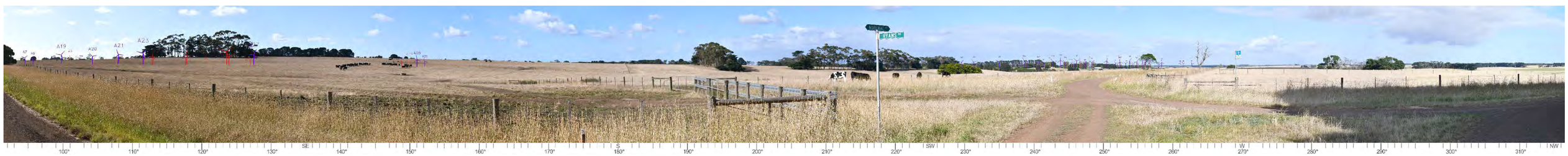


Wireframe view

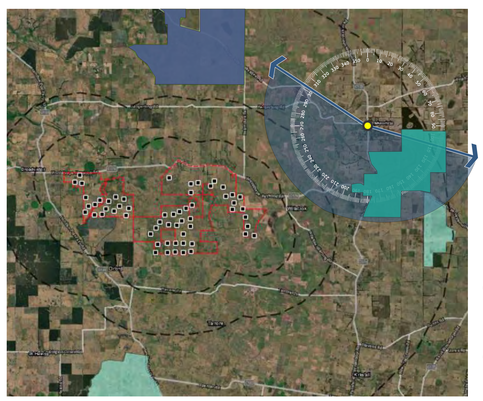
Distance to Hawkesdale Wind Farm approximately 2km

Willatook Wind Farm

Distance to Macarthur Wind Farm approximately 10km



Photomontage - Labelled Turbines



Viewpoint Map

Viewpoint location and orientation

Indicative wind turbine location

Indicative location of Hawkesdale Wind Farm

Indicative location of Macarthur Wind Farm

Turbine locations have been sourced from publicly accessible data of permitted and approved farms.
Locations are shown as a guide only, actual turbine placement may have changed.

Distance to Nearest Turbine: Approximately 10.6km Southwest (T54)

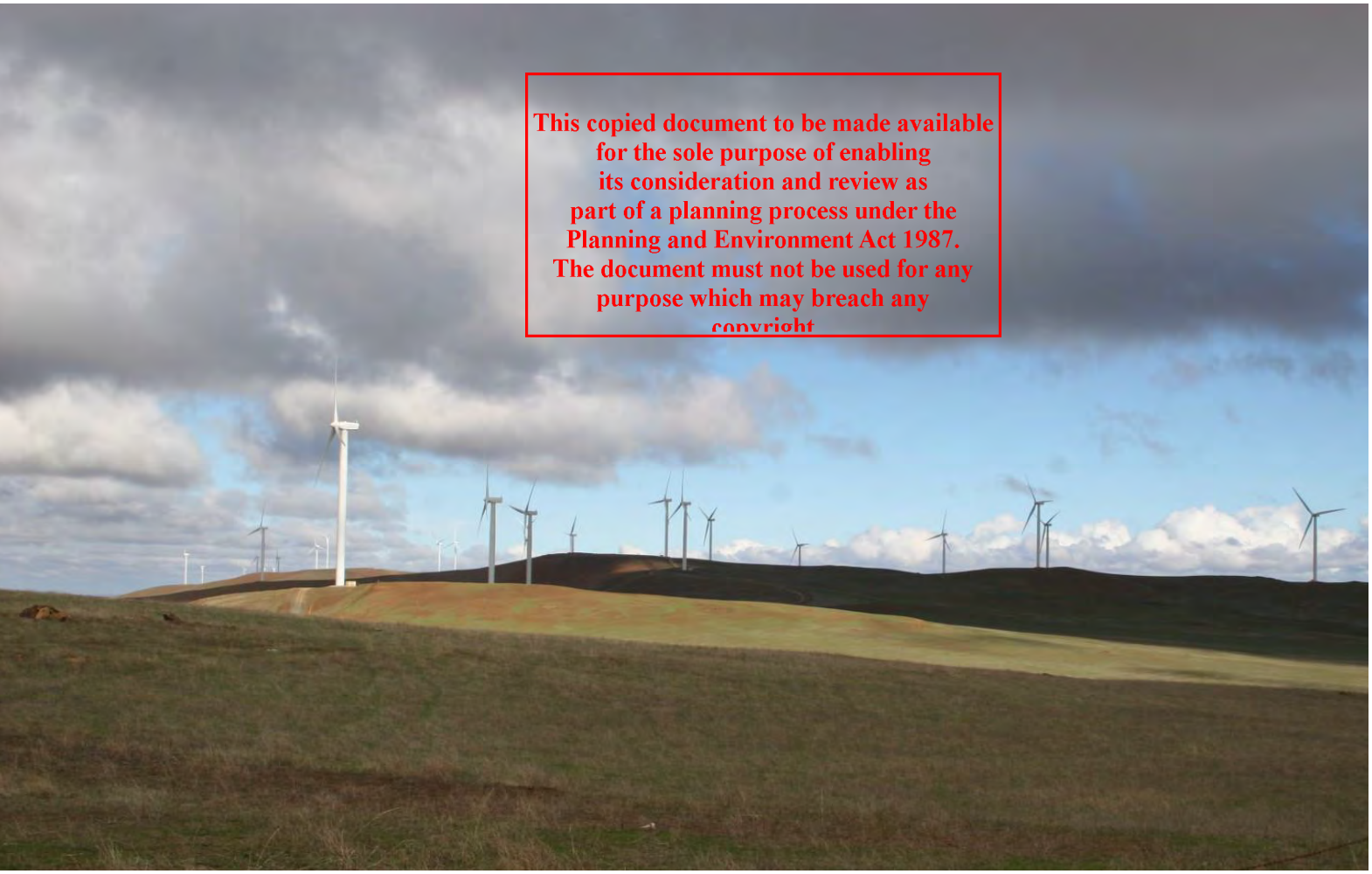
Willatook Wind Farm - Viewpoint T2
COORDINATES: 54 H 615006, 5780573
PREPARED BY: AE
SHEET: 5/5 DATE: 02/02/2022

WILLATOOK WIND FARM

Planning Application Report

Appendix K-2 Landscape and visual peer review

PETER HAACK
CONSULTING



Willatook Wind Farm, Victoria

Peer Review of Landscape and Visual Impact Assessment

20th April 2022

PETER HAACK
CONSULTING

Table of Contents

1 INTRODUCTION 4
1.1 Scope 4
1.2 Qualifications and experience 4
2 PEER REVIEW APPROACH 5
3 THE PROPOSAL 6
4 EES REQUIREMENTS 7
4.1 Key issues 7
4.2 Scoping requirements for evaluation objectives 7
4.3 Landscape and visual specific objectives 7
5 REVIEW OF THE ASSESSMENT METHODOLOGY 9
5.1 Overarching Comments 9
5.2 Residual impact 9
5.2.1 Table 1 - EES / LVIA Scoping Requirements - Performance Objectives 9
5.3 Landscape Character 10
5.3.1 Report Section 2.4 - Landscape character units and sensitivity 10
5.4 Seen Area / ZVI / Visual Catchment Analysis 10
5.4.1 Report Section 2.5 - Seen Area Analysis and Zone of Visual Influence 10
5.5 Sensitive Viewpoint Locations 11
5.5.1 Report Section 2.6 - Viewpoint selection and assessment of publicly accessible viewpoints 11
5.5.2 Report Section 2.7 - The scale of effects – criteria 12
5.5.3 Report Section 2.8 – Photomontages 13
5.6 Report Section 4 - Visual study area 13
5.6.1 Report Figures 4.1 and 4.2 13
5.7 Report Section 4.1 - Zone of Visual Influence 14
6 REPORT SECTION 5 - LEGISLATION, GUIDELINES, POLICY AND PLANNING REVIEW 14
6.1 Report Section 5.6 - Landscape assessment studies 14
7 REPORT SECTION 6 - EXISTING CONDITIONS – LANDSCAPE CHARACTER AND SENSITIVITY 15
7.1 Report Section 6.7 - Landscape sensitivity 15
8 VISUAL IMPACT ASSESSMENT FINDINGS 16
8.1 Report Section 7 - Seen Area Analysis 16
8.2 Report Section 8 - Publicly accessible viewpoints 16
8.2.1 Report Section 8.1 - Significant landscapes and vantage points 17

8.2.2 Report Section 8.2 - Major roads (highways) and connector roads 17
8.2.3 Report Section 8.3 - Local roads 18
8.2.4 Report Section 8.4 - Townships 18
8.2.5 Report Section 8.5 - Construction Impacts 19
9 REPORT SECTION 9 - CUMULATIVE IMPACT 19
10 REPORT SECTION 10 - LIGHTING IMPACTS 20
11 REPORT SECTION 11 - RESIDENTIAL VIEWPOINTS 20
12 REPORT SECTION 12 - MITIGATION OPTIONS 21
13 ADDITIONAL COMMENTS 21
13.1 Blade Glint 21
13.1.1 Table 1 - EES / LVIA Scoping Requirements - Likely Effects 21
13.2 Wind farm design 21
13.3 Viewer perceptions to wind farms 21
14 SUMMARY OF FINDINGS 22

Table of Figures

Figure 1 – Location of Subject Site (Source: Google Earth). 4
Figure 2 – Proposed site layout and key elements (Source: Willatook Wind Farm). 6
Figure 3 – Visual sensitivity table (Source: Moir Landscape Architecture – 2018) 12
Figure 4 – Visual sensitivity table (Source: Ethos Urban – 2019) 13
Figure 5 – Extract of Table 6 – Landscape Units and Sensitivity. 16
Figure 6 – 8.1.2 VP SL2 - Tower Hill Lookout (Interior) 17
Figure 7: Township assessment – Viewpoint H3 Hawkesdale (Source: Jacobs). 19

PETER HAACK
CONSULTING

Quality Assurance

File Name	Date	Details	Reviewed and Approved	
20220420_Willatook WF LVIA Peer Review	20/04/2022	For distribution	Peter Haack	

Contact Details

Peter Haack

Director

Peter Haack Consulting

2/10 Waltham Place, Richmond 3121

Telephone No: 0409 946 938

Email: peter@peterhaack.com.au

PETER HAACK
CONSULTING

1 INTRODUCTION

1.1 Scope

Peter Haack Consulting has been engaged by Willatook Wind Farm Pty Ltd to undertake a Peer Review of the Draft Landscape and Visual Impact Assessment (LVIA) (July 2021) prepared by Jacobs, and the Final Report prepared by Landform Architects (in collaboration with Jacobs) (April 2022), of the proposed Willatook Wind Farm, 240 km west of Melbourne, Victoria (refer to ***Figure 1***).

The intent of the Peer Review is to assess the adequacy of the LVIA and to provide feedback to the proponent during the drafting of the LVIA.

The LVIA has been assessed against the requirements of the EES Scoping Requirements as well as in the context of state and local policies, as well as other assessment reports considered to be best practice.

Figure 1 – Location of Subject Site (Source: Google Earth).

1.2 Qualifications and experience

Director, Peter Haack, has over 35 years' experience in the landscape and visual impact assessment of a diverse range of project types, locally, nationally and overseas, in a wide variety of settings. He has prepared assessments for EES/EIS/EIA's and presented expert evidence at planning panels and tribunals. Sectors include:

- Renewable energy
- Mining and resources
- Transport
- Residential
- Industrial
- Infrastructure.

2 PEER REVIEW APPROACH

This Peer Review has been undertaken in accordance with Environment Effects Act 1978 Advisory Note – Peer Review and Quality Assurance. Key considerations for the Peer Review are:

- Are the methods used appropriate and in-line with best practice and statutory guidelines?
- Are the measures proposed to limit impacts appropriate?
- Are the conclusions of the assessment reasonable?

The Peer Review was undertaken as a desktop assessment exercise utilising Google Earth and Streetview for site familiarisation as well as verification of assessed viewpoints.

To assist the desktop assessment process, Wind Prospect provided a kmz (Google Earth) file of all dwellings within 6 km of proposed Willatook turbines.

The overarching requirement which could be considered the ultimate threshold for the LVIA is the ability of it to adequately address the EES scoping requirements (refer to ***Section 3***).

The main steps in the Peer Review process were:

- Review of the EES Scoping Requirements.
- Review of state policy relating to the development of wind energy projects.
- Review of the Draft LVIA for Willatook Wind Farm in relation to the following matters:
  - Method
  - Assessment of landscape character and values
  - Visual threshold distances
  - ZVI
  - Sensitive viewpoint selection
  - Assessment of visual impact for sensitive viewpoints
  - Assessment of associated infrastructure
  - Assessment of lighting, shadow flicker, glint and reflectivity
  - Assessment of cumulative impact
  - Identification of mitigation measure and consideration of their effectiveness, including proposed performance monitoring and management measures/
- Preparation of preliminary recommendations
- Review of Amended Draft LVIA.
- Preparation of revised and additional recommendations
- Review of Final LVIA
- Preparation of Peer Review report

To allow for direct referencing between this Peer Review and the LVIA, the review section is structured in the same order as the LVIA report.

3 THE PROPOSAL

The proposal is for the development of a wind farm comprised of up to 59 wind turbines located on approximately 4,000 hectares (ha) of land, approximately 22 kilometres (km) north of Port Fairy, within the Moyne Shire area in south-western Victoria.

Subsequent to the preparation of the Draft Report, the number of wind turbines has been reduced from 75 to 59. As a result, impacts, including cumulative, were lower in the Final Report.

The Project will include (refer to ***Figure 2***):

- up to 59 wind turbines, with a height of 250 m (to blade tip), and related infrastructure;
- site access tracks;
- onsite substation;
- battery Energy Storage System (BESS);
- facilities buildings;
- grid connecting infrastructure; and
- temporary construction infrastructure, including an ancillary on-site quarry and laydown areas.

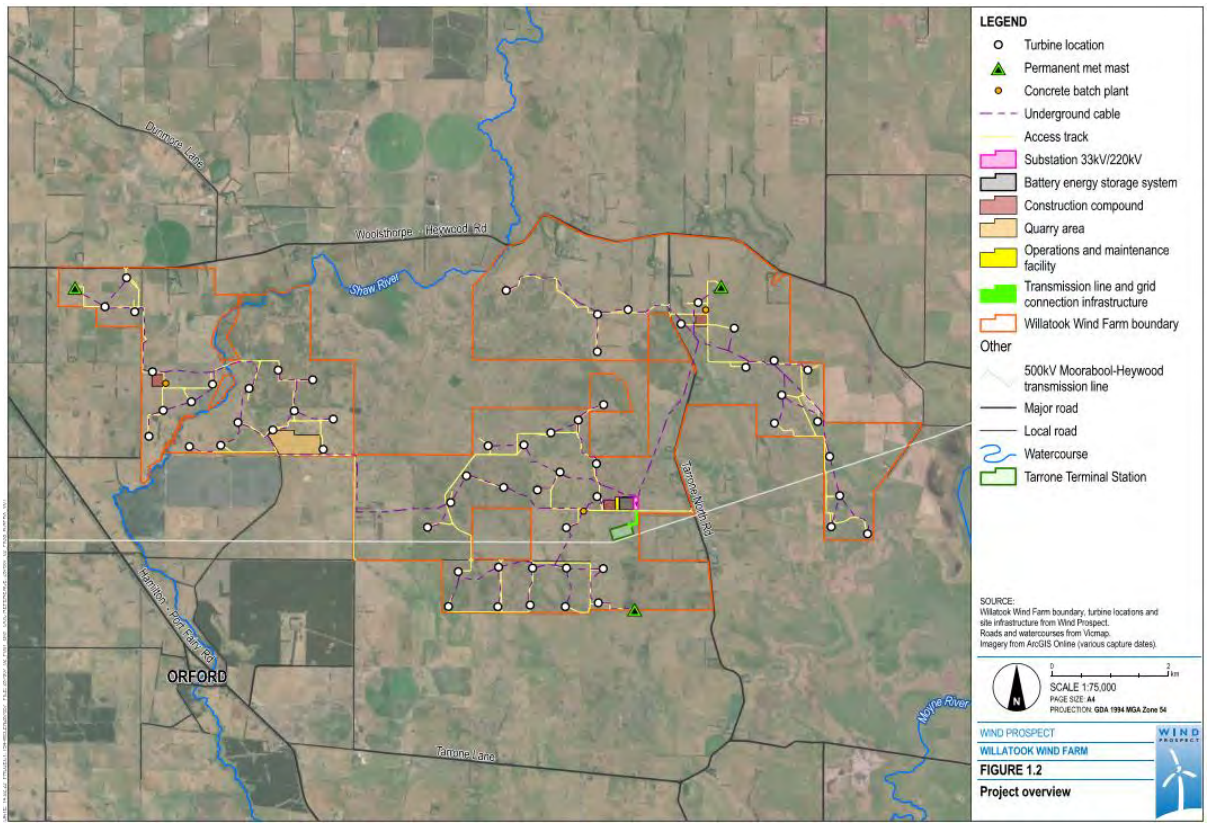


Figure 2 – Proposed site layout and key elements (Source: Willatook Wind Farm).

4 EES REQUIREMENTS

The EES requirements for the LVIA are outlined in *Scoping Requirements for Willatook Wind Farm Environment Effects Statement (August 2019).*

4.1 Key issues

The Minister's decision to require an EES included the following key issues of relevance to landscape and visual matters for the EES to examine:

- effects on the *local visual amenity values*, including for non-neighbouring landholders;
- effects from a cumulative perspective, including on threatened flora and fauna, *social and amenity* values, with particular consideration of the currently operating and already approved wind farm projects in the region.

4.2 Scoping requirements for evaluation objectives

The scoping requirement sets out the following structure for each draft evaluation objective.

1. Identify key issues or risks that the project poses to achieve the draft evaluation objective.

2. Characterise the existing environment to underpin impact assessments having regard to the level of risk.

3. Assess the likely effects of the project on the existing environment and evaluate their significance.

4. Present design and mitigation measures that could substantially reduce and/or mitigate the risk of significant effects. An assessment of residual effects (post mitigation) and their significance will be required to illustrate the effectiveness of the proposed mitigation measure.

5. Propose performance objectives and management measures to evaluate whether the project's effects are maintained within permissible levels and propose contingency approaches if they are not.

The description and assessment of effects must not be confined to the immediate area of the project but must also consider the potential of the project to impact on nearby environmental values, including areas impacted through transport route upgrades.

4.3 Landscape and visual specific objectives

The objectives specific to landscape and visual assessment are contained within Section 4.3 - Landscape and visual.

Draft evaluation objective

To minimise and manage potential adverse effects for the community with regard to landscape and visual amenity.

Key issues

- Potential for nearby residents / communities to be exposed to significant effects to the visual amenity, including blade glint and shadow flicker, from project infrastructure.

- Potential effects on landscape, including significant volcanic and other landforms, through removal or covering of features or reshaping of surfaces.
- Potential cumulative impacts of other operating and approved wind farms on landscape values of the region.

Existing environment

- Characterise the landscape character, features and values of the project area.
- Identify public and private view sheds to and from the project and characterise visual values of the area, including dark skies.
- Identify existing built features within the landscape (e.g., Macarthur wind farm and 500 kV powerlines) and their impact on the existing landscape and visual setting.
- Identify the components of the project that may result in a significant visual amenity effect including turbines, powerlines and on-site quarry.

Likely effects

- Assess the landscape and visual effects of the project, including on public and private views, and effects of blade glint and shadow flicker on neighbouring dwellings and communities. Use photomontages and other visual techniques to support the assessment.
- Assess the potential for cumulative impacts associated with the development of the project in the context of existing built infrastructures and nearby proposed/approved wind farm developments.

Design and mitigation

- Outline and evaluate any potential design and siting options that could avoid and minimise potential effects on landscape and visual amenity of neighbouring residences and communities and additional management strategies that may further minimise potential effects.

Performance objectives

- Describe proposed measures to manage residual effects on landscape and visual amenity values, including in the context of potential rehabilitation and restoration work following decommissioning.

5 REVIEW OF THE ASSESSMENT METHODOLOGY

5.1 Overarching Comments

The LVIA is well presented, written and structured and, in my opinion, the findings are mostly sound and supportable.

A number of comments within the Peer Review relate to the use of standard terminology and, therefore, although there may be a difference in opinion between the authors of the LVIA and the Peer Review, the findings of the LVIA are still sound.

In the assessment of viewpoints other than individual residences, the LVIA methodology has combined the assessment of landscape and visual impact. While closely connected, it is my opinion that they would be better assessed separately. This combining of components is particularly evidenced through the use of the term landscape sensitivity to describe the sensitivity of the landscape to change, as well as sensitivity of viewers in a particular land use type/setting.

The recent Panel Report for the Fingerboards Mineral Sands Project highlights the need for the separation of landscape sensitivity and the sensitivity of a viewer of a particular land use activity within the visual catchment of a Project.

The Panel found that a road used by tourists accessing a National Park some kilometres distant, were highly sensitive to changes to the setting, even though the landscape scenic quality (or landscape sensitivity as used in the LVIA) was low to moderate.

With regards to the findings of the LVIA, it may be that a Panel finds that the Hamilton – Port Fairy Road, named in a number of tourist websites as the quickest route from Melbourne to Port Fairy, is a tourist route. If this is the case, the sensitivity of the users of this road may be higher than the low landscape sensitivity cited in the LVIA, increasing the associated level of visual impact.

With regards to the separation of landscape and visual impacts, the Planning and Policy Guidelines for Development of Wind Energy Facilities in Victoria requires an assessment to:

- *"identify changes to the landscape as well as visual impacts".*

In Guidelines for Landscape and Visual Impact Assessment - The Landscape Institute and The Institute for Environmental Management & Assessment (2016), it is stated that:

- *"Landscape and visual effects are to be assessed separately".*

It is my opinion that the LVIA is very comprehensive in its assessment of landscape impacts.

Following the completion of the draft LVIA, the easing of Covid restrictions has allowed detailed field work to be undertaken and a thorough assessment of key, or representative, residential viewpoints has been completed.

This additional assessment is primarily of visual impact and, as a result, I believe that visual impacts of sensitive viewpoints have been mostly addressed as being separate to landscape impacts.

5.2 Residual impact

5.2.1 Table 1 - EES / LVIA Scoping Requirements - Performance Objectives

The scoping requirements outlined in the LVIA require the following:

Describe proposed measures to manage residual effects on landscape and visual amenity values, including in the context of potential rehabilitation and restoration work following decommissioning.

Review Commentary/Recommendation

It is my opinion that the term residual effects has been incorrectly used in the EES scoping requirements. Residual typically refers to the level of effect or impact "following" the application or establishment of amelioration measures for an impacted viewpoint.

The assessment of individual, non-residential viewpoints does not include the definition of a level of residual impact. This may be as a result of off-site amelioration measures not being achievable in publicly accessible locations and/or the level of predicted pre-mitigation impact being such that further amelioration is not warranted.

The assessment of "residual impact" has been incorporated into the assessment of rural residential viewpoints. Although not specifically called residual impacts, it has been addressed under "Overall Visual Impact Assessment" as the level of impact that would result following mitigation.

It is my opinion that the proposed amelioration measures constitute best practice.

5.3 Landscape Character

5.3.1 Report Section 2.4 - Landscape character units and sensitivity

The LVIA in describing the methodology states that:

Landscape sensitivity for each landscape unit is determined through consideration of the existing use of the area and the degree to which the particular landscape can accommodate further change.

Review Commentary/Recommendation

It is my opinion that there is some confusion in the LVIA over the application of the term landscape and viewer sensitivity. Refer to commentary in ***Report Section 2.6*** and ***Report Section 6.7*** for comments relating to viewer sensitivity.

In my opinion, which is supported by Leonard and Hammond -Landscape Character Types of Victoria (1984), heavily modified, low scenic quality rural landscape, such as this, is not sensitive to change. However, the viewers on tourist routes, townships will be. This distinction between viewer and landscape is not provided in the assessment. Refer to my earlier comments relating to the Fingerboards Mineral Sands Project Panel findings.

However, residential viewpoints have been defined as being of high landscape sensitivity.

In my opinion, a table outlining the sensitivity hierarchy of varying land uses would have been helpful.

5.4 Seen Area / ZVI / Visual Catchment Analysis

5.4.1 Report Section 2.5 - Seen Area Analysis and Zone of Visual Influence

The LVIA in describing the methodology for visual catchment and visual prominence decreasing with distance, states that:

Recognising that visual scale diminishes as distance increases, defining and mapping a Zone of Visual Influence (ZVI) (through radial distance bands) provides guidance on the potential visual scale (of key project infrastructure over distance) for consideration of likely or potential visual impact.

Review Commentary/ Recommendation

It is my opinion that the term "Seen Area" has been used in the LVIA instead of the more regularly accepted “Visual Catchment” or "Zones of Visual Influence” (ZVI). The recognised description for this type of analysis is:

- *The process of determining the visibility of an object in the surrounding landscape. The process is objective in which areas of visibility or non-visibility are determined by computer software using a digital elevation dataset. The output from the analysis is used to create a map of visibility.*

Visual Catchment, Zones of Theoretical Visibility (ZTV), Zones of Visual Influence (ZVI) and Seen Area Analysis (SAA) are effectively the same thing (refer to *The Renewable Energy Landscape, Apostol et al., 2016*).

It is my opinion that the term ZVI has been incorrectly applied to radii from the project, based on the degree of horizontal and vertical field of view of the human eye that the proposed wind turbines occupy (refer to LVIA Report ***Section 4.1*** and ***Figure 4.4***).

It is also my opinion that these ZVI radii are in fact Visual Threshold Distances (refer to *Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes - Sullivan et al. 2012*).

It is my opinion that standard technical terminology should be applied wherever possible, unless a very clear explanation of the alternate terminology can be provided in the report. The term SAA has not been explained within the project glossary but has been described in the project methodology report section 2.5.

However, this is not a critical issue, as long as the reader clearly understands the meaning.

5.5 Sensitive Viewpoint Locations

5.5.1 Report Section 2.6 - Viewpoint selection and assessment of publicly accessible viewpoints

The LVIA in describing the methodology states that:

The assessment considers four key criteria for each location: visibility, distance, landscape character, and viewer sensitivity.

Review Commentary/Recommendation

While the assessment considers each of the above key criteria, there is no summary of viewer sensitivity as it relates to the different land uses and the associated user expectations.

It is my opinion that a table, where the level of viewer sensitivity for key user groups/land use types is described and the associated level of sensitivity defined, would have been helpful to the reader as it would provide certainty in relation to the consistency of interpretation of the assessed level of impact (refer to ***Figure 3***).

VISUAL SENSITIVITY					
LAND USE	DISTANCE ZONES				
	FOREGROUND		MIDDLE GROUND		BACKGROUND
	0-1	1-2km	2-4.5	4.5-7	> 7kms
Tourist / Recreation	High	High	High	Mod	Low
Residential: Rural or Urban	High	High	High	Mod	Low
Main Travel Corridor	Mod	Mod	Low	Low	Low
Minor / Local Roads	Mod	Mod	Low	Low	Low
Railway Line (Freight)	Low	Low	Low	Low	Low
Industrial Areas	Low	Low	Low	Low	Low

TABLE 1: Visual Sensitivity Table

Figure 3 – Visual sensitivity table (Source: Moir Landscape Architecture – 2018)

5.5.2 Report Section 2.7 - The scale of effects – criteria

The LVIA, in describing the approach that would lead to a high visual effect, states that:

The assessment of a high effect from a publicly accessible viewpoint requires the assessment of all criteria to be high.

Review Commentary/Recommendation

There is a lack of clarity as to how a final impact rating has been achieved for assessed viewpoints. A matrix would be useful to show how the various assessment criteria combine to achieve an impact outcome. This would allow lay people to understand the work, improve transparency and reduce some of the appearance of professional subjectivity.

Most other LVIA use a methodology which employs a matrix for clarity (refer to ***Figure 4***). Having a clear process to describe outcomes is a key part of the Guidelines for Landscape and Visual Impact Assessment - The Landscape Institute and The Institute for Environmental Management and Assessment (2016), so that results are not open to misinterpretation by readers.

The decision matrix doesn't need to be quantifiable, with numbers and formulas, but it must be logical to the reader that if a subjectively assessed Condition A occurs in conjunction with Condition B, then the result will be Impact C.

However, it is acknowledged that assessment methodologies not utilising a matrix have been accepted by EES panels on other projects.

Table 3: Significance of Visual Impacts

Viewpoint Sensitivity	Magnitude of Change				
	Dominant Change	Considerable Change	Noticeable Change	Perceptible Change	Imperceptible Change
High	Major	High	Moderate	Low	Negligible
Medium	High	Moderate	Low	Low	Negligible
Low	Moderate	Low	Low	Negligible	Negligible
Negligible	Low	Low	Negligible	Negligible	Negligible

Figure 4 – Visual sensitivity table (Source: Ethos Urban – 2019)

5.5.3 Report Section 2.8 – Photomontages

The methodology as outlined in the LVIA for focal length and image overlap, as well as method of 3D modelling and image composition, is generally consistent with best practice.

Review Commentary/Recommendation

It is noted that a 70mm focal length lens has been used as opposed to a 50mm lens that is more commonly used due to its closeness to the central field of view of a human eye.

However, the result of this will be an image that is slightly "zoomed in", appearing slightly larger than would be the case with a 50mm lens. In this instance, the images would in effect represent a worst-case scenario and not underplay the visibility of the wind turbines in the photomontages.

Additionally, it may be helpful for the reader for the report to elaborate that the Nikon D850 is a full frame DSLR, as the focal length is somewhat meaningless without knowing what the 35mm film format equivalent is.

5.6 Report Section 4 - Visual study area

5.6.1 Report Figures 4.1 and 4.2

The parameters of human vision and the field of horizontal and vertical view, as outlined in the report, are consistent with accepted practice for the assessment of the visual prominence of an element within the landscape. The potential visual prominence of vertical elements is detailed in relation to how the degree of visual prominence decreases with distance.

Review Commentary/Recommendation

Only the potential visual prominence of vertical elements is detailed, as opposed to horizontal elements. This may be as a result of the authors of the report determining that, due to their significant height, this factor alone is of the most consequence.

It is my opinion that the horizontal occupied field of view is useful in the determination of impact of individual viewpoints with views to a wide spread of turbines, as well as cumulative impact.

5.7 Report Section 4.1 - Zone of Visual Influence

The LVIA in describing the approach to the assessment of visual prominence decreasing with distance, states that:

Zones of Visual Influence (ZVI) assist to assess the visible scale of the proposed turbines over varying distances. The same principles used to determine the viewshed assist to define visual scale based on the distance to a turbine. For example, when a viewing location is closer to a turbine, the turbine would take up a greater percentage of the vertical field of view.

This forms one element of several criteria that contribute to determining the overall visual impact of a project from viewing locations.

Review Commentary/Recommendation

I agree with the principle of this analysis "tool" and the decrease in visual prominence with distance. However, it is my opinion that the use of the term Zone of Visual Influence has been incorrectly applied to radii from the project, based on the degree of horizontal and vertical field of view of the human eye that the proposed wind turbines occupy.

It is my opinion that the correct term for what is really being represented here is "visual impact threshold distances (refer to Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes - Sullivan et al. 2012).

However, the term ZVI as it has been used in the ZVIA has been addressed within the project glossary.

6 REPORT SECTION 5 - LEGISLATION, GUIDELINES, POLICY AND PLANNING REVIEW

The report has undertaken a comprehensive review of State, and local government legislation, policy and guidelines relating to wind farms as well as landscape values and places of significance.

Review Commentary/Recommendation

It is my opinion that the report meets the Scoping Requirements for the EES (Section 4.2), as outlined in the Draft evaluation objective:

- *"To minimise and manage potential adverse effects for the community with regard to landscape and visual amenity".*

6.1 Report Section 5.6 - Landscape assessment studies

Relevant landscapes of state and regional significance within the viewshed of the project, and their associated view lines, are identified and summarised, based on available studies.

Review Commentary/Recommendation

It is my opinion that the report has undertaken a comprehensive review of the physical and cultural attributes of the landscape of the setting.

7 REPORT SECTION 6 - EXISTING CONDITIONS – LANDSCAPE CHARACTER AND SENSITIVITY

Based on best practice, existing studies and available data sets, the landscape of the broader study area has been described and mapped, with landscape character units identified.

Review Commentary/Recommendation

A comprehensive assessment of the physical and cultural attributes of the landscape of the setting has been undertaken, with landscape units and landscape character areas having been identified.

7.1 Report Section 6.7 - Landscape sensitivity

The LVIA defines landscape sensitivity as:

Landscape sensitivity is in part a measure of the ability of a landscape to absorb visual change based on attributes of a particular landscape.

Landscape sensitivity from individual residential properties will always be assessed as 'high', as for a resident, their home will always be a highly sensitive location and disturbances to a resident's views must always be considered to have the highest degree of sensitivity.

Review Commentary/Recommendation

It is my opinion that the assessment methodology confuses the sensitivity of the viewer (viewer sensitivity) with the landscapes' sensitivity to change. However, I accept that the terms landscape sensitivity (to change) and landscape absorptive capability are effectively the same thing.

Anomalies in the methodology occur in rural areas, where the landscape sensitivity of the broader landscape in which residences are scattered throughout, is low (plains farmland), but the residences themselves have a high level of landscape sensitivity – *"Landscape sensitivity from individual residential properties will always be assessed as 'high'".*

In my opinion, the landscape sensitivity rating for the "plains farmland" should remain low, as assessed, but the individual viewpoint be assessed as a viewer sensitivity rating of high as part of the visual impact assessment, not the landscape assessment.

Additionally, "the scenic qualities of a particular landscape" have not been defined here despite being identified in the report as one of the attributes of sensitivity.

Report Table 6 (refer to ***Figure 5***) is, in my opinion, somewhat of an amalgam of landscape character and viewer sensitivity, with some commentary on the elements that contribute to scenic quality. However, the overall ratings of landscape sensitivity appear to me, to closely align with what I would consider to be the scenic quality ratings of the landscape units.

Table 6 Landscape Units and Sensitivity

Landscape Unit	Sensitivity
LCU 1 - Urban Areas and Townships	**Medium** - Built form and other visual elements reduce the visual sensitivity of these areas. However, as these are urban areas with many dwellings, the landscape sensitivity is rated medium.
LCU 2 - Rural Residential	**Medium-High** - While these areas are valued for their 'natural-appearing or rural landscape amenity, they have modified landscapes within zones that are set aside for rural related industries such as farming, and thus inherently contain land uses with potential off-site amenity impacts.
LCU 3- Plains Farmland	**Low** – Highly modified, contains visible infrastructure, is not topographically dramatic, and does not contain large bodies of water.
LCU 4 - Undulating Farmland	**Low to Medium** – Highly modified, by way of clearing of native vegetation. The intersection of rolling hills and valleys provides for a diversity of framing of views. Elevated hills provide moments of vistas in journeys through the landscape.

Figure 5 – Extract of Table 6 – Landscape Units and Sensitivity.

8 VISUAL IMPACT ASSESSMENT FINDINGS

8.1 Report Section 7 - Seen Area Analysis

An assessment, based on locations from where varying degrees of the turbines will be visible, was undertaken, extending beyond 28.6km from the Project's site extent. Beyond this distance the vertical visual prominence of the up to 250 m high turbines would be insignificant.

Review Commentary/Recommendation

The assessments for whole of turbine visible, as well as the bundled analysis for the visibility of a number of turbines, has been prepared in accordance with best practice.

Refer to Report Section 2.5 above regarding comments on terminology.

8.2 Report Section 8 - Publicly accessible viewpoints

Representative publicly accessible viewpoints within the viewshed of the Project were assessed in detail.

Review Commentary/Recommendation

Detailed assessment of representative viewpoints, as opposed to all viewpoints within the viewshed of a project, is typical best practice as it is impractical, and not necessary, to visit all viewpoints within the viewshed of a project.

8.2.1 Report Section 8.1 - Significant landscapes and vantage points

The assessment considers impacts on views from publicly accessible significant areas.

As all significant landscape viewpoints identified in Table 8.1 are in excess of 16.2km from the nearest turbine, the visual impacts are assessed as nil to low.

Review Commentary/Recommendation

The assessment of Viewpoint SL4 (refer to ***Figure 6***) is an example of the lack of clarity in determining an impact level outcome. It is not clear to me what is driving the Negligible or Nil overall impact. The sensitivity level is that of the landscape, not the viewer. A tourist use would be of a higher viewer sensitivity level, but from 19km away, it is my opinion that their level of viewer (visual) sensitivity would be significantly lower to any visual change. Once again, there is a lack of clarity between landscape and visual impacts.

Moir, Van Pelt, Lamb, Williamson, Homewood, Ethos Urban, NSW Wind Farm Bulletin and USFS VMS and Haack (myself), all use a methodology which recognises that viewer sensitivity decreases with distance. This is also known as distance decay, or stepped effect in relation to sensitivity falling with distance.

However, by not reducing viewer sensitivity with an increase in distance from the project, the LVIA approach results in a conservative outcome, i.e., the impacts are not understated and could be considered worse case/

VIEWPOINT SL3 – Mount Rouse Lookout (54H 614377, 5806428)			
Distance	30.4km SW (T66)	**ZVI**	Noticeable, but will not form a dominant element in the landscape
Landscape Unit	LU8 – Volcanic Cones and Craters, Lakes, Natural Forested Areas	**Sensitivity**	Medium - High
Viewer Type	Tourist	**Viewer numbers**	Medium
OVERALL VISUAL IMPACT	**Negligible**		

Figure 6 – 8.1.4 VP SL4 - Tower Hill Lookout (Interior).

8.2.2 Report Section 8.2 - Major roads (highways) and connector roads

The report assesses a large representation of viewpoints on roads of varying standard in the viewshed of the Project. 19 viewpoints were assessed in the draft report.

Review Commentary/Recommendation

A categorisation of roads and their relative sensitivity would be helpful for consistency.

One assumes highways and tourism road would have a higher level of sensitivity to C category roads and local roads, based on relative user numbers and user expectation, i.e., holiday travellers as opposed to agricultural machinery and transport.

Hamilton–Port Fairy Road (H8), 2.7km from the Project, was identified in the draft LVIA as a tourist road but defined as of low sensitivity. "Tourist" has been removed from the final LVIA, replaced with "road users".

Viewpoints H11, H12, H13 and H14 on Woolsthorpe-Heywood Road, have their viewer types defined as local, but are included under "Major roads and connector roads".

Justification of the relative differences in sensitivity is required for clarity as it is still unclear how "road user" differs from "local" as the viewer type, as defined on other roads, such as H10 – Woolsthorpe-Heywood Road.

8.2.3 Report Section 8.3 - Local roads

Four viewpoints from local roads have been assessed.

Review Commentary/Recommendation

Interestingly, the sensitivity of local roads is rated as low and low to medium, the same as major roads. I find this inconsistent with best practice, which should have major roads, particularly tourist routes, rated of a higher sensitivity.

A rationale for the determination of road user sensitivity would be instructive.

8.2.4 Report Section 8.4 - Townships

Four townships have been assessed, with the closest being Hawkesdale, 10km from the closest turbine.

Review Commentary/Recommendation

Based on the significant distances from the Project, up to 21.2km for the most distant, Winslow, I find the sensitivity levels to be on the high side. In my opinion, low would be more appropriate. However, the overall visual impact levels for the four townships are determined to be Low, despite the ZVI rating being Noticeable (refer to ***Figure 3***)

Without it being clear in the assessment table, the text describes how the landscape and built form of the township partially screens views. The ZVI or SAA is a worst-case tool that does not take into account the screening effects of intervening elements within the landscape.

In this case, the assessment table does not help the understanding of how the various considerations of assessment are applied to achieve an outcome or final rating.

It is my opinion that a table of sensitivity level and a matrix of decision-making criteria would be help for the reader.

VIEWPOINT H3 – Hawkesdale Township (54H 615943, 5781541)			
Distance	To Project: 8.0 km SW (T61) To Hawkesdale Wind Farm: 2.6km S	**ZVI**	Noticeable, and can dominate the landscape
Landscape Unit	LU1 - Townships	**Sensitivity**	Medium
Viewer Type	Township viewers, tourists, road users (Connector Road)	**Viewer numbers**	Medium-High
OVERALL VISUAL IMPACT	**Nil - Low**		

Figure 7: Township assessment – Viewpoint H3 Hawkesdale (Source: Jacobs).

8.2.5 Report Section 8.5 - Construction Impacts

All construction activities have been assessed at a high level to demonstrate their relatively short-term impact.

Review Commentary/Recommendation

The quarry would warrant some commentary with regards to impact and potential amelioration, given it is likely to operate for up to 2 years, before becoming a dam.

Excavation and earthworks are listed as construction activities, but not the quarry specifically. However, the quarry is listed in individual viewpoint assessments for roads as a specific element of the Project and included within the overall visual impact rating.

Construction impacts range from high to low, albeit temporary, dependant on viewer perception. In my opinion, this finding is reasonable.

9 REPORT SECTION 9 - CUMULATIVE IMPACT

The report identifies all proposed and operating wind farms in the broader area, up to Oaklands, 54.1km distant, as well as the Shaw River and Tarrone Gas-Fired Power Stations and existing HV powerlines.

Likely sequential and simultaneous cumulative impacts are described and assessed.

Review Commentary/Recommendation

Cumulative impacts have been assessed for residential viewpoints and sequential impacts assessed for roads.

However, a bundled cumulative analysis would be helpful in showing locations from where views to multiple turbines from multiple wind farms may be seen.

PETER HAACK
CONSULTING

10 REPORT SECTION 10 - LIGHTING IMPACTS

The LVIA refers to CASA requirements for aviation lighting. No other significant sources of lighting are required for the project.

The LVIA states:

Consistent with other projects, this assessment considers aviation hazard lighting to be installed on the nacelles of wind turbines along the perimeter of the Project. Lights assessed would be of medium intensity (2,000 cd) red hazard beacons which would be continuous output (i.e., not blinking) and would only be on for a short time period of around thirty minutes while aircraft are in the vicinity of the Project.

Review Commentary/Recommendation

An assessment has been undertaken of the likely visual impact of the lighting on sensitive viewpoints.

The findings appear sound and reasonable.

11 REPORT SECTION 11 - RESIDENTIAL VIEWPOINTS

The visual impact on the residences of non-participating landowners within 6km of the Project have been assessed, as it is over this distance that the highest visual impacts will potentially occur.

Field work has been undertaken and a thorough assessment of key, or representative residential viewpoints has been completed.

This assessment is primarily of visual impact and, as a result, I believe that visual impacts have now been mostly addressed as separate to landscape impacts.

Additionally, the potential for amelioration at each assessed viewpoint has been identified and an impact level following amelioration assigned.

The level of assessed impact for the representative viewpoints appears sound.

Review Commentary/Recommendation

To further support the assessment of all other residential viewpoints within a 6km radius, other than those assessed in detail, a higher-level assessment could be useful in fully defining the potential impact on non-assessed rural residences.

In my experience, a desktop assessment demonstrating the effects of vegetation within the surrounding home yard of a residence on the screening of a proposed wind farm can be highly effective. The analysis would typically define a number of different vegetation screening scenarios, such as:

- Fully screened.
- Partially screened.
- Minimally screened.

The amount of vegetation would directly affect the level of visibility and, therefore, impact. It would also directly feed into the potential amelioration measures required and provide clarity between the level of initial visual impact and the level of residual impact.

12 REPORT SECTION 12 - MITIGATION OPTIONS

The LVIA outlines widely recognised measures for on-site and off-site screening, as well as siting of project components to minimise visual intrusion.

The report notes that the offer and preparation of on and off-site amelioration plans will most likely be a permit condition.

13 ADDITIONAL COMMENTS

13.1 Blade Glint

13.1.1 Table 1 - EES / LVIA Scoping Requirements - Likely Effects

The scoping requirements outlined in the LVIA require the following:

Assess the landscape and visual effects of the project, including.....effects of blade glint.

Review Commentary/Recommendation

Blade glint has not been assessed in the LVIA as it has been assessed as part of a separate report. A reference is provided to a separate report in Table 1 – Scoping Requirements, as well as there being a reference in the EES itself.

I have not reviewed the findings of the separate blade glint report.

13.2 Wind farm design

The amelioration section deals with reactive measures to mitigate impacts, but does not address proactive measures that reduce wider landscape impacts.

Review Commentary/Recommendation

Some commentary on the positive aspects of the wind farm design and layout would be helpful, as this project has more consistent spacing between turbines and is not cramped like Macarthur.

13.3 Viewer perceptions to wind farms

Consistent with recent trends in Victoria, a community perception study has not been undertaken. The LVIA does not summarise findings of other visual perceptions studies.

Review Commentary/Recommendation

Yes, they are big and can be seen, but what does this mean? Will their visual prominence result in a negative visual impact for all viewers?

Although I note that recent panels have stepped away from a reliance on viewer perception studies, it is my opinion that a discussion on viewer perception and value surveys and studies would be helpful.
The assessment of visual impact should be based on a cautionary approach, but the findings should be prefaced in the context of widespread local and overseas studies that demonstrate a high level of acceptance.
Additionally, there are a number of studies, most notably Lothian, that could be referenced to demonstrate that wind turbines within a low scenic quality landscape can elicit a more positive response.
The perception studies also provide a basis to support the concept of distance decay effect in relation to sensitivity falling with distance.

14 SUMMARY OF FINDINGS

It is my opinion that the LVIA is well presented, written and structured and the findings mostly sound and supportable.

Many comments within the Peer Review relate to the use of standard terminology and, therefore, although there may be a difference in opinion between the authors of the LVIA and the Peer Review, the findings of the LVIA are still sound.

In the assessment of viewpoints other than individual residences, the LVIA methodology has combined the assessment of landscape and visual impact. While closely connected, it is my opinion that they would be better assessed separately. This combining of components is particularly evidenced through the use of the term landscape sensitivity to describe the sensitivity of the landscape to change, as well as sensitivity of viewers in a particular land use type/setting.

Anomalies in assessment outcomes may arise in viewpoint assessments for roads, particularly any road with an identified tourism use that traverses a low sensitivity landscape. In these instances, the visual sensitivity of the road user would be higher than that of the landscape, and the resultant higher level of sensitivity may not be reflected in the overall visual impact rating.

However, it is my opinion that the LVIA is very comprehensive in its assessment of landscape impacts.

During the final LVIA preparation stage, a thorough assessment of key, or representative, residential viewpoints was completed which primarily focused on visual impacts, with the assumption being that all residences were of high sensitivity. As a result, I believe that for these sensitive viewpoints, visual impacts have been addressed as being separate to landscape impacts.

In summary, with regards to the adequacy of the LVIA in response to the key considerations of the Peer Review:

- Are the methods used appropriate and in-line with best practice and statutory guidelines? – Yes.
- Are the measures proposed to limit impacts appropriate? – Yes.
- Are the conclusions of the assessment reasonable? - Yes.

PETER HAACK
CONSULTING

[redacted]

PETER HAACK
CONSULTING

APPENDIX A - CV

Peter Haack – Landscape & Visual Impact Assessment CV

Registered Landscape Architect #619, FAILA

Qualifications

Bachelor of Landscape Architecture, RMIT University,
Diploma of Applied Science (Amenity Horticulture), University of Melbourne

Professional Experience

Urbis – Director and Studio Lead Director 2008 – 2021
EDAW/AECOM – Senior Associate and Principal 1995 – 2008
Loder and Bayly Consulting Group – Consultant and Associate 1985 -1995

After over 30 years working in some of Australia's leading planning and design consultancies, I have established my own practice, focussing on advisory and expert evidence.

My projects have positioned me to be one of the country's most experienced landscape architects and urban designers. I have a passion for highly creative design solutions that improve functional, aesthetic, social and environmental outcomes.

For more than 35 years, I have led private and public sector landscape architecture, urban design and landscape planning projects – including transport, energy infrastructure and major renewal projects, conducting visual assessments of wind farms, and developing open space strategies and park master plans.

I led the urban and public realm reference design for the Melbourne Metro Rail project, one of Victoria's largest public transport projects; the urban design and landscape architecture for the Peninsula Link Freeway and the preparation of a master plan for Living Links, an environmental and recreational corridor in the Dandenong Creek catchment, which received an award from the Australian Institute of Landscape Architects.

Contact

m 0409 946 938
e peter@peterhaack.com.au

Relevant Projects

Renewable Energy

Mt Fyans Wind Farm, VIC
Bulgana Wind Farm, VIC
Mokoan Solar Farm, VIC
Naring Solar Farm, VIC
King Island Wind Farm, TAS
Taralga Wind Farm, NSW
Clifton Beach Wind Farm, WA
Crookwell II Wind Farm NSW
Mt Bryan Wind Farm, SA
Black Springs Wind, NSW
Bannister Wind Farm, NSW
Starfish Hill Wind Farm, SA
Tungketta Hill Wind Farm, SA
Berrybank Wind Farm, VIC
Waterloo Wind Farm, SA
SA Planning Wind Farm Assessment Guidelines, SA
Woolnorth Wind, TAS
Portland Wind Energy Project, VIC

Transport

Melbourne Metro Rail Project, VIC
West Gate Tunnel Project, VIC
Frankston Bypass Project (PenLink), VIC
State Highway 19, NZ
Inland Rail Project, NSW
Scoresby Freeway (Eastlink), VIC

PETER HAACK
CONSULTING

Infrastructure
Optus and Telstra Mobile Deployment, NSW, VIC, QLD
Brunswick Terminal Station, VIC
Nowingi Long Term Waste Facility EES, VIC
SNI Interconnector Powerline, SA, NSW, VIC
Eastern Gas Pipeline EES, VIC and NSW
Northern Tasmanian Gas Pipeline, TAS
Waverley Park HV Powerline Undergrounding, VIC
Energy from Waste Facility, NSW
Brunswick Terminal Station, VIC
Golden Plains Peak Power Station, VIC
Lilydale Treatment Facility, VIC
Cape Jervis to Yankalilla Powerline, SA
Maryvale Mine - Morwell River Diversion, VIC
Emerald - Cockatoo Pipeline, VIC
Apollo Bay Treatment Plant, VIC
OneWeb Satellite Base Station, QLD
OZ Minerals Powerline, SA

Urban and Other Development
Northern Beaches Hospital, NSW
Biasin Flinders Estate, VIC
Smith's Beach Estate, WA
Iwasaki Resort, QLD
Campbells Stores Redevelopment, NSW
12 Coppin Grove, Hawthorn, VIC
Portsea Inclinator, VIC
Barwon Prison, VIC
Ravenhall Prison, VIC
329 Point Nepean Road, Rosebud, VIC
101 Miller Street, North Sydney, NSW
JC Decaux Signage Rollout, NSW
RMIT University Signage, Melbourne, VIC
City of Sydney Art Project, NSW
Ravenswood Development SLO, VIC

Relevant Projects cont'

Energy and Resources
PNG LNG Project, PNG
Fingerboards Mineral Sands, VIC
Wimmera Mineral Sands, VIC
Wafi Golpu Project, PNG
Kanmantoo Copper, SA
Port Campbell Gas Storage, VIC
Minerva Offshore Gas, VIC
Northern Murray Basin Project Mineral Sands, VIC
Jimblebar Mining Project, WA
Williams United Gold Mining Project, VIC
Big Hill Mine Project, VIC
Carshalton Gold Mine, VIC
Fosterville Gold Expansion, VIC
Yandera Copper Mine, PNG
Fosterville Gold Mine, VIC
Cowal Gold Mine, VIC
Gorgon LNG, WA
WIM150 Mineral Sands, VIC
Area C Mine, WA
Donald Mineral Sands, VIC
Sepon Mine, Laos
Mt Arthur Coal, NSW
McPhillamys Gold Project, NSW
Wambo Coal Mine, NSW
Vickery Coal Mine, NSW

Other Sectors
Portarlington Safe Harbour, VIC
Tasmanian Hydro Lakes Assessment, TAS
Webb Dock Extension, VIC
Southern Fertilizer Facility, VIC
Moura Urea Facility, QLD
Eulie Piggery, NSW
Wallacia Memorial Park, NSW
Wanless Recycling Park, QLD