KENTBRUCK GREEN POWER HUB

PRELIMINARY LANDSCAPE ASSESSMENT

Attachment 3

Prepared for:

NEOEN Australia Pty Ltd

Prepared by:

GREEN BEAN DESIGN
landscape architects

GREEN BEAN DESIGN PTY LTD
PO Box 3178 Austral NSW 2179
Principal: Andy Homewood BSc (Dual Hons), Grad Dip LM, Dip Hort, Registered Landscape Architect, AILA
(ABN: 86 603 575 702)

DOUCMENT CONTROL

ITEM	DETAIL
Project Name:	**Kentbruck Green Power Hub**
Report Title:	**Preliminary Landscape Assessment**
Project Number:	**19-267**
Version Number:	**v5**
Status:	**Final**
Author:	**Andrew Homewood**, Registered Landscape Architect, AILA *Graduate Diploma Landscape Management, Bachelor Science (Dual Honours) Landscape and Archaeology, National Diploma Horticulture*
Date	**17 July 2019**

Contents

Contents **Page**

Figures

Executive Summary

Green Bean Design (GBD) was commissioned by AECOM Pty Ltd (on behalf of Neoen Australia Pty Ltd) to undertake a Preliminary Landscape Assessment (PLA) for the proposed Kentbruck Green Power Hub (the Project). This PLA involved a desk top study and field inspection to collect and analyse information to describe and define landscape characteristics of the area in which the Project would be constructed.

GBD note that the Project is in the early stages of development and specific details will be refined following the completion of further environmental investigations. This PLA has therefore considered a preliminary concept design and wind turbine layout for the Project that will be subject to ongoing development and refinement in response to environmental, land use and topographical constraints, landholder negotiations and technical and operational requirements.

This PLA has determined that landscape characteristics within and immediately surrounding the Project site, as well as portions of the landscape in the broader Project viewshed, are generally robust and defined by visually strong forms and patterns. Overall landscape characteristics within and surrounding the Project site are considered to exhibit characteristics which tend to result in a moderate to high sensitivity to change.

Landscape characteristics with a moderate sensitivity are those associated with broad, simple patterns and consistent colour and texture. This includes areas with extensive tree cover such the commercial plantations covering most of the Project site. The Project site is characterised by a largely modified landscape with plantation forestry and areas of agricultural pasture and cropping. These landscape characteristics are also generally common within the broader regional landscape. However, parts of the landscape beyond the Project site also displays characteristics which are highly valued and have a high degree of visual amenity such as Discovery Bay and the Coastal/National Parks.

The overall potential visibility of the Project has been illustrated in a series of panoramic/aerial photographs and Zone of Visual Influence (ZVI) diagrams. The ZVI diagrams demonstrate the influence of topography on visibility and identify areas from which the Project would, and would not, be visible. It is important to note that The ZVI assessment methodology is considered to be very conservative as the screening effects of any structures and vegetation (including extensive areas of trees within surrounding plantations and National Parks) above ground level are not considered in any way.

A preliminary cumulative assessment identified the Portland, Codrington and Yambuk wind farms within the broader locality of the Project. A small number of proposed and operational wind farms are located in excess of 60 kilometres (km) to the east of the Project site. This PLA determined that there would be limited opportunities for land based intervisibility between the Project site and other wind farms within a regional context. The closest operational wind turbine (Cape Bridgewater) would be around 19.5km south east of the Project site.

This PLA has determined that the Project would be unlikely to result in any significant cumulative visual impacts arising from indirect or direct visibility between other proposed and operational wind farms.

Introduction

Section 1

1.1 Introduction

This PLA has been prepared by GBD on behalf of the Proponent to inform the assessment of the Project site for suitability for a wind farm development. This PLA accompanies a Referral of the proposed Project to the Minister of Planning for advice as to whether an Environment Effects Statement (EES) is required Under the Environmental Effects Act 1978.

GBD has prepared this PLA to comply with the information as required and outlined within the Environmental Effects Act 1978 Information Sheet No.2, Information to accompany notification of proposals: Wind Energy Facilities. Information Sheet No.2 requires the preliminary landscape assessment to consider:

- *The landscape character of the site and surrounding areas including landform, vegetation types and coverage, water features, any other notable features and current land use*
- *The location of nearby dwellings, townships, recreation areas, major roads, above-ground utilities, tourist routes and walking tracks*
- *Views to the site and to the proposed location of wind turbines from key vantage points (including views showing existing nearby dwellings and views from major roads, walking tracks and tourist routes) sufficient to give a sense of the overall site in its setting and*
- *The preliminary landscape assessment should include a notated plan (or aerial photograph) of the site and surrounding areas showing key features, including those identified above. Photographic images from key viewpoints (using a lens with a 50mm focal length) should also be provided.*

This PLA has used the following documents and guidelines to identify and consider potential landscape and visual impacts:

- Ministerial guidelines for assessment of environmental effects under the Environmental Effects Act 1978
- Referral of a project for a decision on the need for assessment under the Environmental Effects Act 1978 – Referral Form
- Environmental Effects Act 1978 Information Sheet No.2, Information to accompany notification of proposals: Wind Energy Facilities
- Policy and planning guidelines for development of wind energy facilities in Victoria, March 2019
- Glenelg Shire Council Planning Scheme
- Coastal Spaces Landscape Assessment Study (2006) and
- Victorian Coastal Strategy (2014).

Project location and description

Section 2

2.1 Project location

The Project is in the south west of Victoria within the Glenelg Shire Council local government area. The majority of the Project site is located within an area that has been substantially modified for commercial forestry use (comprising the active management and harvesting of radiata pine). On the eastern and western extents of the wind farm site there are some areas of land used for agricultural purposes (primarily grazing). The Portland-Nelson Road bisects the wind farm site in a generally east to west direction. The site is generally bound by forestry to the north, highly-modified land used for grazing purposes to the south east and west, Discovery Bay Coastal Park to the south, and the Lower Glenelg National Park and Cobboboonee National Park to the east and north-east. The Project location is illustrated in **Figure 1**.

The Glenelg Shire Council Planning Scheme Municipal Profile (Section 21.01-1) sets out a regional landscape description:

The Shire covers an area of 6,212 square kilometres, of which 45% (276,606 hectares) is public land. It is characterised by a diverse range of environments, including rugged coastline, dense native forests and woodlands, rolling rural plains and rivers, lakes and wetlands of significance. In the course of time, these features have contributed to creating distinctive communities with quite different expectations about how their area should develop. Glenelg Shire acknowledges its unique geographical location and regional strengths. Its rich natural resources are the basis of these regional strengths, which include a natural deep sea port and links with road and rail networks, prosperous fishing and primary production industries in a high rainfall zone with fertile soils. A standout natural feature in the Shire is the Glenelg River and estuary, which together with its tributaries, flows through the Shire from the Grampians, carving deep gorges in the Dundas Tablelands and Glenelg Plain before reaching the Southern Ocean at Nelson. The spectacular landscape of Discovery Bay and three prominent headlands and bays of Cape Bridgewater, Cape Sir William Grant and Cape Nelson; the Budj Bim National Park and Tyrendarra lava flow at the eastern boundary are a National Heritage listed landscape, as rich in Indigenous cultural heritage as they are in biodiversity.

The Municipal Profile also notes:

Primary production is the major land use in the Shire (45.2%). Timber plantations are also a major land use (15.7%) as well as conservation areas (15%), which include the Cobboboonee National Park, Lower Glenelg National Park, Mount Richmond National Park, Mount Clay State Forest, Discovery Bay Coastal Park and numerous coastal, flora and fauna reserves.

2.2 Project description

The key visual components of the Project may comprise:

- up to 157 wind turbines to a 270 metre (m) tip height
- a battery storage facility
- on-site collection stations
- potential power line connection (above or below ground up to 275kV) between the collection stations and either an existing or new terminal station

- operations and maintenance building with car parking
- up to 16 wind monitoring masts
- crane hardstand areas
- on site access tracks for construction, operation and ongoing maintenance and
- signage.

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

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

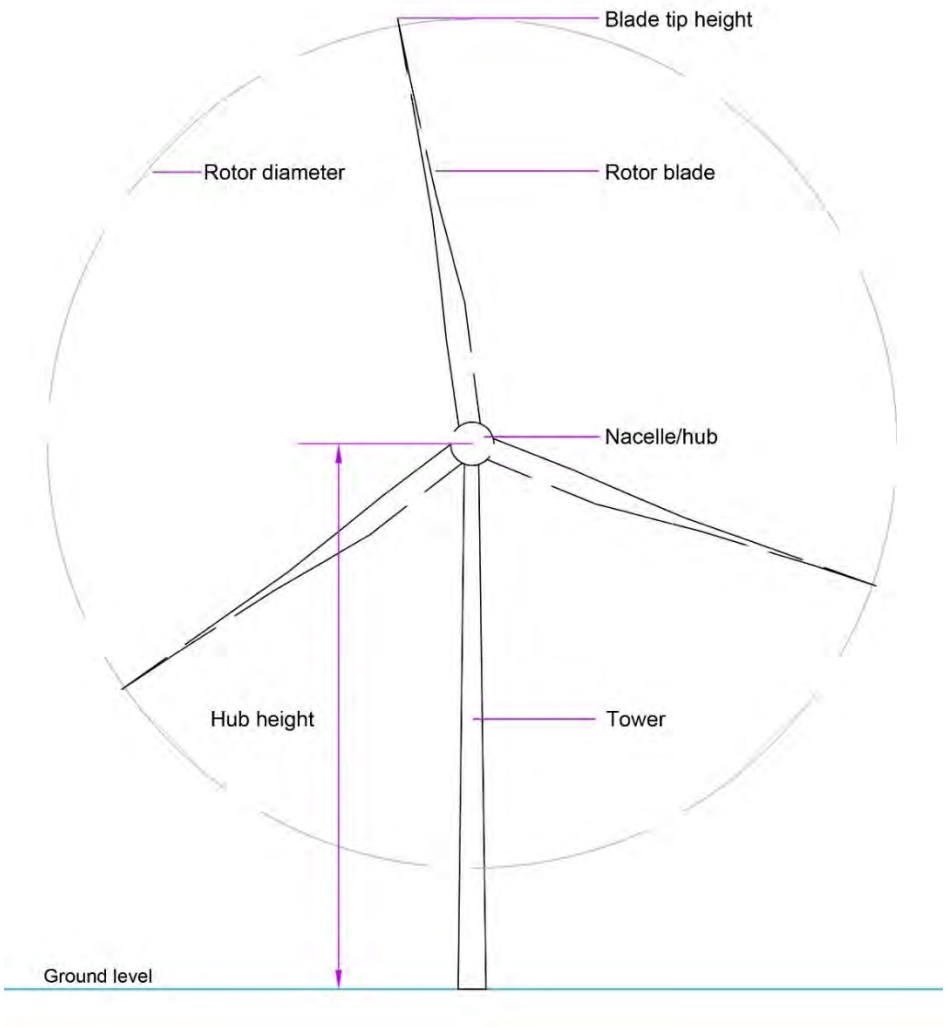
The Project indicative wind turbine layout is illustrated in **Figure 2**.

2.3 Wind turbines

The specific elements of the wind turbines typically comprise:

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

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



2.4 Wind monitoring masts

Wind monitoring masts would be installed on-site, extending up to the wind turbine hub height. The permanent wind monitoring masts are expected to be of a guyed, narrow lattice or tubular steel design.

Due to their scale and overall level of visibility, the permanent wind monitoring masts are unlikely to create a significant visual effect in the context of the overall wind farm development.

2.5 On-site access tracks

There is a network of roads within the site that are used by heavy and light vehicles associated with the timber plantation. There will be a requirement to upgrade sections of these to accommodate wind farm traffic (particularly oversize and/or over-dimensional loads). New on-site access tracks will also be constructed to between five metre and 10 metres in width where existing access tracks are not present or not suitable for use. and the network of access tracks would provide access to turbine locations across the site during construction and operation.

The final access track design would be subject to detailed design of the wind farm and will be developed in consideration of site constraints, including minimising the potential for visual impact by considering:

- the use of existing plantation and farm access tracks
- the overall length and extent
- the use of existing logging roads within the pine plantation
- the need for clearing vegetation
- the potential for erosion
- the extent of cut and fill and
- the potential to maximise rehabilitation at the completion of the construction phase.

2.6 Electrical works

The majority of cabling works, including the installation of cables linking the turbines to the control building would be installed underground.

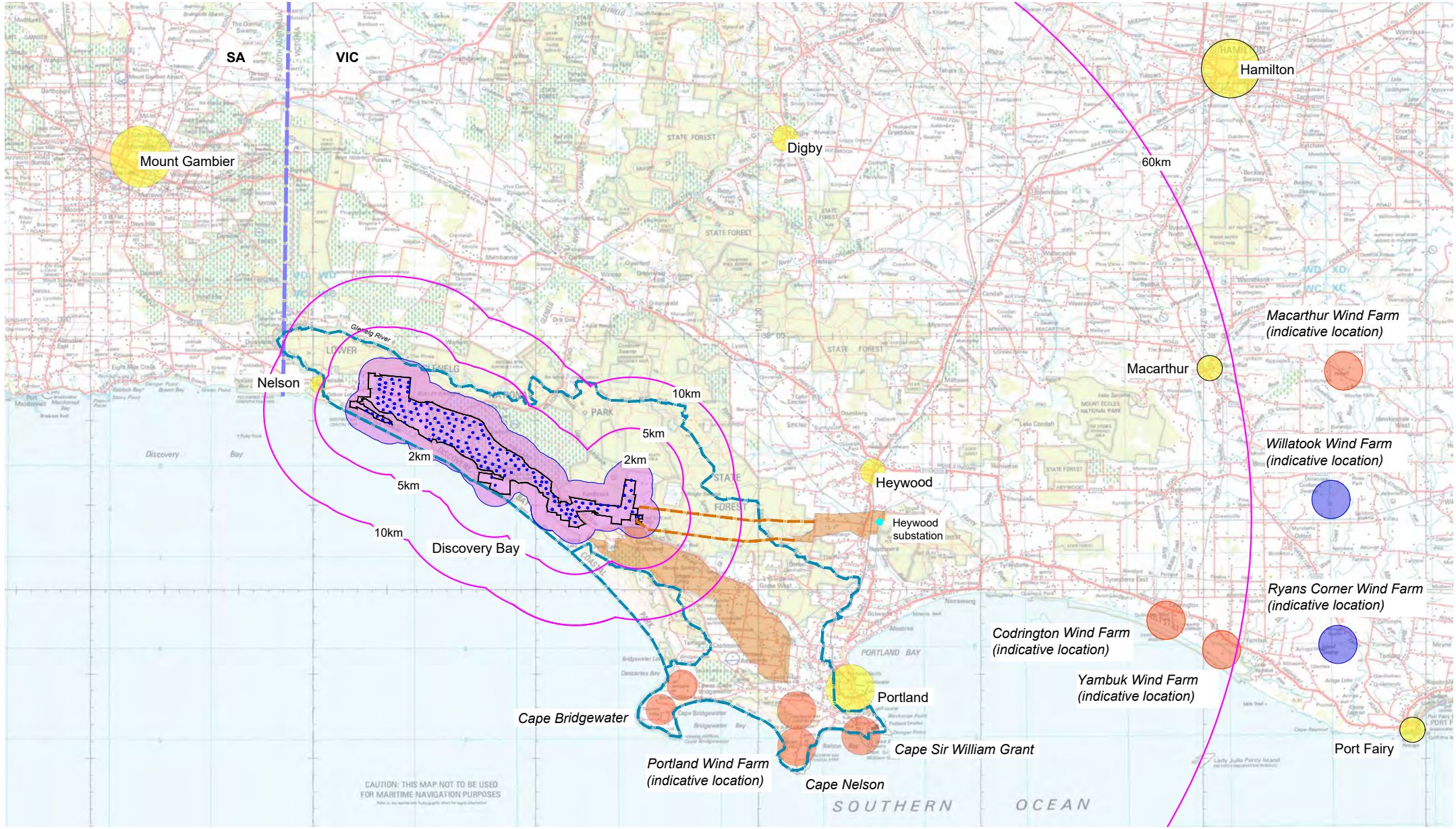
Grid connection would be achieved via a connection to the existing 500kV powerline which passes generally east of the wind farm site. This connection would be via either underground or overhead transmission cables with a voltage of up to 275kV. The wind farm turbines would be connected to a terminal station, control room and facilities for the grid connection. The potential underground and overhead development envelopes are illustrated in **Figure 1**. Whilst further assessments will determine the final transmission line route selection, this PLA notes that options to underground the transmission line will decrease potential for landscape and visual impact. A final route selection may also take into account local landscape characteristics which assist in absorbing the above ground transmission line structures.

2.7 Construction

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

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

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



Base map source: © Commonwealth of Australia (Geoscience Australia) 2019

Legend

- Proposed wind turbine (indicative layout)
- Distance from Project wind turbine
- Great South West Walk (indicative alignment)
- Other proposed wind farm localities
- Underground transmission line option
- 2 km view shed
- Township/locality
- Other operational wind farm localities
- Project site boundary (indicative alignment)
- Overhead transmission line development envelope

0m 10km

Figure 1
Regional locality

Kentbruck Green Power Hub

Preliminary Landscape Assessment

GREEN BEAN DESIGN
landscape architects

Legislative and planning frameworks

Section 3

3.1 Introduction

This PLA has considered state and local planning policies, as well as controls and policy guidelines applicable to landscape and visual aspects of the Project. Whilst the state and local planning policies are not directly applicable to the Project referral, they may be required to be addressed in any subsequent Development Application. The key planning policies, controls and guidelines are outlined below.

3.1.1 Planning Policies

- Victorian State Planning Policy Framework – relevant Clause 19.01.2S Renewable Energy
- Local Planning Policy Framework – relevant Clause 21 Municipal Strategic Statement
- Local Planning Policy Framework – relevant Clause 21.02.26 Significant Landscapes
- Local Planning Policy Framework – relevant Clause 21.02.27 Objectives
- Local Planning Policy Framework – relevant Clause 21.02.28 Strategies

3.1.2 Planning Controls

- Particular Provisions – relevant Clauses 52.32 Wind Energy Facilities
- Zoning and Overlays

3.1.3 Relevant guidelines

- Policy and planning guidelines for development of wind energy facilities in Victoria, March 2019.

These are discussed in more detail in the following sections.

3.2 State Planning Policy Framework

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

3.3 Local Planning Policy Framework - Glenelg Shire Council Planning Scheme

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

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

- Clause 19.01-2S Renewable energy

- Clause 19.01-2R Renewable energy – Great South Coast
- Clause 21.02.26 Significant Landscapes
- Clause 21.02.27 Objectives
- Clause 21.02.28 Strategies

3.4 Zoning and Overlays

The Project site is located partly within a Rural Farming Zone (FZ) and a significant Landscape Overlay (SLO1) as defined in the Glenelg Shire Council Planning Scheme. Zones surrounding the Project site include Public Park and Recreation Zones and Environmental Significance Overlays. Wind energy facilities are a permissible use subject to the wind energy project meeting the requirements of Clause 52.32 Wind Energy Facility.

The Glenelg Shire Council Planning Scheme attributes SLO1 (refer **Figure 3** for SLO1 locality) to the Glenelg River Estuary and Surrounds, and outlines the nature and key elements of the landscape, and landscape character objectives to be achieved as follows:

3.4.1 SLO1 Statement of nature and key elements of landscape

The Glenelg River Estuary and Surrounds is a regionally significant landscape as the confluence of the Glenelg River estuary, the Southern Ocean, and the coastal edge.
The Glenelg River Estuary has a wild and windswept character that is dominated by the intersection of its strong landscape elements – the sea, beaches, sand dunes, and remnant vegetation. It is open and uncluttered, with the settlement of Nelson nestled discreetly within the landscape, its buildings largely concealed by vegetation. The strong coastal edge is dominated by sandy beaches, providing a contrast with the dunes and lakes behind. This type of landscape is increasingly rare on the Victorian coast.
The landscape's visual significance is enhanced by environmental and visitor attractions. The estuary is listed on the Register of the National Estate for its tidal reach, which is one of the longest in Victoria, and Nelson is the starting point for one of the most well-known long-distance walks in Victoria – the Great South West Walk. In addition, the area is listed in the Heritage Rivers Act for its scenic and cultural value, and because it has many sites of Aboriginal heritage significance, particularly on the coast

.

3.4.2 The Glenelg Shire Council Planning Scheme also identifies landscape character objectives to be achieved

- *To protect locally significant views and vistas, to the ocean, the Glenelg River Estuary and other natural landforms from Nelson-Portland Road, the Great South West Walk and other publicly accessible locations.*
- *To protect the indigenous coastal vegetation and ensure that it is the dominant feature of the landscape when viewed from the foreshore.*
- *To retain the undeveloped and vegetated character of coastal dunes, waterways and estuaries near the coastal edge of this landscape.*

- *To minimise any increase in development visible above the dunes and coastal vegetation outside settlements, when viewed from the beach, foreshore or offshore.*
- *To discourage buildings set high on dunes or development that will be visible on the skyline.*
- *To discourage ridge tops and visually prominent hill faces from being visually dominated by buildings.*
- *To encourage vegetated landscape edges to the settlement of Nelson, which soften the interface of built and rural areas, and avoids expansion of built areas beyond current boundaries.*

3.5 Particular provisions

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

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

3.6 Policy and planning guidelines for development of wind energy facilities in Victoria, March 2019 (the Victorian Guidelines)

The purpose of the Victorian Guidelines is to set out:

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

The Victorian Guidelines states that *'the Victorian Government recognises that the Victorian community places a high value on landscapes with significant visual amenity due to their environmental, social and economic benefits. Strategic planning plays an important role in identifying and managing these important landscapes'*. The Victorian Guidelines identifies the Coastal Spaces Landscape Assessment Study (2006) as a strategic landscape study that identifies visually significant landscapes surrounding the Project site. This study includes recommendations for improved planning scheme guidance and is required to be considered by decision makers

for wind energy facility planning permit applications. Section 5.1.3 (Landscape and visual impact) of the Victorian Guidelines sets out matters to be considered in assessing permit applications for wind energy facilities.

3.7 Coastal Spaces Landscape Assessment Study (2006)

The Coastal Spaces Landscape Assessment Study was commissioned in December 2004 as part of the Coastal Spaces Initiative. The study focuses on the coastal areas of Gippsland (Bass Coast to the NSW border), the Bellarine Peninsula and the coast west of Warrnambool to the South Australian border. The study identifies and maps individual landscape characteristics within these coastal regions, identifies significant landscapes and provides an implementation framework to assist local government and other agencies in managing development impacts within coastal landscapes.

The Coastal Spaces Landscape Assessment Study notes Character Areas 1.1 Far West Coastal Hills and 1.2 Discovery Bay Dunes and Hinterland as occurring within or proximate to the Project site.

3.7.1 The Far West Coastal Hills

This small Character Area near the border of South Australia abuts the coast and contains scenic landscape features including the Glenelg River. The coastal edge is dominated by wide sandy beaches and vegetated sand dunes with lakes behind. The mouth of the Glenelg River creates a scenic setting for the Nelson township and is a significant water feature that opens out to the sea via Oxbow Lake. Inland, the area is characterised by open pastures in an undulating landscape with scenic copses of wind-pruned native vegetation.

3.7.2 The Discovery Bay Dunes and Hinterland are noted as:

Characterised by a long coastal edge and a large inland area dominated by pine plantations, this Character Area is unique for its large-scale active dune system that extends from east of the settlement of Nelson to the Bridgewater Lakes west of Cape Bridgewater. The undulating topography is completely dominated inland at the west of the Character Area by pine plantations and other vegetation that mostly filters or blocks views from roads. Roadsides occasionally provide scenic views to Mount Richmond and larger dunes near the coast. There are no major settlements in the Character Area and much of itis free of built development, despite inland sections being highly modified by pine plantations.

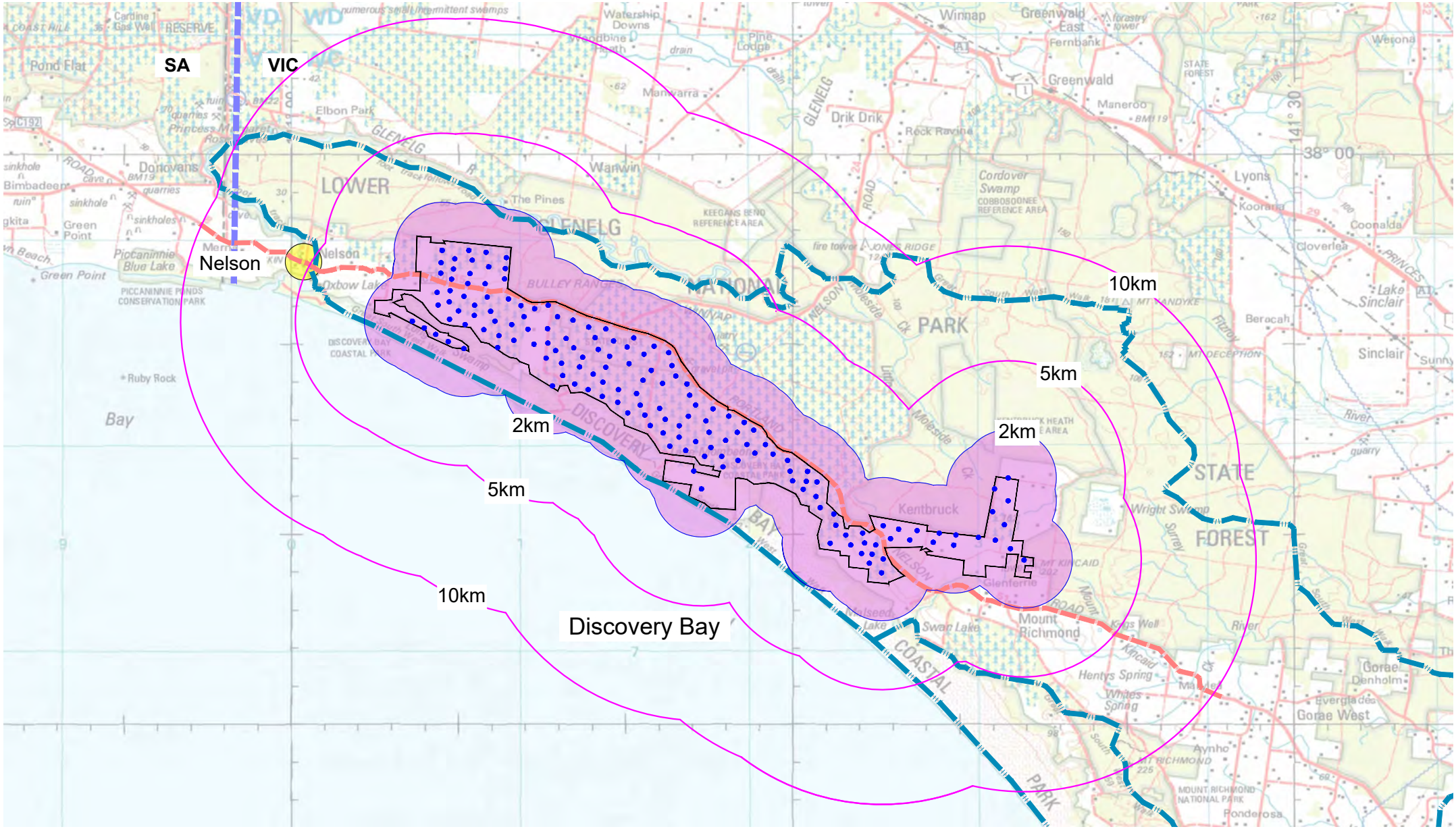
The Coastal Spaces Landscape Assessment notes the Glenelg River Estuary & Surrounds as having Regional Significance, stating that this area is:

- *Visually significant as the confluence of the Glenelg River estuary, the Southern Ocean and the coastal edge*
- *Characterised by a strong intersection of landscape elements – sea, beaches, sand dunes and remnant vegetations*
- *Valued by the community as a wetlands habitat and as one extremity of the Great South West Walk.*

The Coastal Spaces Landscape Assessment also notes the Discovery Bay Coast as having State Significance stating that this area is:

- *Visually significant for the dramatic sweep of its long dune backed bay with its rugged open beaches and sense of remoteness*

- *Characterised by a vast mobile dune system extending some three kilometres inland*
- *Valued by the community for its wild untamed character.*



Source: Geoscience Australia 2019

Legend

- Proposed wind turbine (indicative layout)
- 2 km view shed
- Distance from Project wind turbine
- Township/locality
- Portland Nelson road corridor
- Great South West Walk (indicative alignment)
- Project site boundary (indicative alignment)

0m 5km

Figure 2
Project layout

Kentbruck Green Power Hub

Preliminary Landscape Assessment

GREEN BEAN DESIGN
landscape architects

Legend

- Proposed wind turbine (indicative layout)
- Distance from Project wind turbine
- Portland Nelson road corridor
- Significant Landscape Overlay (SLO1)
- Project site boundary (indicative alignment)
- 2 km view shed
- Township/locality
- Great South West Walk (indicative alignment)
- Landscape feature

0m 5km

Figure 3
Key Landscape Features and Designations

Kentbruck Green Power Hub

Preliminary Landscape Assessment

GREEN BEAN DESIGN
landscape architects

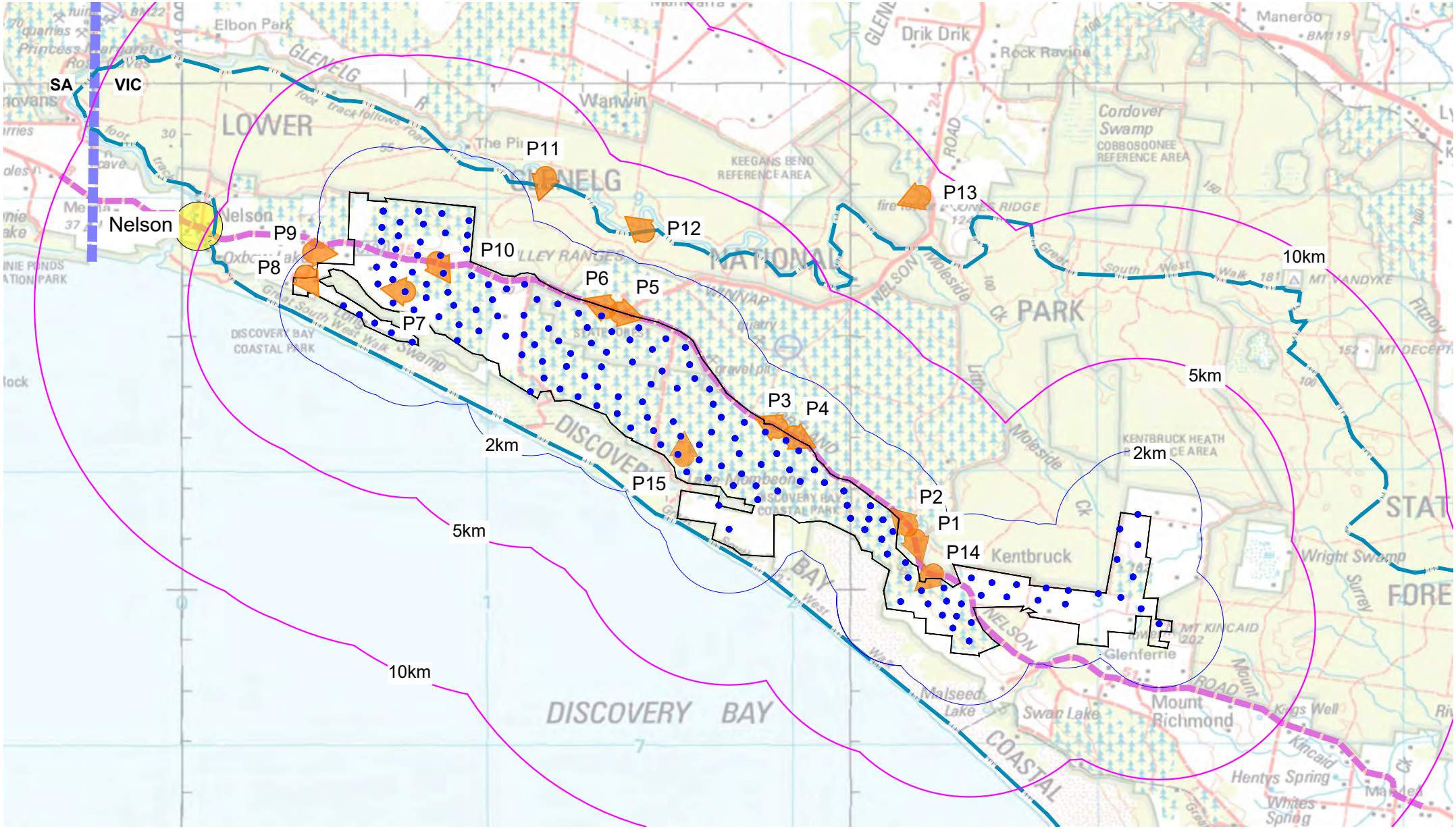
Panoramic photographs and aerial images

Section 4

4.1 Panoramic photographs and aerial images

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

The panoramic and aerial photographs presented in this PLA have been annotated to identify local features within and beyond the Project site. The photograph and aerial image locations are illustrated in **Figure 4** and **Figure 5** and the photographs illustrated in **Figures 6** to **27** and **32** to **33**.



Legend

- Proposed wind turbine (indicative layout)
- 2 km view shed
- Distance from Project wind turbine
- Township/locality
- Portland Nelson road corridor
- Great South West Walk (indicative alignment)
- P13 Ground photo location
- Project site boundary (indicative alignment)

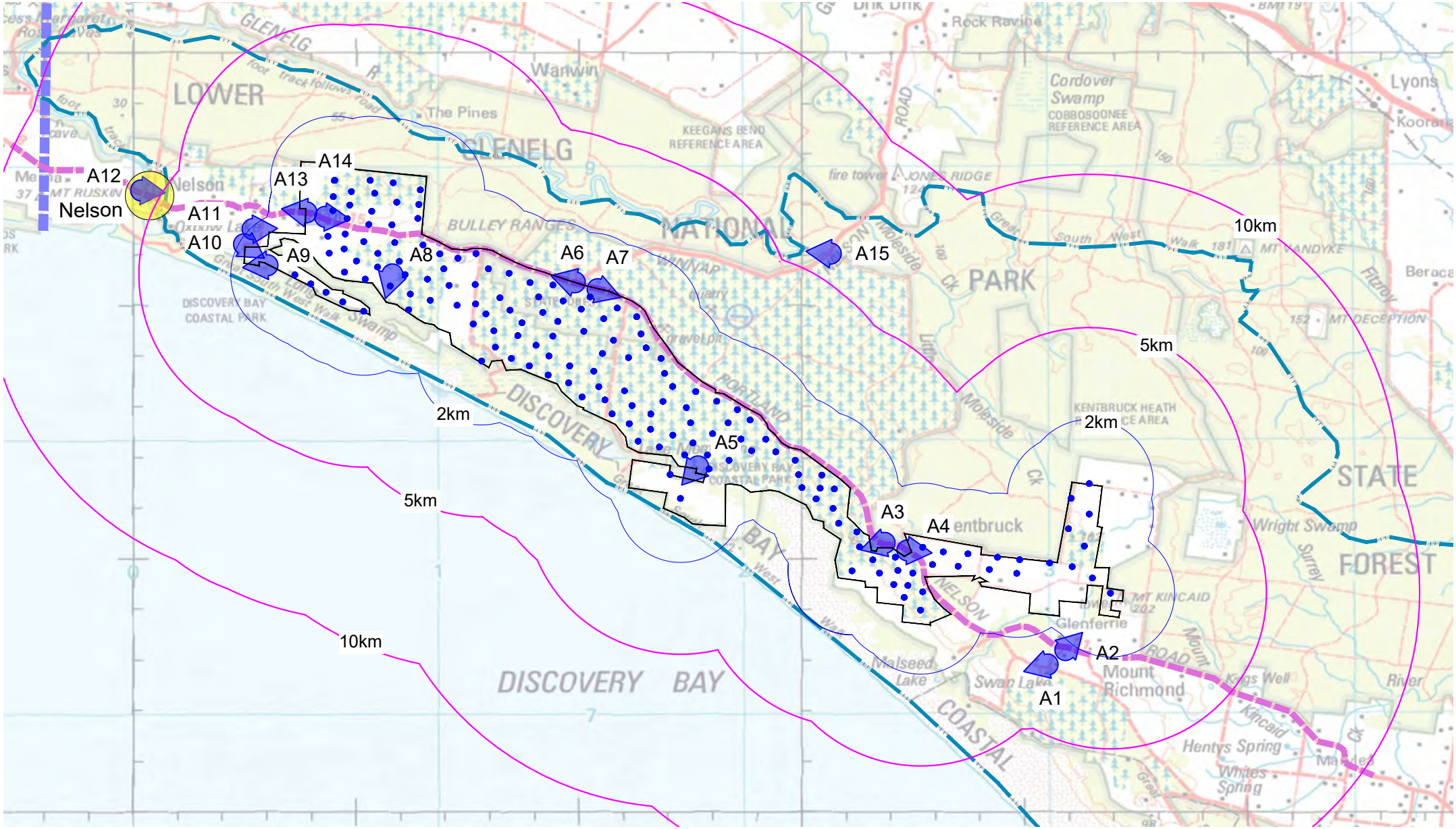
0m 2.5km

Figure 4
Ground photo locations

Kentbruck Green Power Hub

Preliminary Landscape Assessment

GREEN BEAN DESIGN
landscape architects



Legend

- Proposed wind turbine (indicative layout)
- 2 km view shed
- Distance from Project wind turbine
- Township/locality
- Portland Nelson road corridor
- Great South West Walk (indicative alignment)
- A5 Aerial photo location
- Project site boundary (indicative alignment)

0m 2.5km

Figure 5
Aerial photo locations

Kentbruck Green Power Hub

Preliminary Landscape Assessment

GREEN BEAN DESIGN
landscape architects

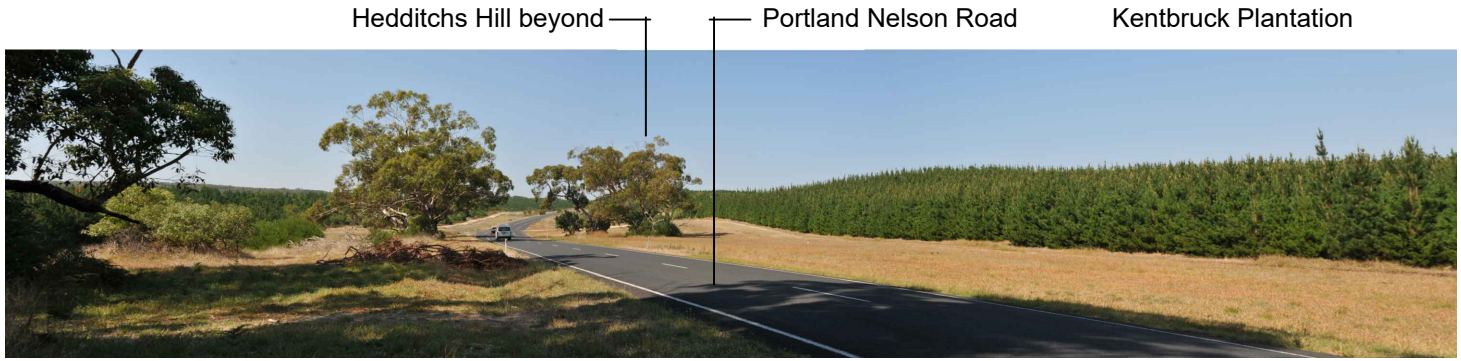


Photo Location P1- View south to south east from the Portland Nelson Road

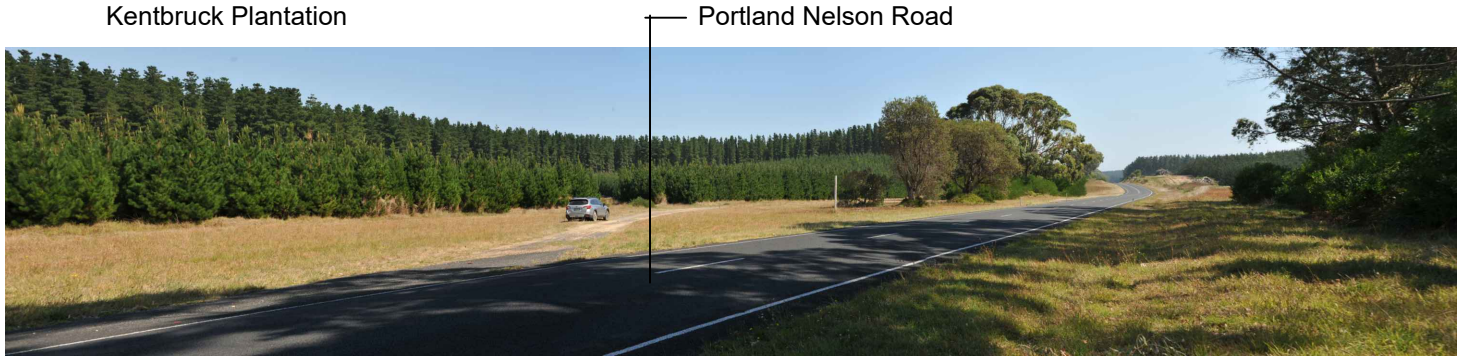


Photo Location P2- View west to north west from the Portland Nelson Road

Photo Location P3- View west from the Portland Nelson Road

Figure 6 Photo sheet 1

Photo Location P4- View north west from the Portland Nelson Road

Photo Location P5- View east to south east from the Portland Nelson Road

Photo Location P6- View west to north west from the Portland Nelson Road

Figure 7 Photo sheet 2

Vegetated/pastoral sand dunes south of Portland Nelson Road

Photo Location P7- View west from Johnsons Road

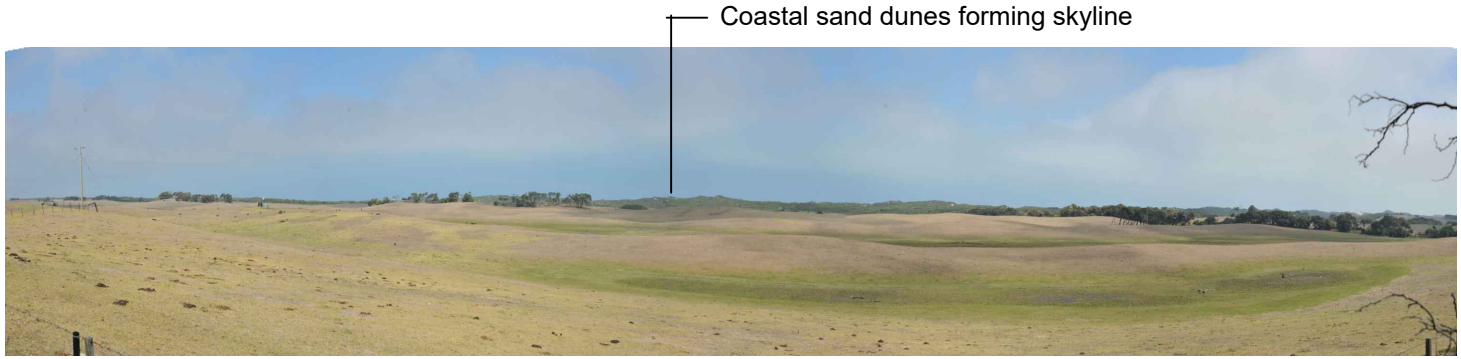


Photo Location P8- View south east from Millhouse Road

Photo Location P9- View east to south east from Millhouse Road

Figure 8 Photo sheet 3

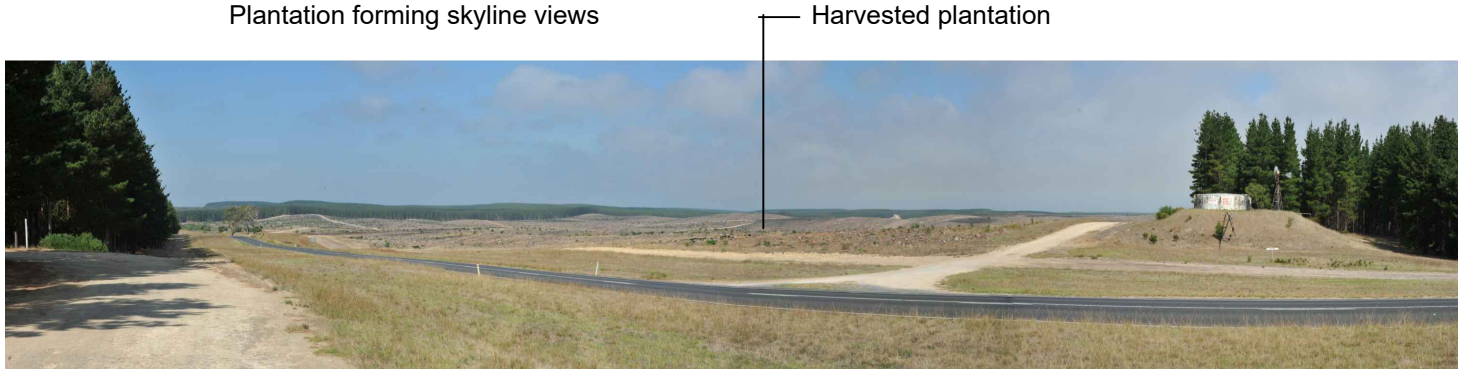


Photo Location P10- View south east from truck stop on Portland Nelson Road

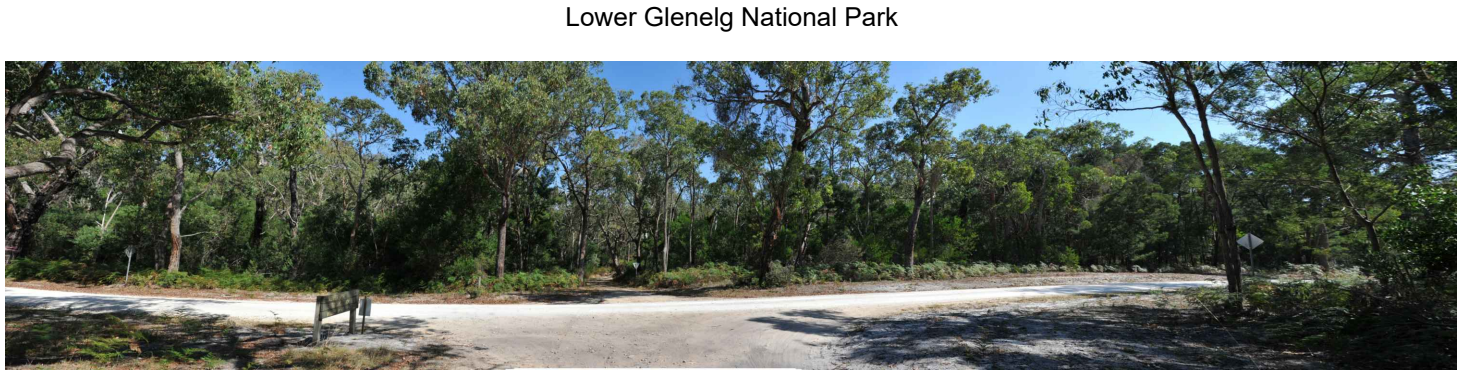


Photo Location P11- View south toward the River Road (Lower Glenelg National Park)

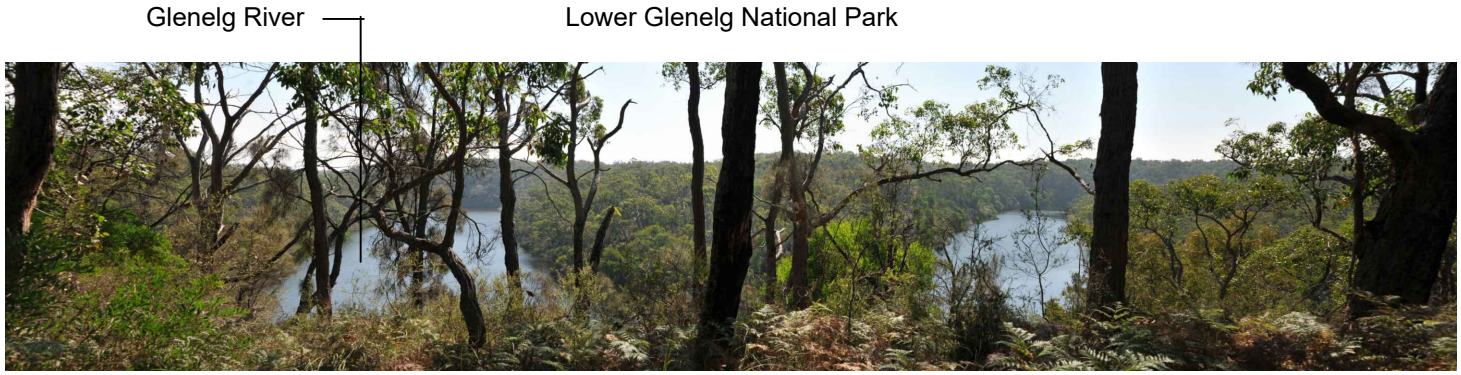


Photo Location P12- View north from River Road (Lower Glenelg National Park)

Figure 9 Photo sheet 4

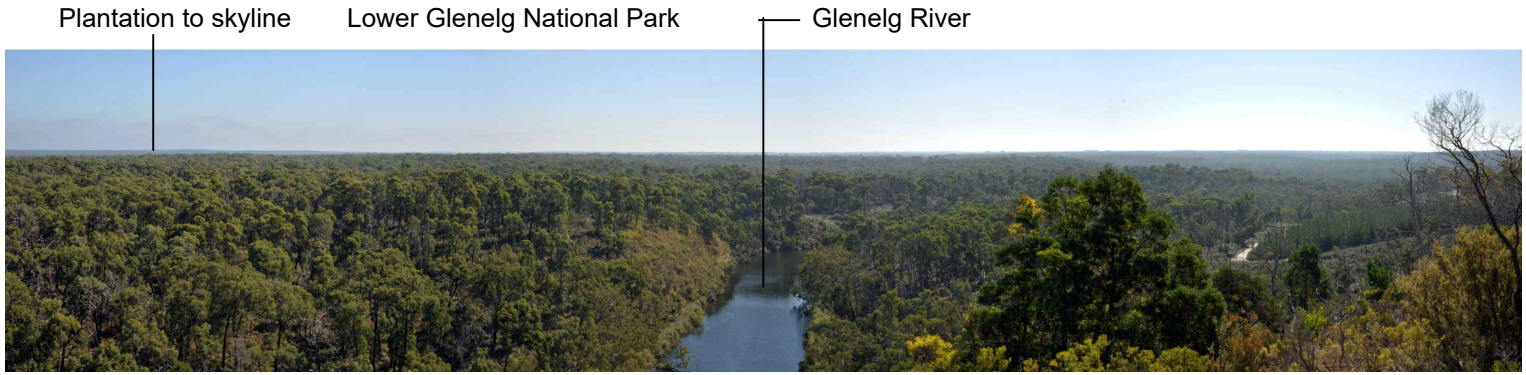


Photo Location P13- View west to south west from Jones Lookout

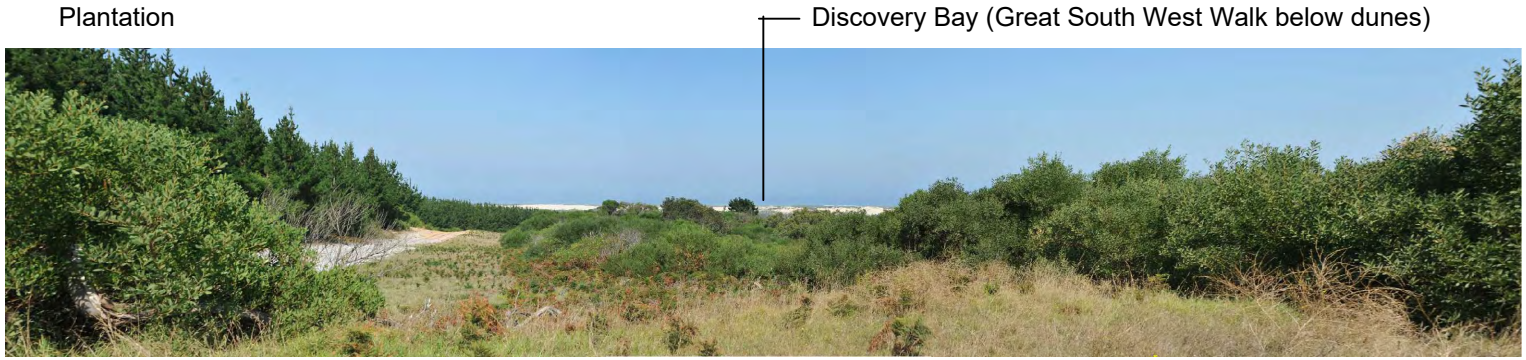
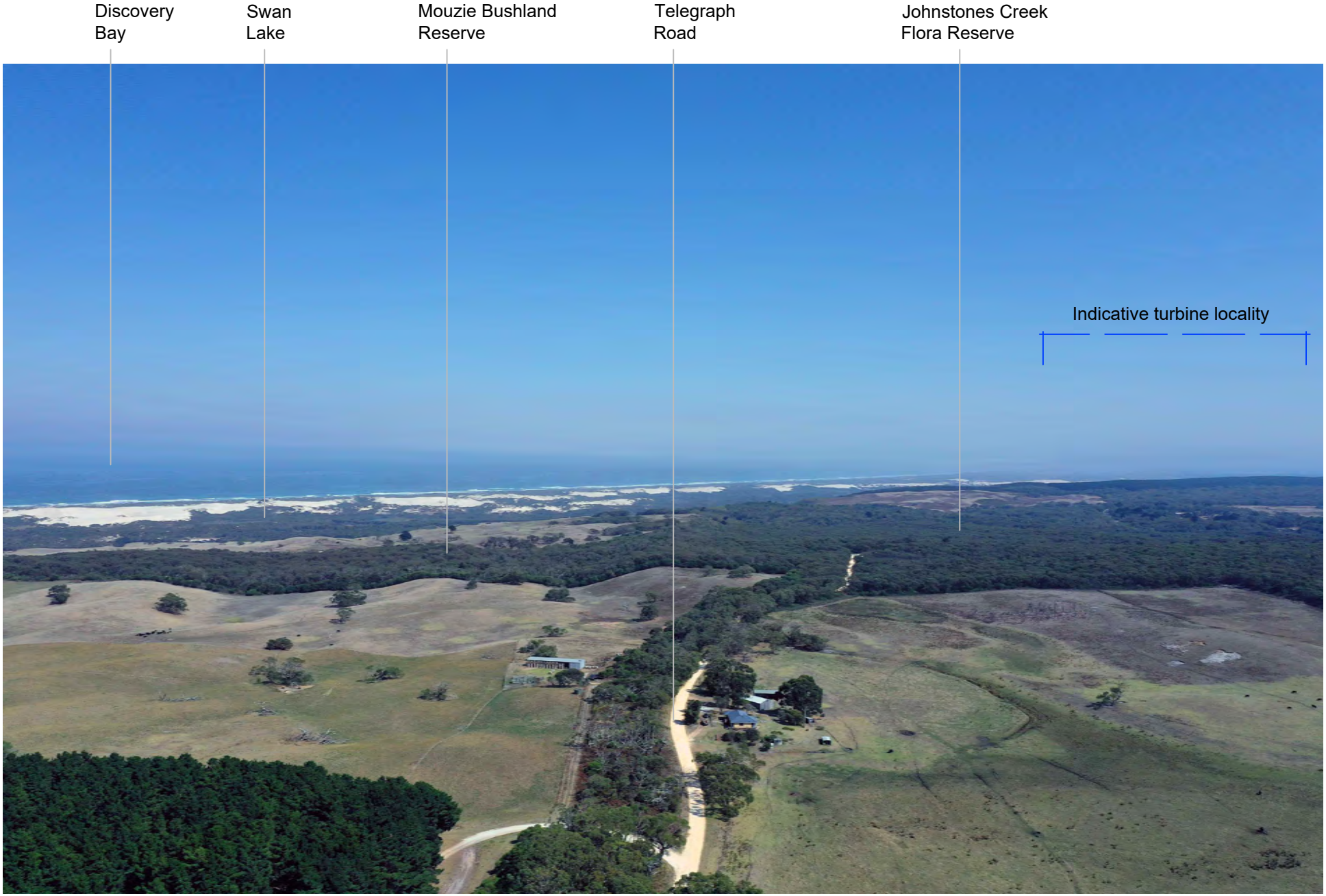


Photo Location P14- View south to south west from Hedditch Hill Scenic Reserve

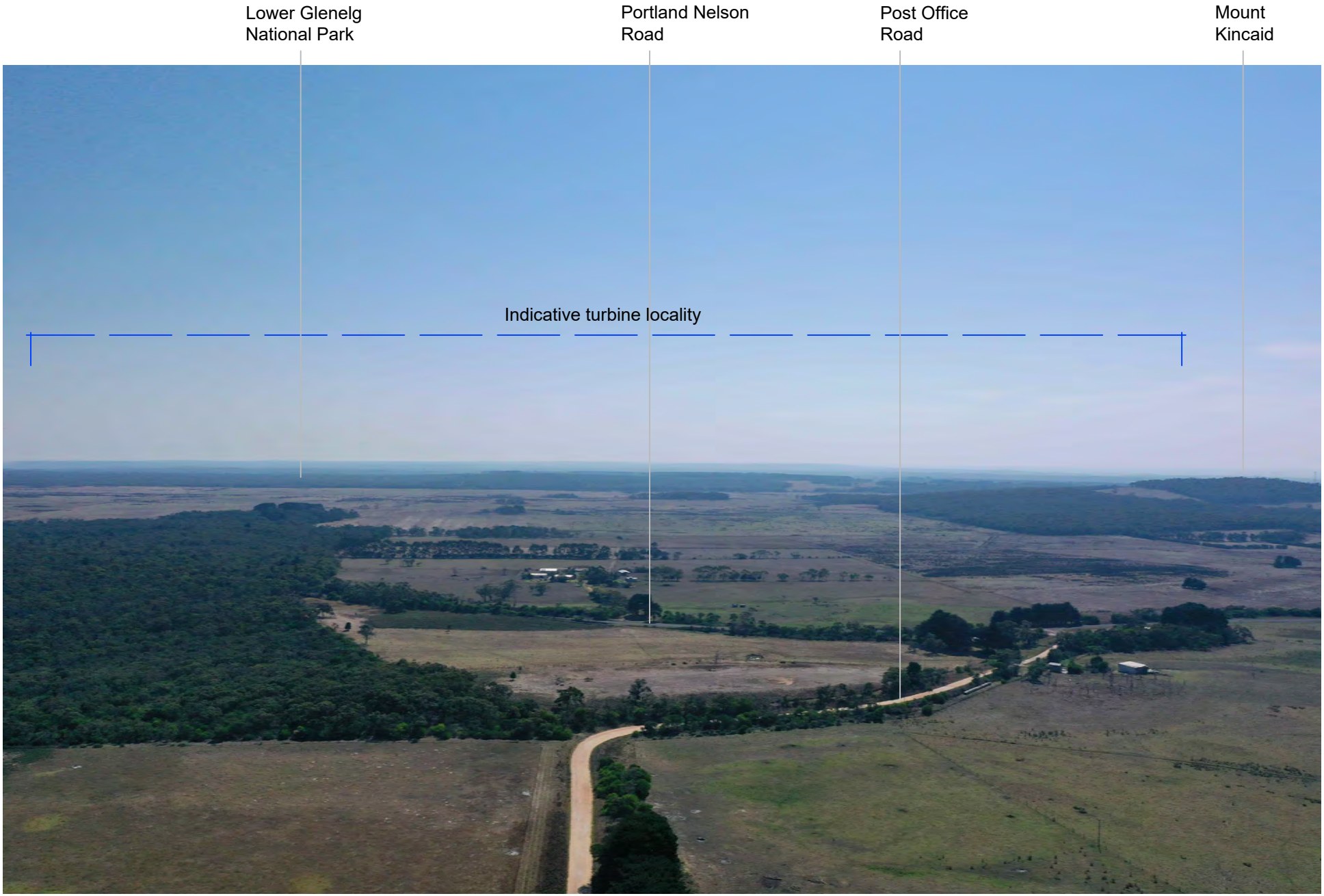
Photo Location P15- View north along Dry Block Road within Kentbruck Plantation

Figure 10 Photo sheet 5



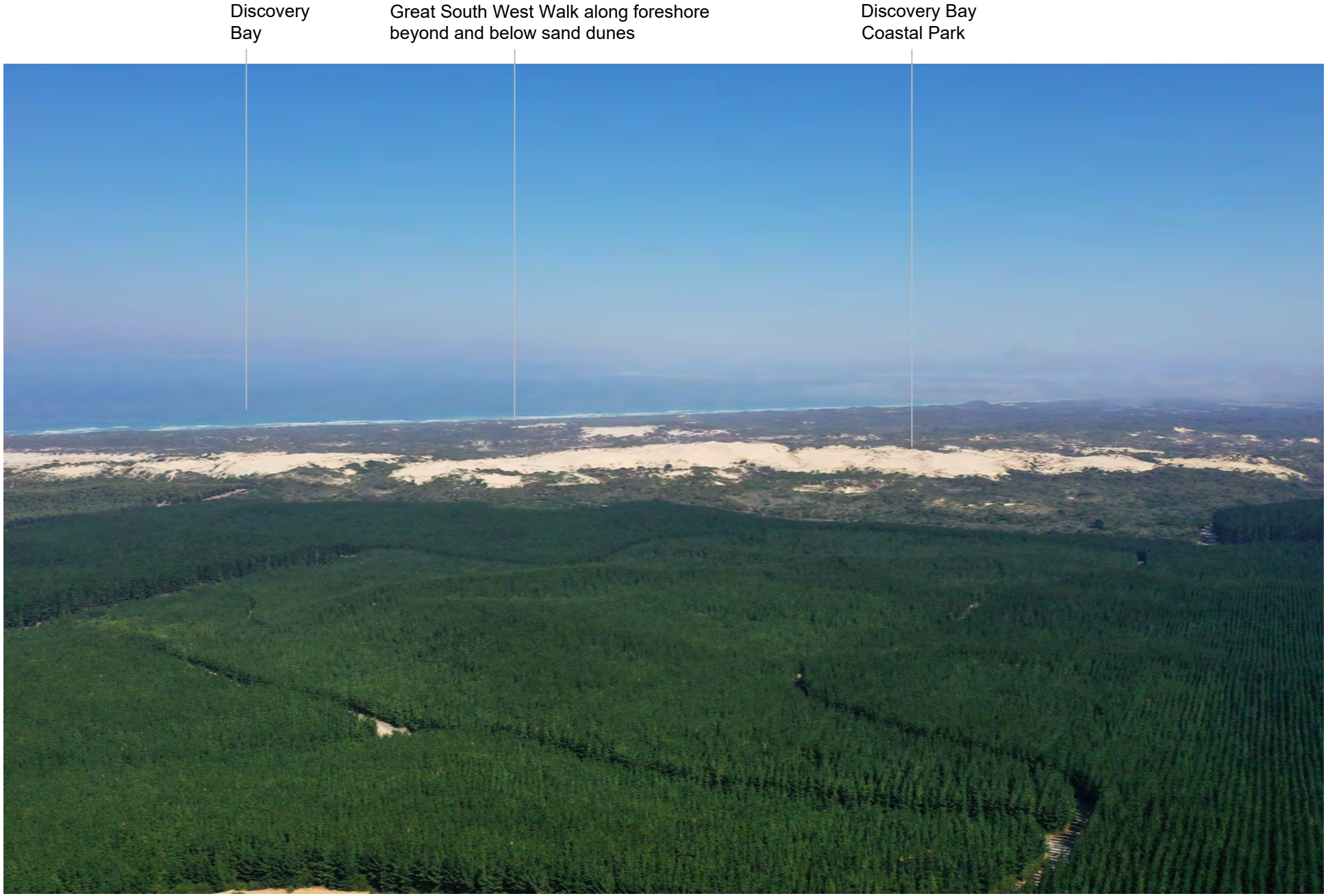
Aerial Photo Location A1- View south to south west above Post Office Road

Figure 11 Aerial photo sheet 6



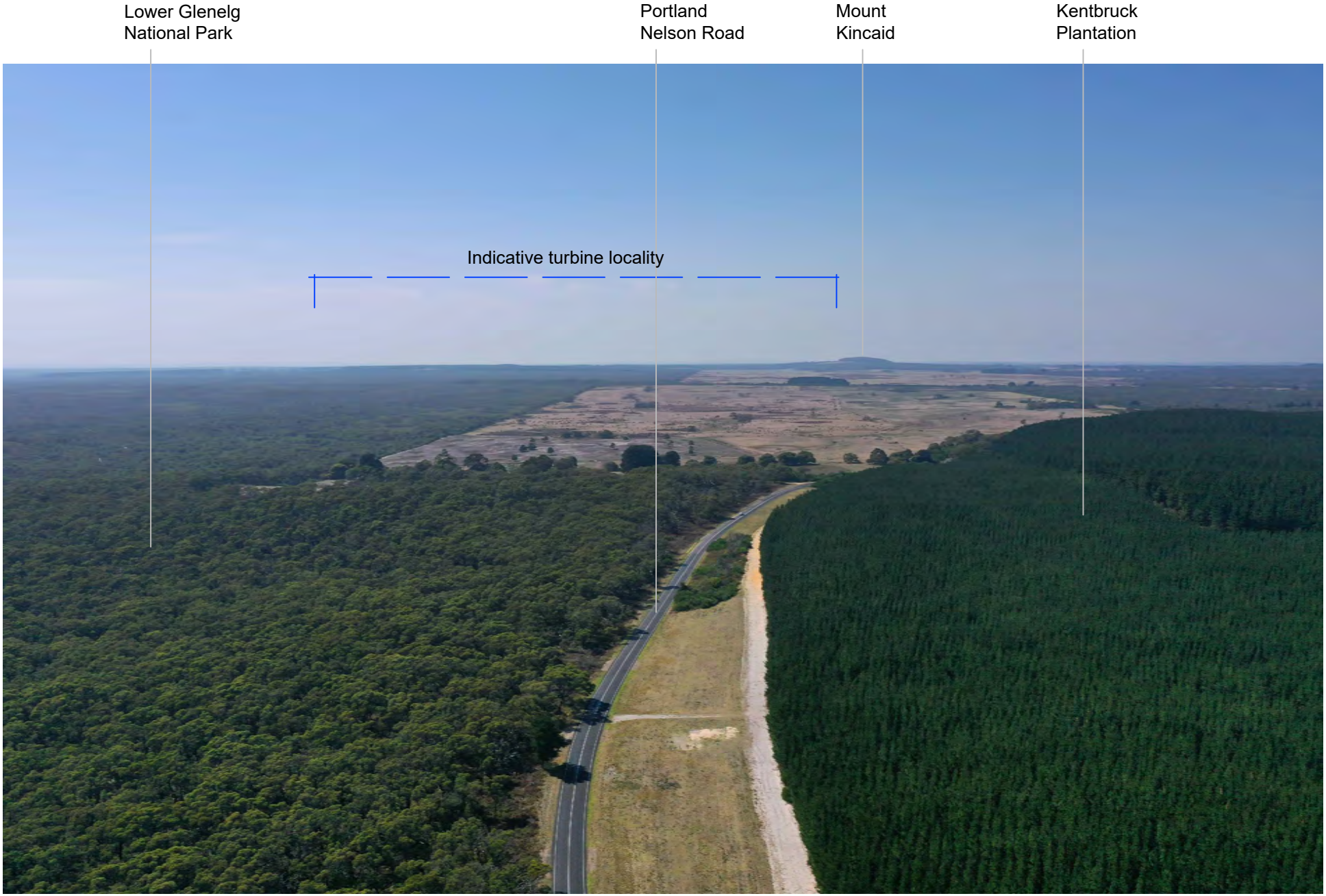
Aerial Photo Location A2- View north to north east above Post Office Road

Figure 12 Photo sheet 7



Aerial Photo Location A3- View south west above Portland Nelson Road and Hedditch Hill Scenic Reserve

Figure 13 Photo sheet 8

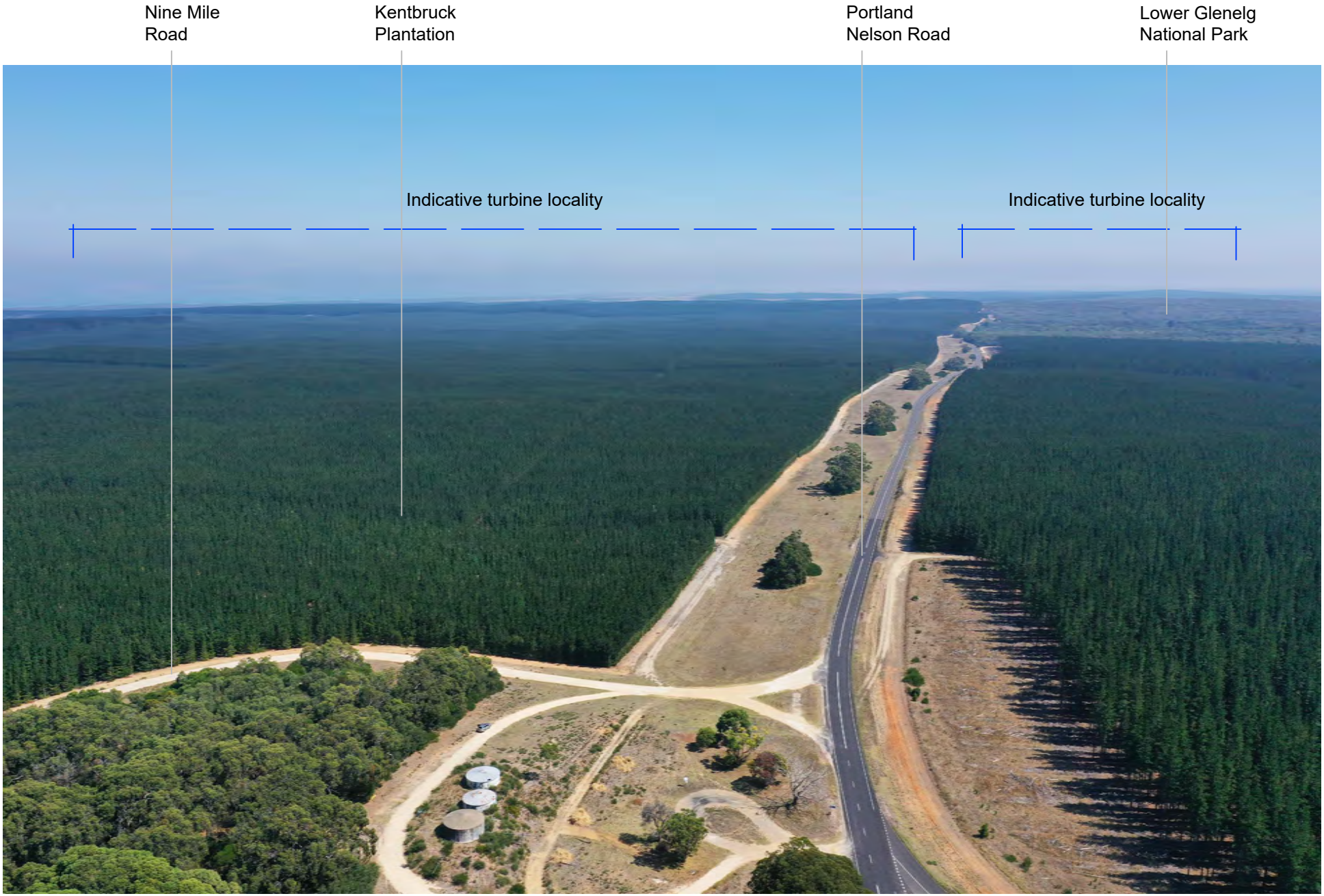


Aerial Photo Location A4- View east above Portland Nelson Road and Hedditch Hill Scenic Reserve

Figure 14 Photo sheet 9

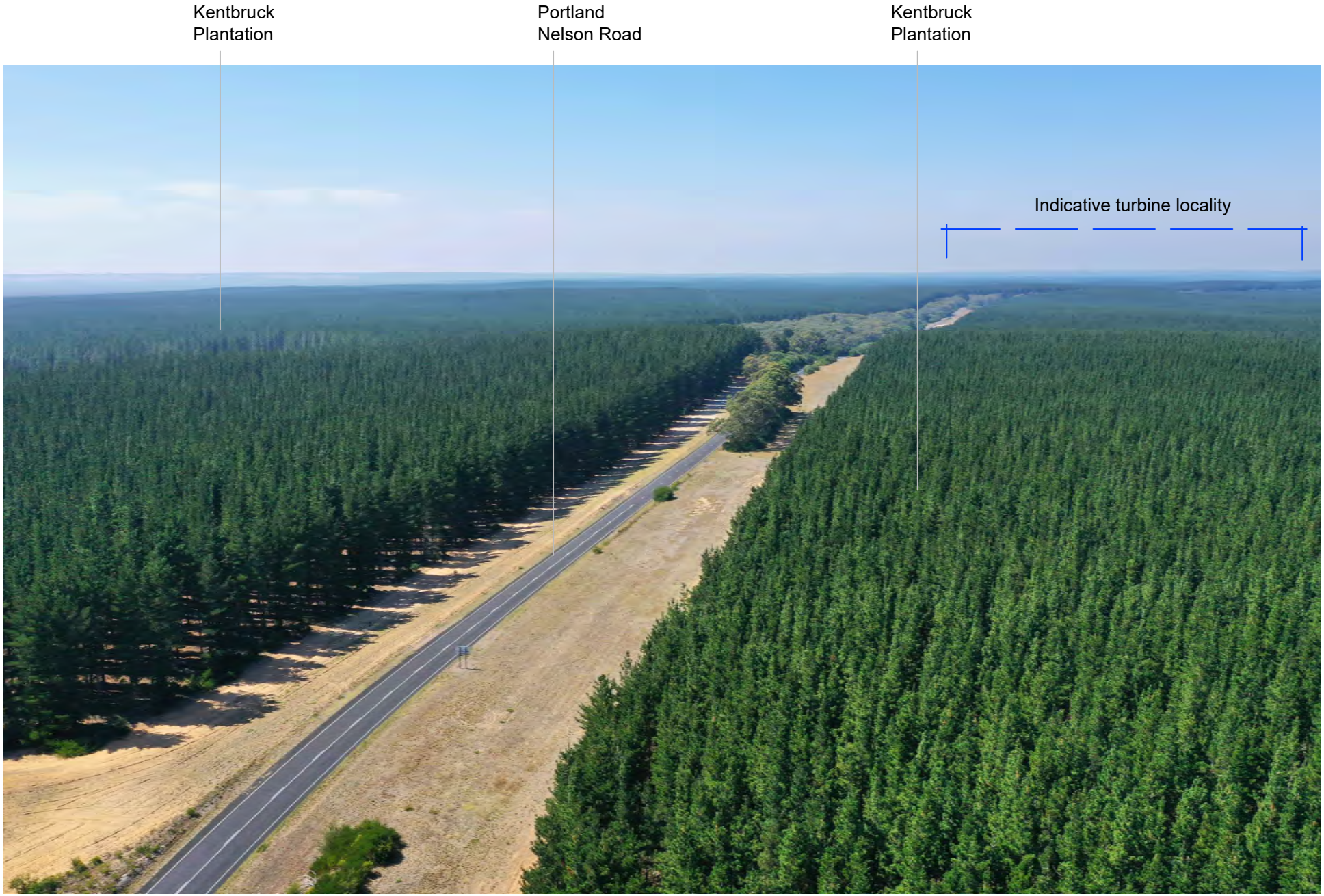
Aerial Photo Location A5- View south from above Dry Block Road toward Discovery Bay

Figure 15 Photo sheet 10



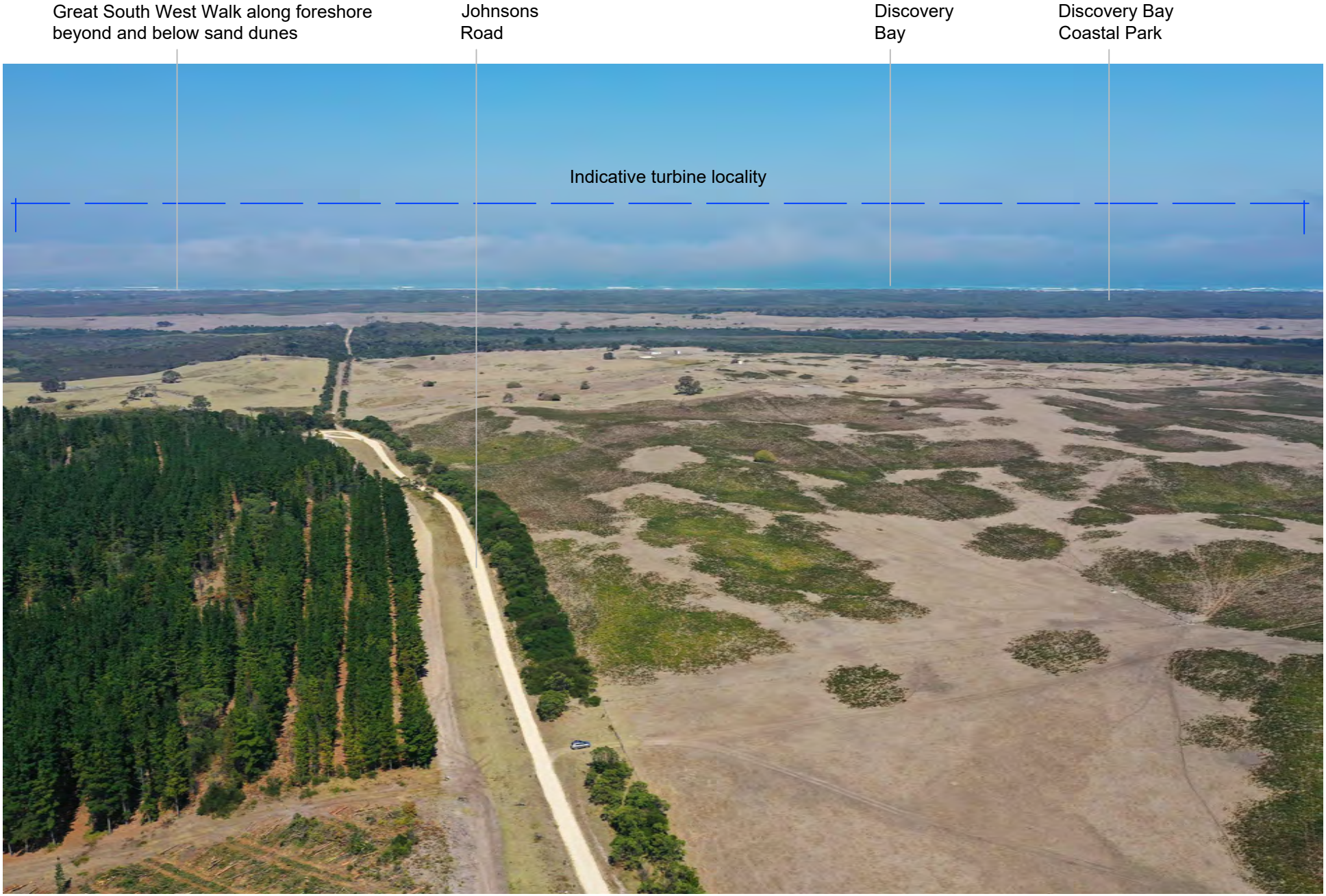
Aerial Photo Location A6- View west from above Portland Nelson Road corriodor

Figure 16 Photo sheet 11



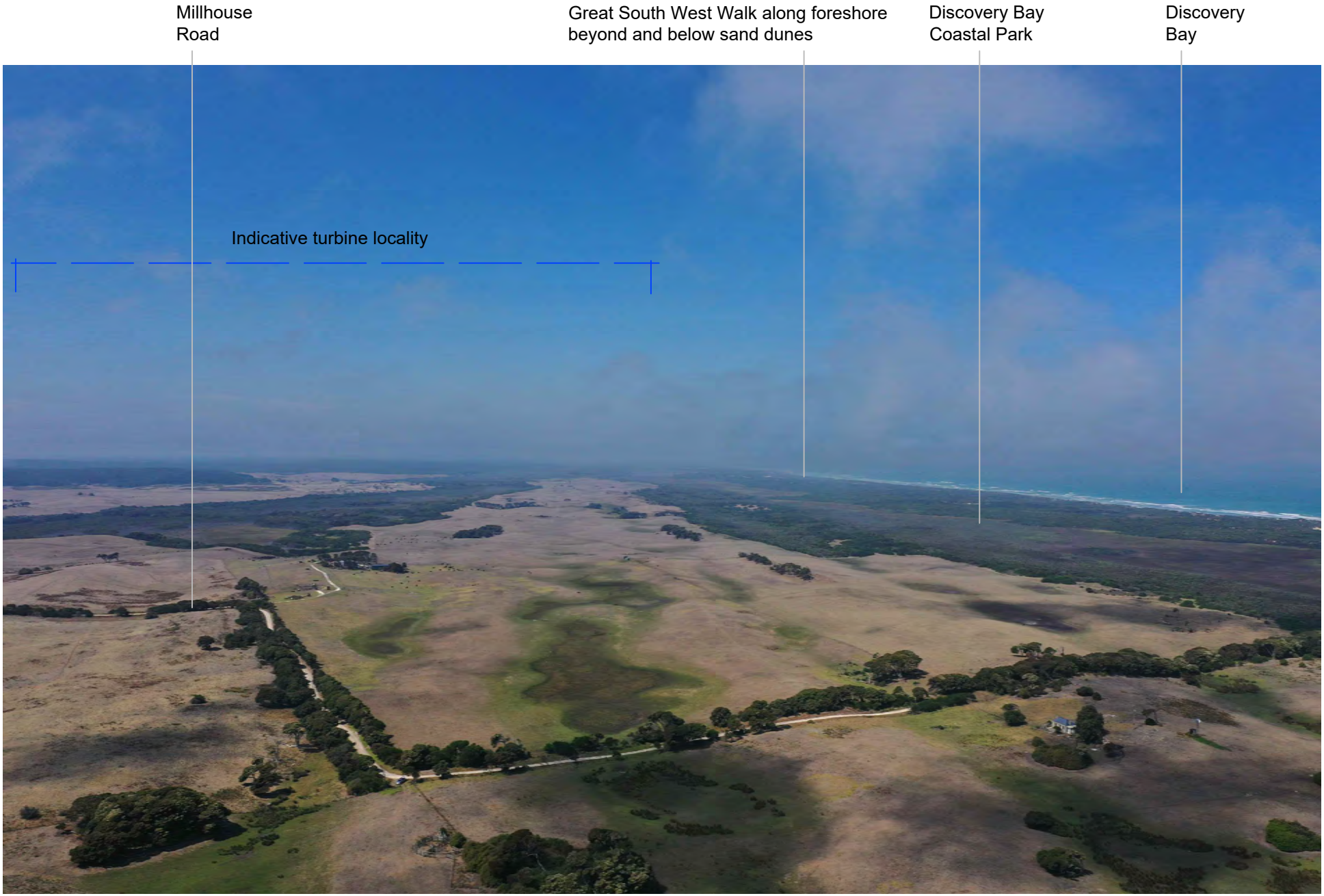
Aerial Photo Location A7- View east from above Portland Nelson Road corriodor

Figure 17 Photo sheet 12



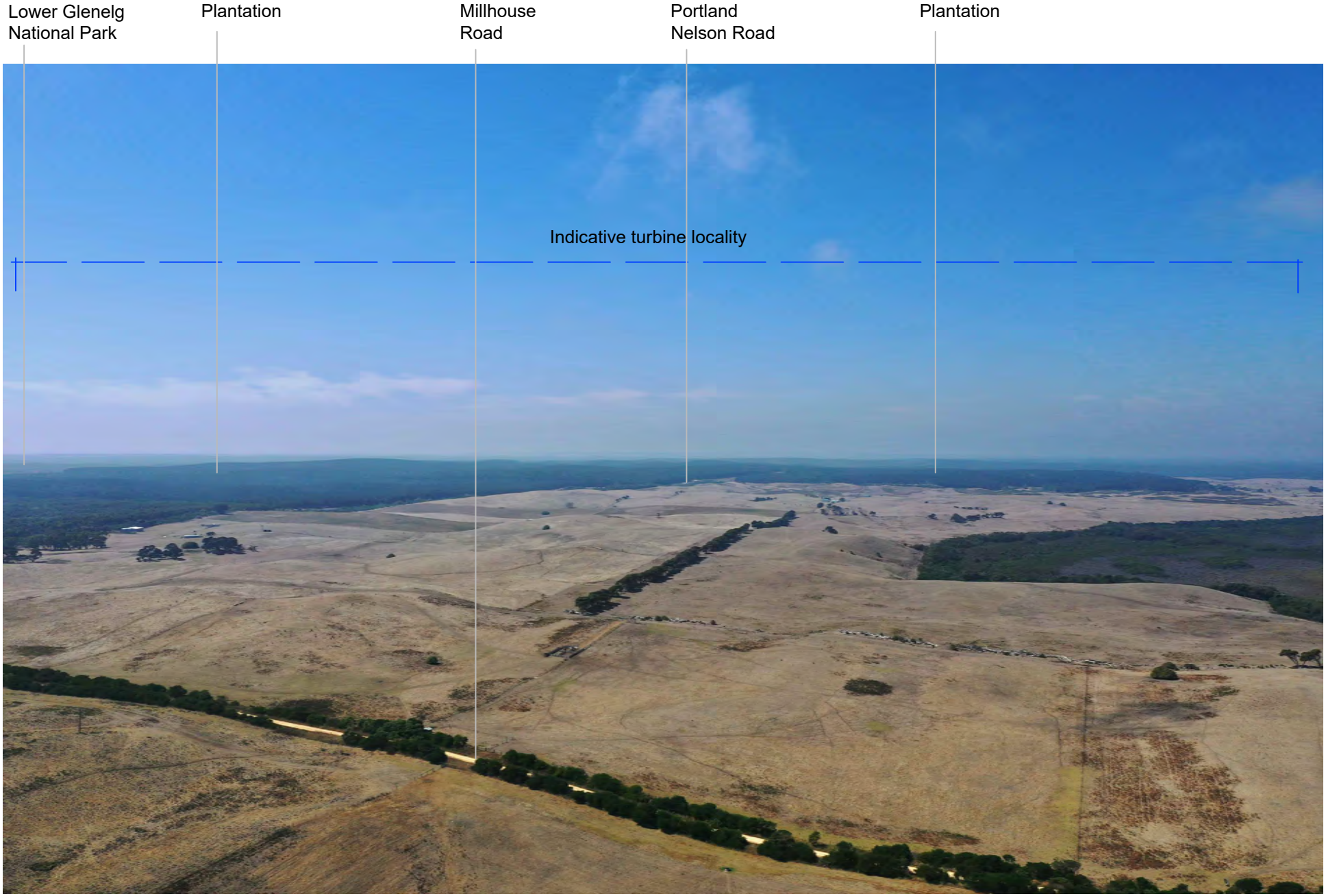
Aerial Photo Location A8- View south from above Johnson's Road corridor

Figure 18 Photo sheet 13



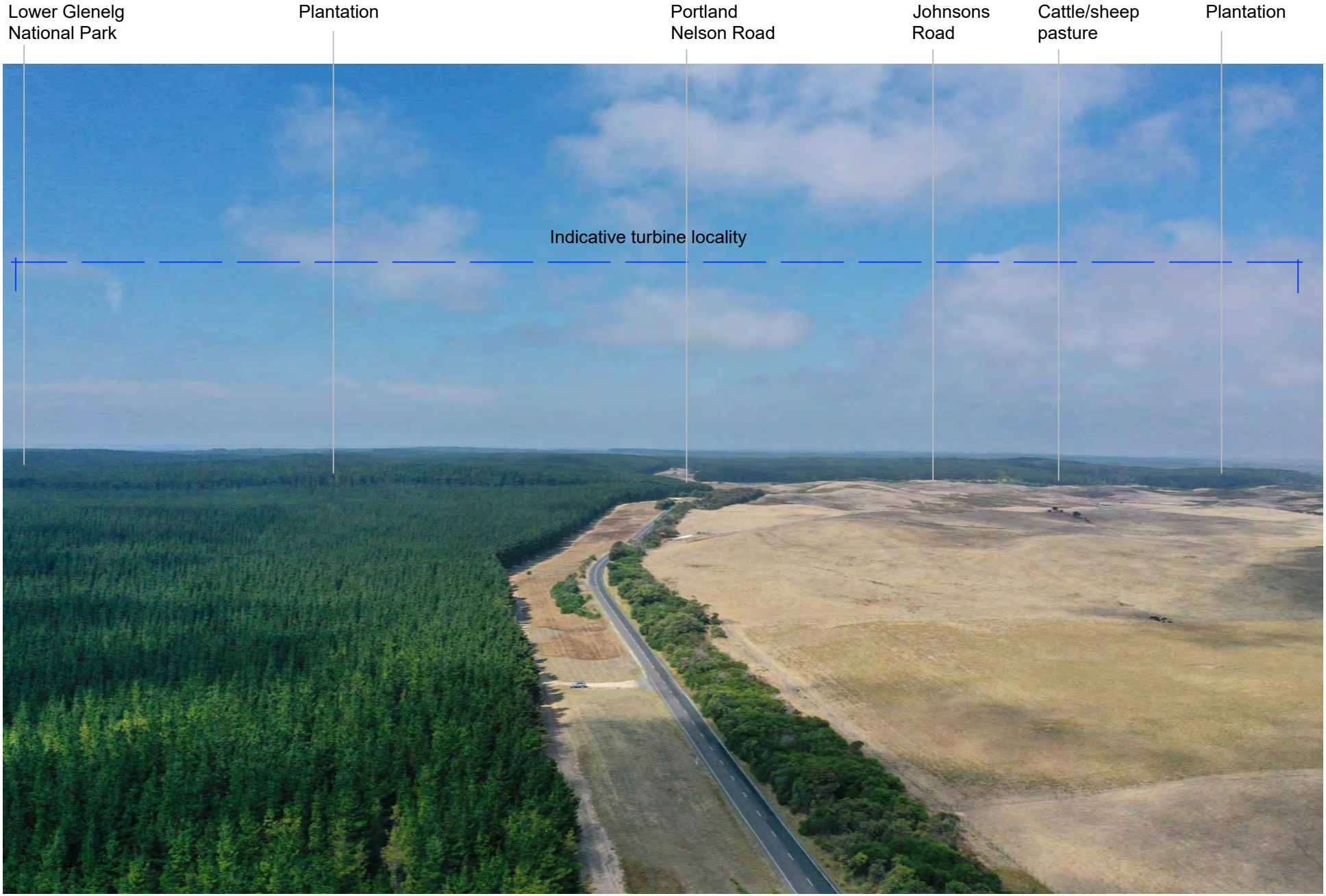
Aerial Photo Location A9- View east to south east from above Millhouse Road

Figure 19 Photo sheet 14



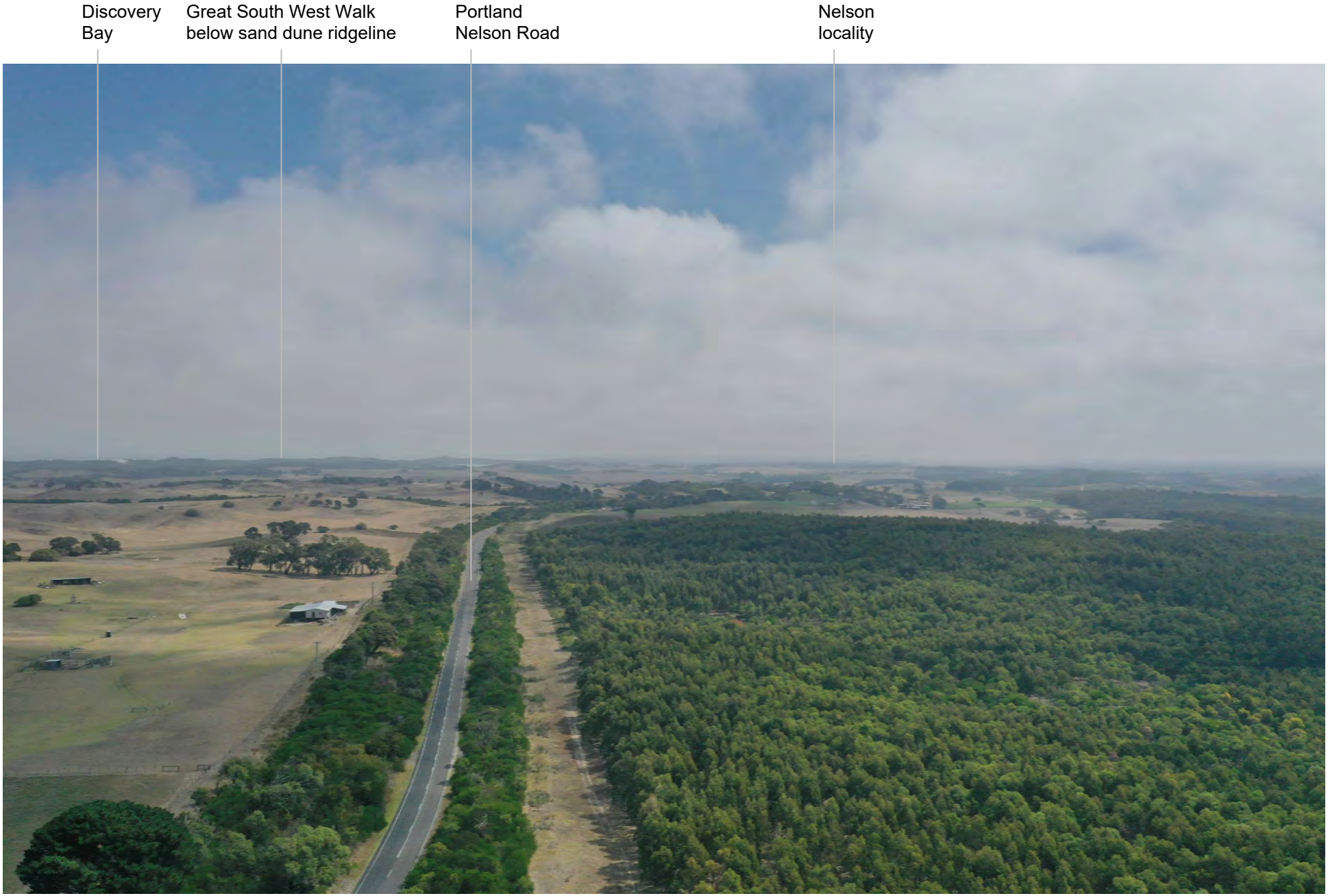
Aerial Photo Location A10- View east to north east from above Millhouse Road

Figure 20 Photo sheet 15



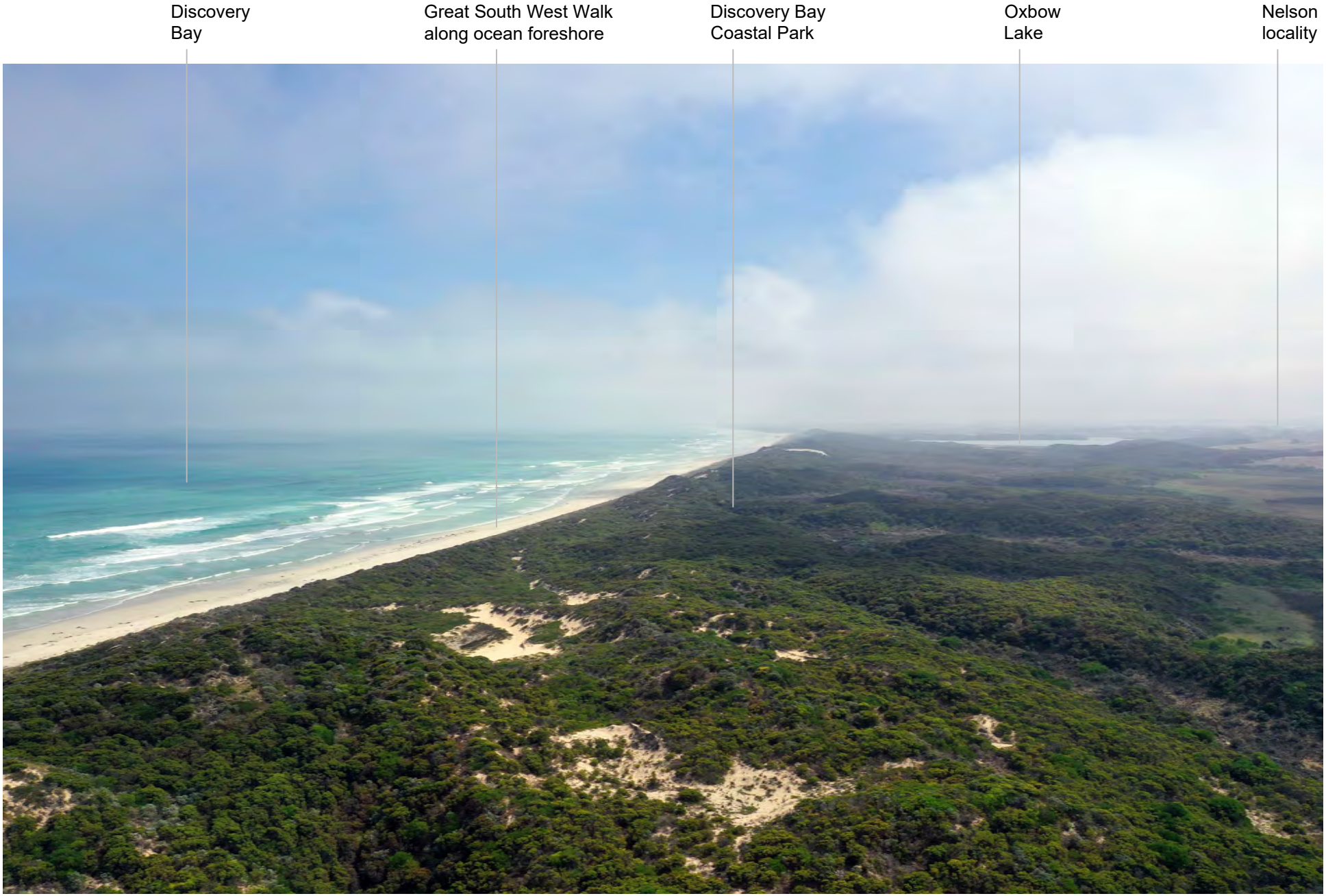
Aerial Photo Location A11- View east to south east from above the Portland Nelson Road

Figure 21 Photo sheet 16



Aerial Photo Location A12- View west from above the Portland Nelson Road

Figure 22 Photo sheet 17

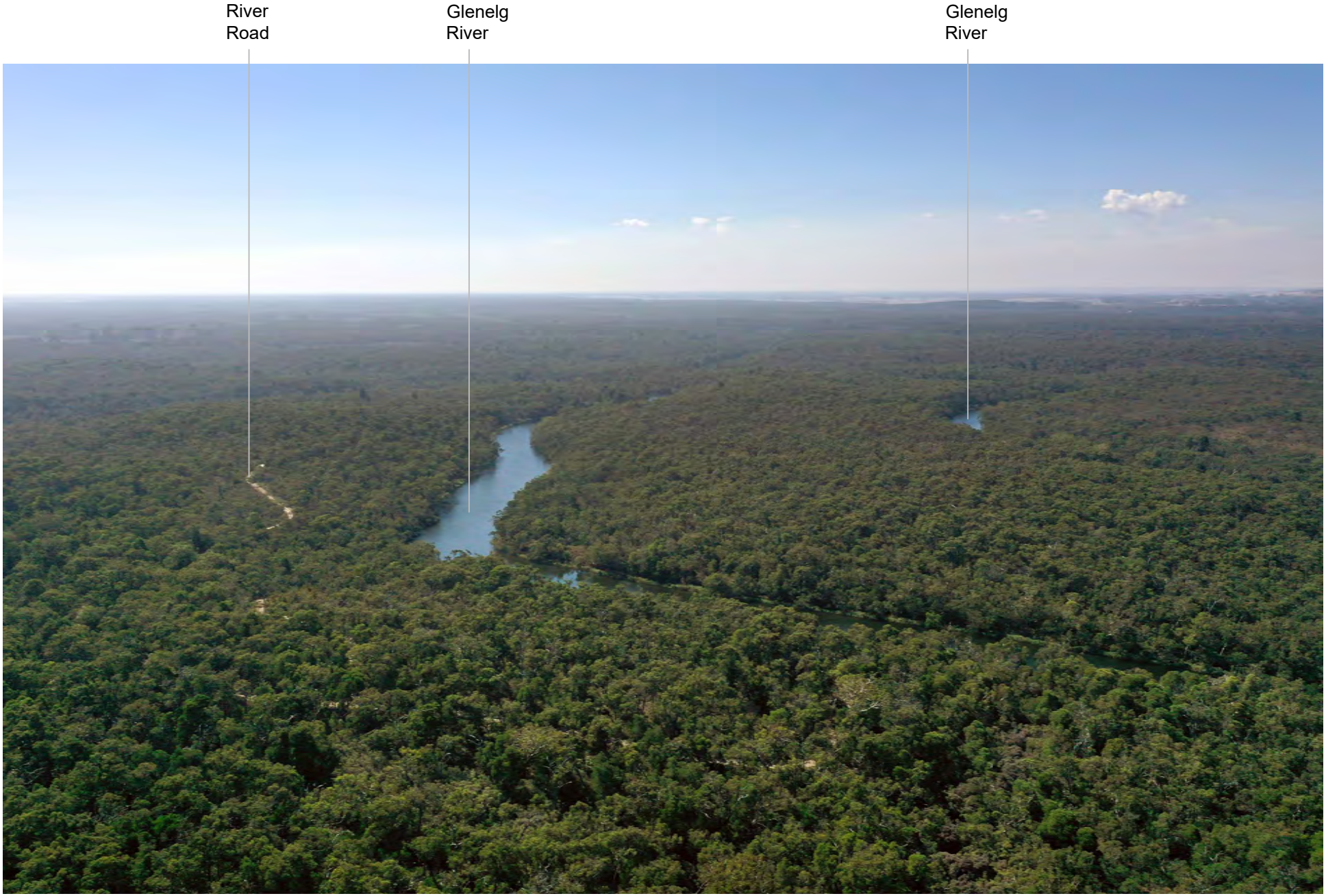


Aerial Photo Location A13- View west toward Discovery Bay and Nelson

Figure 23 Photo sheet 18

Aerial Photo Location A14- View east from above Nelson

Figure 24 Photo sheet 19



Aerial Photo Location A15- View west to north west from Winnap Nelson Road

Figure 25 Photo sheet 20

Landscape character assessment

Section 5

5.1 Landscape character area

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

The landscape within and surrounding the Project site is relatively consistent and recognisable in terms of its key landscape elements and physical attributes; which include a combination of topography/landform, vegetation/landcover, land use and built structures (including settlements and local road corridors).

For the purpose of this PLA, landscape character within and surrounding the wind farm site has been considered as a singular landscape unit; however, this PLA recognises that localised and specific characteristics occurring within the landscape unit, include major landscape features identified in the Glenelg Planning Scheme (Section 21.01-3 Vision and strategic framework plan):

- Glenelg River
- Mount Richmond National Park
- Lower Glenelg National Park

This PLA also considers other key landscape features within and surrounding the Project site to include:

- Discovery Bay and Coastal Park (incorporating the Great South West Walk)
- Kentbruck plantation and
- Various flora and scenic reserves

5.2 Landscape character assessment

Understanding a particular landscape's key characteristics and principle visual features is important in defining regional distinctiveness and sense of place and to determine a region's sensitivity to change. The criteria applied in the determination of landscape character assessment and the ability of a landscape to accommodate change are outlined in **Table 1**. These criteria are based on established industry good practice employed in the assessment of wind farm developments and have been adopted for numerous wind farm assessments across Australia. The criteria are broadly outlined in the National Wind Farm Development Guidelines (Draft v2.4), Section 6.1 Landscape Character Units, and covered in more detail within the Guidelines for Landscape and Visual Impact Assessment, Third Edition, Landscape Institute and Institute of Environmental Management & Assessment, 2013 – Chapter 5 Assessment of landscape effects.

Whilst landscape character assessment is largely based on a systematic description and analysis of landscape characteristics, this PLA acknowledges that some individuals and other members of the local community may place different values on the local landscape.

Table 1 – Criteria for the assessment of landscape character

Landscape Character Assessment Criteria			
Characteristic	Aspects indicating lower sensitivity to the wind farm development	↔	Aspects indicating higher sensitivity to the wind farm development
Landform and scale: patterns, complexity and consistency	• Large scale landform • Simple • Featureless • Absence of strong topographical variety	↔	• Small scale landform • Distinctive and complex • Human scale indicators • Presence of strong topographical variety
Landcover: patterns, complexity and consistency	• Simple • Predictable • Smooth, regular and uniform	↔	• Complex • Unpredictable • Rugged and irregular
Settlement and human influence	• Concentrated settlement pattern • Presence of contemporary structures (e.g. utility, infrastructure or industrial elements)	↔	• Dispersed settlement pattern • Absence of modern development, presence of small scale, historic or vernacular settlement
Movement	• Prominent movement, busy	↔	• No evident movement, still
Rarity	• Common or widely distributed example of landscape character area within a regional context	↔	• Unique or limited example of landscape character area within a regional context
Intervisibility with adjacent landscapes	• Limited views into or out of landscape • Neighbouring landscapes of low sensitivity • Weak connections, self-contained area and views • Simple large-scale backdrops	↔	• Prospects into and out from high ground or open landscape • Neighbouring landscapes of high sensitivity • Contributes to wider landscape • Complex or distinctive backdrops

5.3 Landscape sensitivity

The scale of sensitivity for the landscape character area is described below and considered against each characteristic identified in **Table 1**.

The overall sensitivity for the landscape character area has been determined against the following ratings of Negligible through to High:

High – where key characteristics of the landscape may be impacted by the Project and could result in major and visually dominant alterations to perceived characteristics of the landscape character area, which may not be fully

mitigated by existing landscape elements and features. The degree to which the landscape may accommodate the proposed Project will result in a number of perceived uncharacteristic and significant changes.

Medium – where distinguishable characteristics of the landscape character area may be altered by the proposed Project, although the landscape character area may have the capability to absorb some change. The degree to which the landscape character area may accommodate the proposed Project will potentially result in the introduction of prominent elements to the landscape character area, which may be accommodated to some degree.

Low – where the majority of the landscape character area characteristics are generally robust and will be less affected by the proposed Project. The degree to which the landscape may accommodate the Project will not significantly alter existing landscape character.

Negligible – where the characteristics of the landscape character area will not be impacted or visibly altered by the proposed Project.

5.4 Landscape sensitivity assessment

5.4.1 Landform and scale

Landform within and surrounding the Project site exhibits a range of simple to moderately complex landforms with repeating patterns of topographical forms across timbered and sand dune landscapes. Landscape scale presents as both simple from view locations with moderate to long distance views, to more distinctive along coastal and dune areas, where a greater landform complexity is more evident. The landscape contains examples of human scale indicators, including agricultural structures, dwellings and roads. Whilst there is limited strong topographical variety within or immediately surrounding the Project site, the remnant and mobile dune system provides a moderately undulating landform.

5.4.2 Landcover

Landcover is both simple and predictable across the Project site and surrounding areas, where defined by pine plantation and native tree cover within National Parks. Areas of plantation are also dynamic and subject to change through harvesting. European settlement established an agricultural presence which defines contemporary arable and livestock areas beyond the Project site. Cropping and pastoral fields create a regular and uniform appearance. Landcover increases in complexity across the Discovery Bay Coastal Park becoming irregular across dunes and water bodies.

5.4.3 Settlement and human influence

Low density rural settlement is generally dispersed east and west of the Project site, consisting largely of small-scale farmsteads and individual rural dwellings. There are limited examples of small scale, historic or vernacular structures within the Project site and immediate surrounding landscape. The Nelson township is situated around five kilometres to the west of the Project site, either side of the Glenelg River.

5.4.4 Movement

Movement proximate to the Project site is generally restricted to local vehicular movements, including cars and trucks travelling along the Portland Nelson Road, with occasional agricultural vehicles operating on local farms. There are periods of increased and intense activities associated with timber harvesting and transport.

5.4.5 Rarity

The Project site is considered to be a relatively common landscape type (pine plantation) within a regional context extending across South West Victoria. Some areas of the landscape beyond the Project site display characteristics which are considered to be more limited examples of coastal landscape types, including the combination of sandy beaches, dunes and coastal lakes.

5.4.6 Intervisibility

Areas within the Project site generally offer limited views into or out of the landscape where plantation trees restrict views, including those along the Portland-Nelson Road corridor. Landscapes neighbouring the Project site include higher levels of sensitivity which contribute to the broader landscape. Backdrops to more extensive views, for example those gained from Jones Lookout (off the Winnap-Nelson Road) are formed by tree cover across the Lower Glenelg National Park and plantations.

5.4.7 Overall Sensitivity

With regard to existing landscape characteristics, the landscape within and surrounding the Project site is considered to have an overall medium to high sensitivity to the Project.

Some aspects of landscape character within the Project site, as well as landscape character associated with the broader landscape (including tree cover within surrounding National Parks), is considered to display some characteristics associated with medium levels of sensitivity. However, some aspects of landscape character beyond the Project site (including the coastal fringe and foreshore areas) will be more affected by the Project which may result in visually dominant alterations to characteristics with a higher sensitivity.

Zone of Visual Influence and Visibility

Section 6

6.1 Zone of Visual Influence (ZVI)

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

6.2 ZVI Methodology

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

Calculations have been made to determine the visibility of the wind turbines from:

- blade tips (essentially a view toward any part of the wind turbine rotor, including views toward the tips)
- hub height (view between the nacelle and tip of blade) and
- the whole wind turbine structure (a view from base of tower to tip of blade).

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

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

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

A diagram illustrating the tip of blade, rotor face and whole turbine visibility is illustrated in **Figure 26** and the ZVI diagrams are shown in **Figures 27**, **28** and **29**.

The tip of blade, rotor face and whole turbine ZVI diagrams illustrate similar areas of potential visibility and highlight the extent and influence of landform surrounding the Project site.

6.3 Visibility

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

- Distance between view location and wind turbine

- Directional movement (travelling toward or away from wind turbines)
- Relative position and backdrops
- Climatic and atmospheric conditions

6.4 Distance

With an increase in distance the proportion of a person's horizontal and vertical view cone occupied by a visible turbine structure, or group of turbine structures, would decline. **Figure 30** illustrates the effect increasing view distance on the scale and visibility of wind turbines.

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

6.5 Movement

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

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

6.6 Relative position

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

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

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

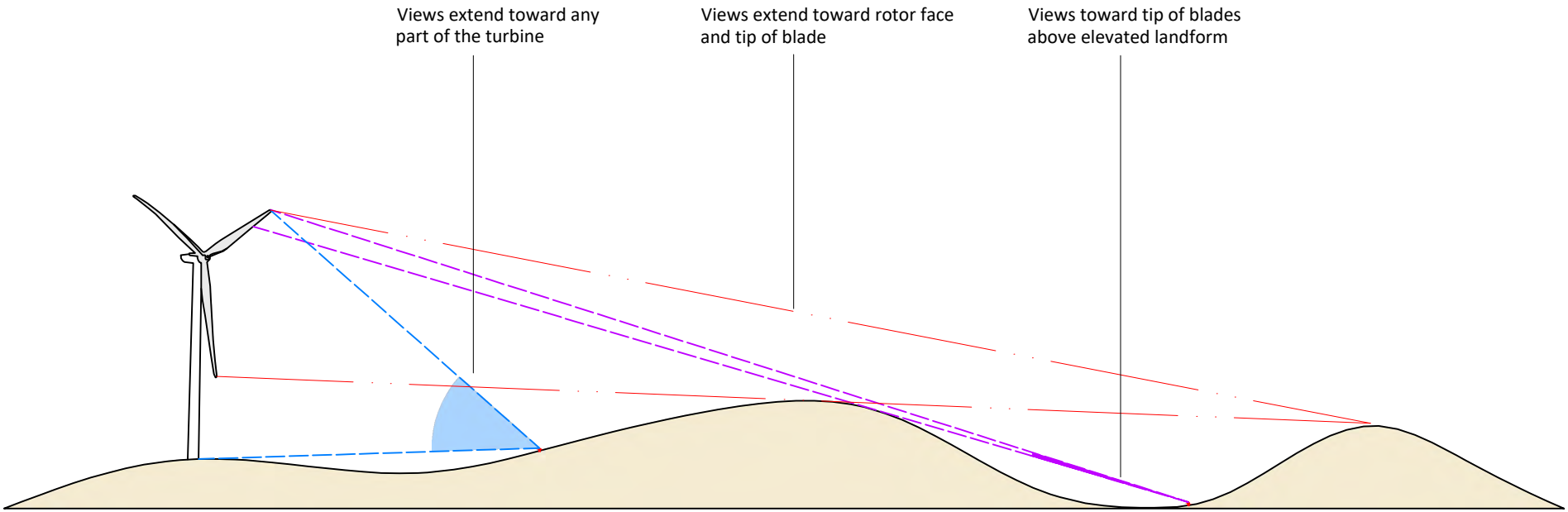
6.7 Climatic and Atmospheric Conditions

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

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

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

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



'Tip of blade'

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

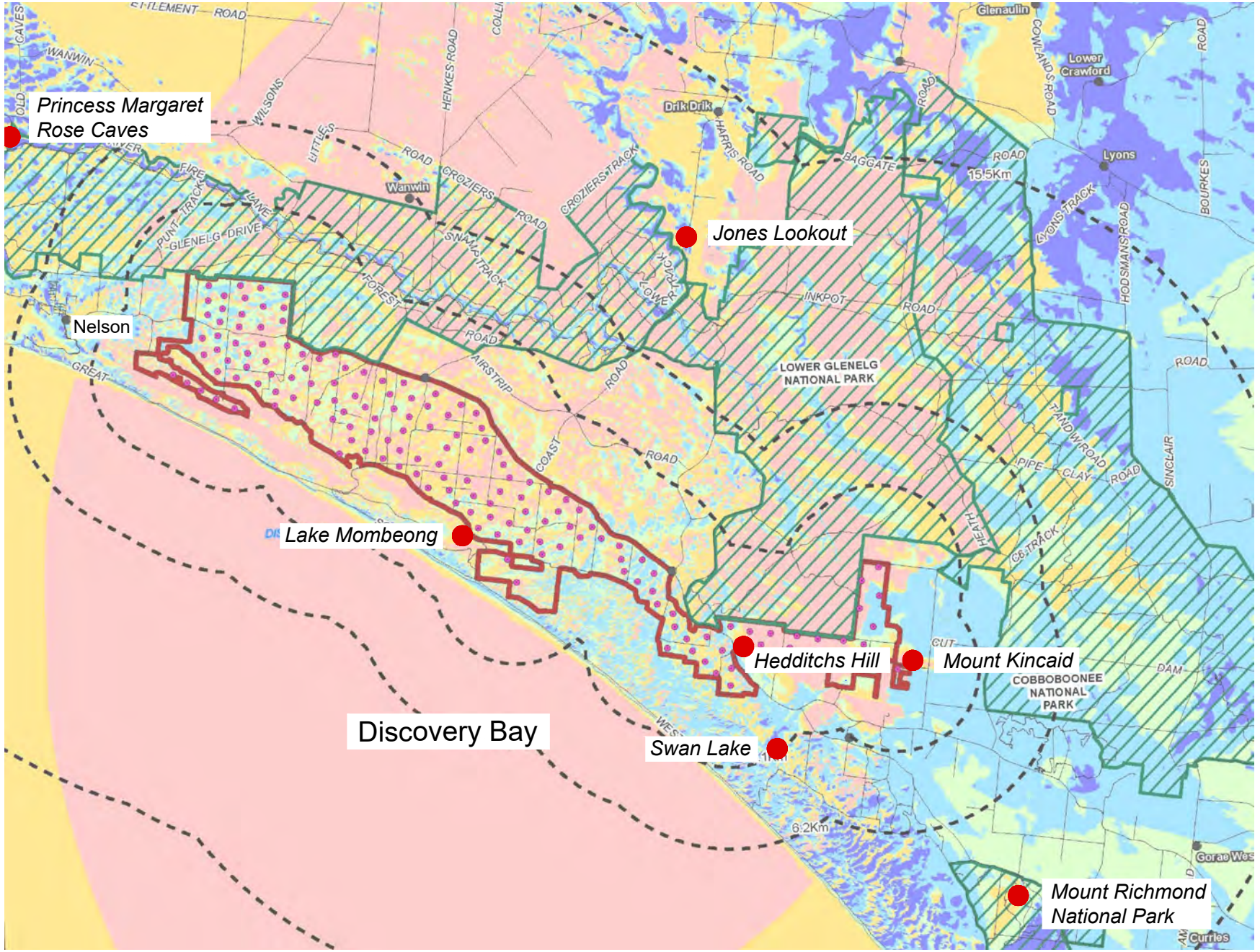
'Rotor face'

View toward 'rotor face' - where views extend toward the wind turbine rotor blades swept path.

'Whole turbine'

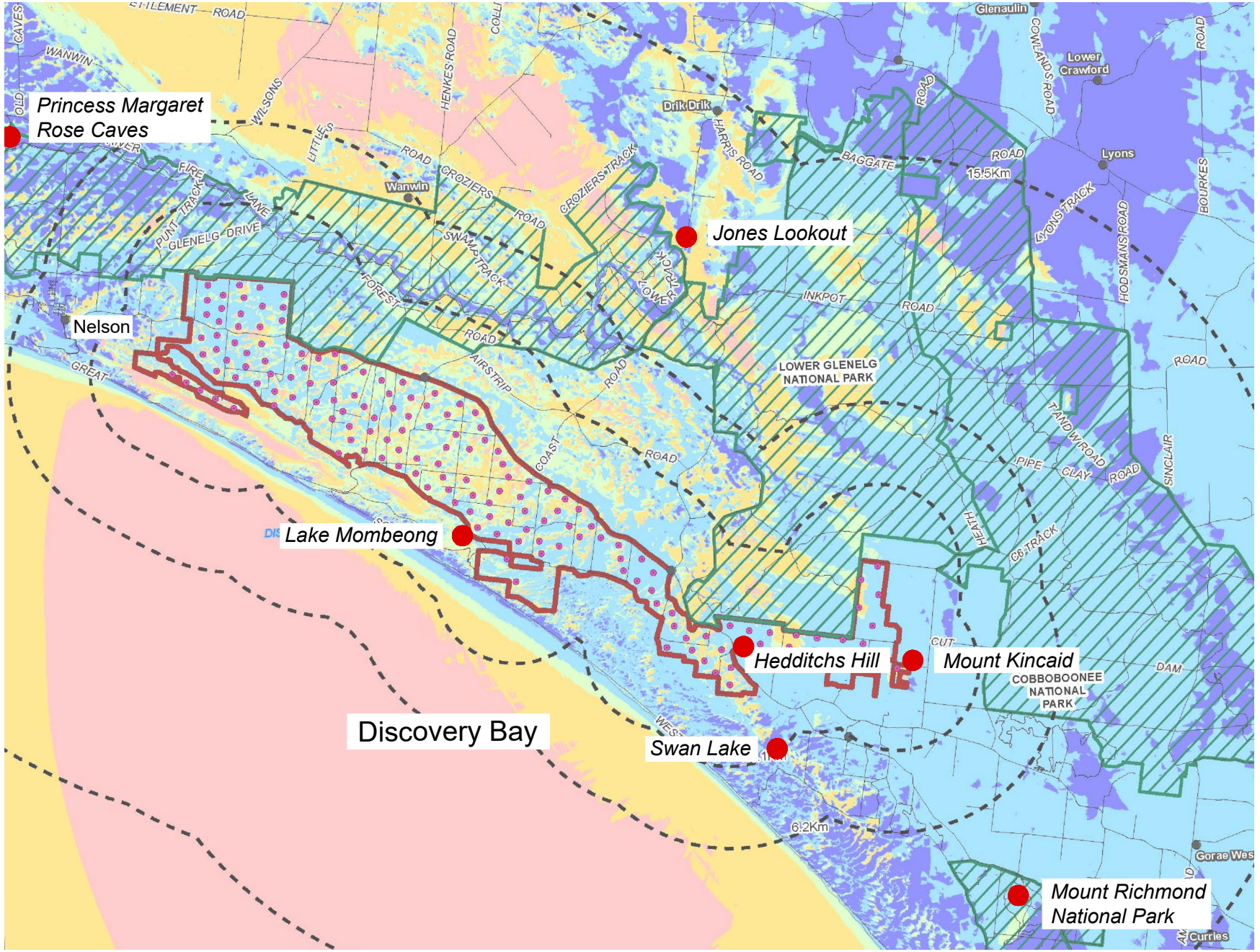
View toward 'whole turbine' - where views extend toward the wind turbine from base of tower to tip of blade.

Figure 26
ZVI visibility



ZVI prepared and supplied by AECOM May 2019

Figure 27
ZVI Tip of blade



Legend

- Vewshed Zones
- Indicative wind farm site boundary
- Wind Turbine
- Town
- Roads
- National Park

Number of Turbines Visible

VALUE

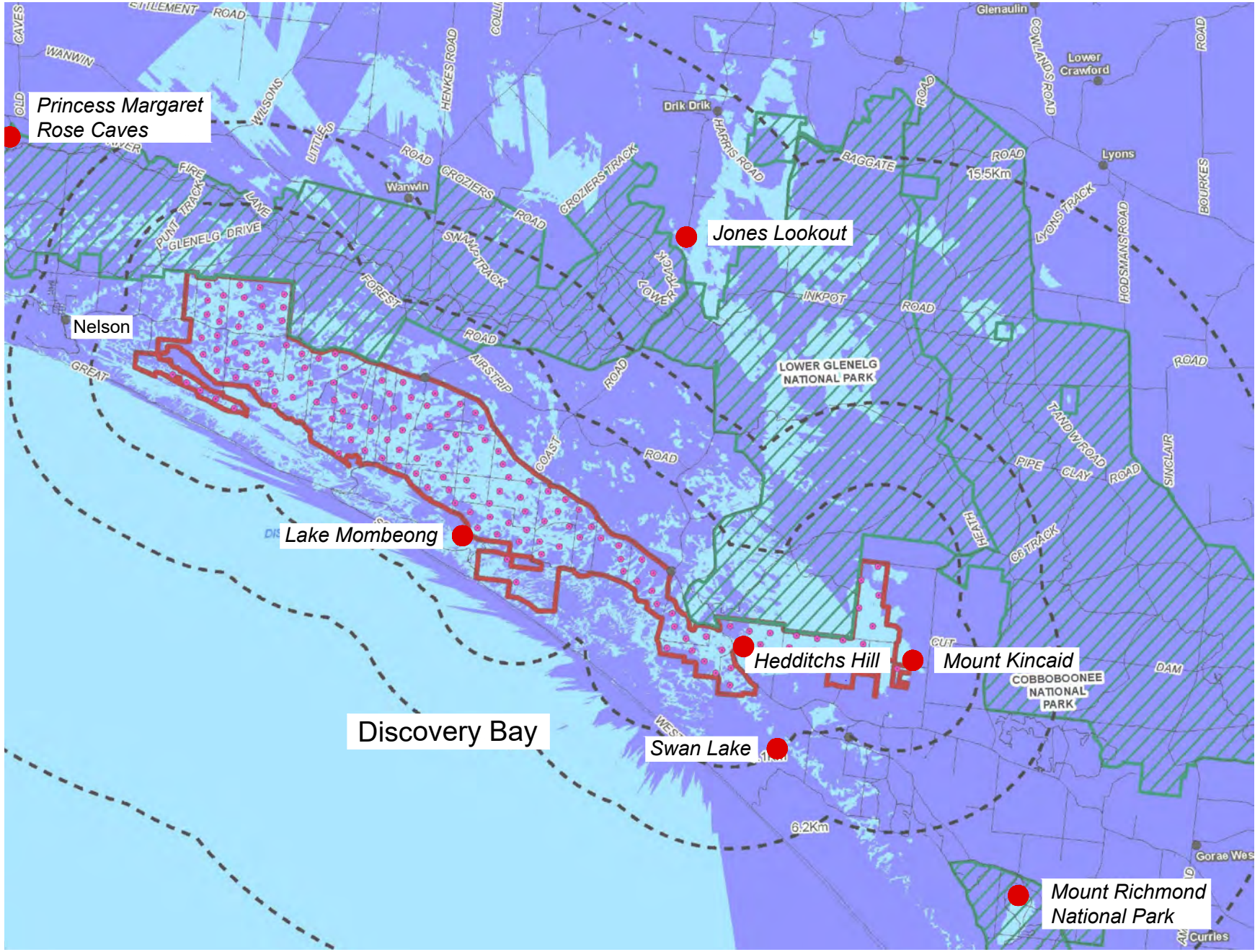
- 0
- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 157

Note: The extent of visibility illustrated in this ZVI does not take into account the screening influence of tree cover or other above ground structures.

0m 5km

ZVI prepared and supplied by AECOM May 2019

Figure 28
ZVI Rotor face



Legend

- Vewshed Zones
- Indicative wind farm site boundary
- Wind Turbine
- Town
- Roads
- National Park

Number of Turbines Visible

VALUE

- 0
- 1 - 50

Note: The extent of visibility illustrated in this ZVI does not take into account the screening influence of tree cover or other above ground structures.

0m 5km

ZVI prepared and supplied by AECOM May 2019

Figure 29
ZVI Whole of turbine

Maroona Wind Farm - View distance 2 km

Maroona Wind Farm - View distance 3 km

Maroona Wind Farm - View distance 4 km

Maroona Wind Farm - View distance 5 km

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

Approximate wind turbine swept area

Figure 30
Wind turbine visibility

Preliminary visual effects

Section 7

7.1 Introduction

The following consideration of potential visual effects is an assessment based on a preliminary concept design that is likely to be refined following the completion of further environmental investigations. A further consideration of potential visual effects will be undertaken to address any refinements to the concept design. The determination of potential visual effects resulting from the construction and operation of the Project would result primarily from a combination of receiver sensitivity and the magnitude of visual effects. A determination of visual effects from the combination of receiver sensitivity and the magnitude of visual effect is a well-established methodology and has been applied extensively on visual impact assessments in Victoria and across Australia. A range of key view locations and types of visual receivers are illustrated in **Figure 31**.

7.2 Sensitivity of visual receivers

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

7.3 Magnitude of visual effects

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

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

The following considers the potential visual effect of the Project on a number of key view categories surrounding the Project site. This consideration, based on the preliminary concept design has identified potential views from:

- Urban localities
- Residential dwellings
- Publicly accessible locations (e.g. open spaces, recreational and conservation areas)
- Local road corridors and
- Agricultural land.

7.4 Views from urban localities (including Nelson)

Wind turbines within the western section of the Project site would be visible from some areas (and dwellings) within the eastern portion of Nelson. However, views towards the Project site from the majority of residential dwellings in Nelson, would be partially restricted or completely screened by built structures within the urban area, as well as a surrounding and gently undulating landform beyond the Glenelg River corridor. Potential views toward the Project site would also tend to be disrupted by discrete areas of vegetation both within and beyond Nelson. Given the potential for screening, the Project site would be unlikely to have any significant visual effect on most people living or working in Nelson.

7.5 Views from residential dwellings

Existing rural residential dwellings within 5km of the Project site wind turbines are illustrated in **Figure 32** and include properties that are not associated with the Project. The site inspection noted that the relatively small number of residential dwellings within 5km of the Project site wind turbine locations, were screened by tree planting. It is possible that not all rural residential dwellings will have direct or significant views toward the Project.

7.6 View from publicly accessible locations

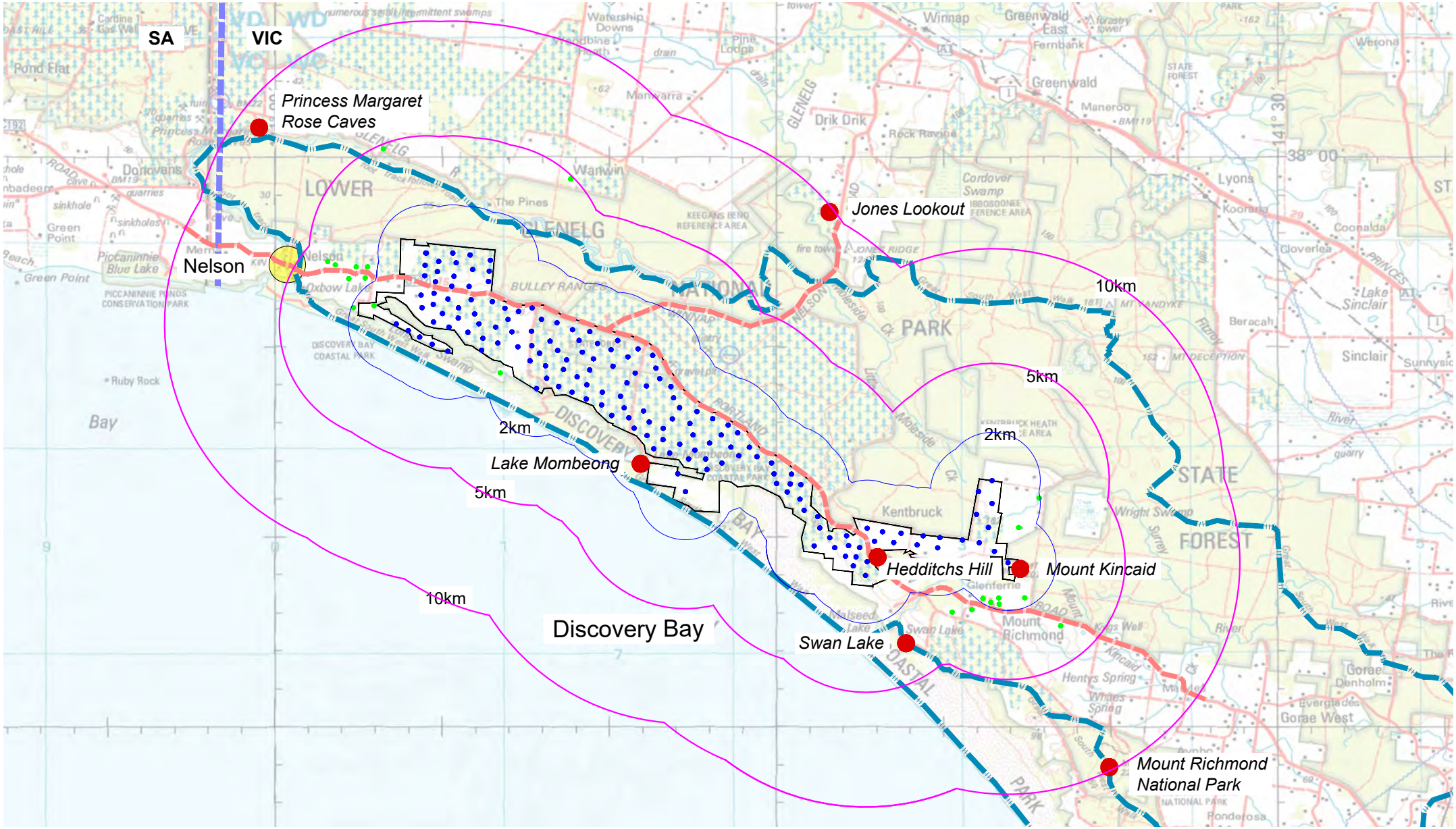
Publicly accessible locations, other than road corridors, include various public open spaces, walking tracks, conservation areas, recreational areas and reserves. The majority of public open spaces and recreational areas are those associated and located within surrounding localities, where the influence of both distance and existing vegetative cover is likely to partially screen potential views toward the Project site. The Great South West Walk is an interesting case in point. The vast majority of the walk (around 220km), including areas nearby the Project site within the Lower Glenelg or Cobobboonee National Parks, are likely to be completely screened by extensive stands of vegetation. These include the sections along the Glenelg River which Neoen understands to be the most popular sections where the Great South West Walk follows the Discovery Bay beach, the visual effect of the Project will be more significant.

7.7 Views from local roads

The Project is likely to be partially screened from the Portland Nelson Road and that views from the other minor roads will be influenced by both landform and vegetation alongside the road corridors. The dynamic and constantly changing nature of views from vehicles travelling along local roads will tend to be transitory in nature and generally short term.

7.8 Views from agricultural land

The Project would have the potential to impact people engaged in predominantly farming activities. Ultimately the level of impact would depend on the type of activities engaged in as well as the location of the activities together with the degree of screening provided by local vegetation within individual properties.



Legend

- Proposed wind turbine (indicative layout)
- Project site boundary (indicative alignment)
- Distance from turbine
- Township/locality
- Portland Nelson and Winnap Nelson Roads
- Great South West Walk (indicative location)
- Landscape feature
- Dwelling within 5km of wind turbine (indicative location)

0m 5km

Figure 31
Key view locations

Kentbruck Green Power Hub

Preliminary Landscape Assessment

GREEN BEAN DESIGN
landscape architects

Cumulative assessment

Section 8

8.1 What is Cumulative Impact Assessment?

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

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

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

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

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

8.2 Other wind farm developments (regional locality)

There are three wind energy developments that are currently operational within the same regional context as the Project. These are identified in **Table 2**, with the Portland (Cape Bridgewater and Cape Nelson South) wind farms illustrated in **Figures 32** and **33**.

Table 2 - Regional Wind Farm Developments

Other Wind Farm	Turbine tip height	Status	Number of turbines	Approx distance to Project site
Codrington	79m	Operating	14	51km
Yambuk	105m	Operating	20	57km
Portland Wind Energy Project Cape Bridgewater, Cape Nelson North and Cape Nelson South	135m	Operating	29, 11 and 22	19.5km

8.3 The Project and other wind farm visibility

The potential for the Project wind turbines to be visible from residential and other view locations together with other wind farm turbines are considered in **Table 3**.

Table 3 The Project and other wind farm visibility

Other wind farm development	View description between the Project and other wind farm	
	'Direct' Views	'Indirect' Views
Yambuk	There will be no direct views between the wind farms where views will be blocked by landform and vegetation.	There will be no indirect views between the wind farms where views will be blocked by landform and vegetation.
Codrington	There will be no direct views between the wind farms where views will be blocked by landform and vegetation.	There will be no indirect views between the wind farms where views will be blocked by landform and vegetation.
Portland Wind Energy Project Cape Bridgewater, Cape Nelson North and Cape Nelson South	Generally direct views between the wind farms will be largely restricted by distance and vegetation. Views may extend between wind turbines located on Cape Bridgewater and the Project; however, wind turbines would be separated by a distance around 19.5km.	Restricted potential for indirect views between wind farm projects due to distance. Views may extend between wind turbines located on Cape Bridgewater and the Project; however, wind turbines would be separated by a distance around 19.5km.

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

Sequential views from local roads would be mitigated to some extent by undulating landform and tree cover alongside road corridors and the transitory nature of short-term dynamic views, and the fact that these wind farm projects are not located along a single highway or thoroughfare.

Portland Wind Farm, Cape Nelson

Aerial Photo from Oleria Road, view west to south west toward Cape Nelson

Figure 32 Photo sheet 21

Portland Wind Farm, Cape Bridgewater

Aerial Photo from Amos Road, view south toward Cape Bridgewater

Figure 33 Photo sheet 22

Summary

Section 9

9.1 Summary

The key findings of this PLA are summarised below:

- This PLA determined the Project site and surrounding landscape character sensitivity to be medium to high. As a landscape with a medium to high sensitivity, some key landscape characteristics (including those associated with the Discovery Bay Coastal Park and sections of the Great South West Walk) would be affected by the Project. The Project would likely result in visually dominant alterations to perceived characteristics of the landscape character area which may not be fully mitigated by existing landscape elements and features.
- Some areas, including the Lower Glenelg National Park and the Glenelg River environs, would have a greater ability to absorb some change through extensive areas of tree cover screening views toward the Project site from sensitive locations including camp sites and day use areas within the National Parks.
- The Project would occupy a portion of the Significant Landscape Overlay (SLO1) to the east of Nelson and have impacts upon some of the landscape character objectives set out in the Glenelg Shire Council Planning Scheme (outlined in Section 4.4 of this PLA).
- The Project is unlikely to have a significant visual impact on the urban character of Nelson, where the majority of views toward the Project site from residential view locations would be screened by adjoining residences, tree cover and undulations in local landform.
- The low number of rural residential dwellings beyond the Project will be impacted to the extent they have views to the project. In many instances these views are limited due to planting.
- Portions of the Project site would be visible from parts of the Great South West Walk, including an approximate 30km length along the Discovery Bay foreshore south of the Project site. Views from the majority of the 250km Great South West Walk would not extend toward the Project site.
- Whilst the Project site would include wind turbines proximate to the Lower Glenelg National Park, views toward the Project site would be screened from day use and camping areas located along the Glenelg River within the National Park.
- Views toward the Project site from local roads will offer a range of transitory views which will be subject to direction of travel and potential screening influence of vegetation (and plantation) alongside road corridors.