EPURON

APPENDIX H

Landscape and Visual

BOWMANS CREEK
WIND FARM

environmental impact statement

GREEN BEAN DESIGN *landscape architects*

BOWMANS CREEK WIND FARM EIS

LANDSCAPE AND VISUAL IMPACT ASSESSMENT

Prepared for:

EPURON PROJECTS Pty Ltd

Prepared by:

GREEN BEAN DESIGN
landscape architects

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

Document control

Item	Detail
Project Name:	**Bowmans Creek Wind Farm**
Report Title:	**Landscape and Visual Impact Assessment**
Project Number:	**18-259**
Version Number:	**v7**
Status:	**Final**
Author:	**Andrew Homewood**, Registered Landscape Architect, AILA, MEIANZ *Graduate Diploma Landscape Management, BSc. (Dual Honours) Landscape Design and Archaeology, National Diploma Horticulture*
Date	**17 March 2021**

Contents Page

Contents Page

Contents **Page**

Contents **Page**

Tables

Contents Page

Contents **Page**

Contents

Contents **Page**

Introduction

Section 1

1.1 Background

Green Bean Design Pty Ltd (GBD) has been commissioned by Epuron Projects Pty Ltd (the Proponent) to undertake a Landscape and Visual Impact Assessment for the Bowmans Creek Wind Farm (the Project) Environmental Impact Statement (EIS).

This Landscape and Visual Impact Assessment (LVIA) has been prepared to meet the objectives of the Wind Energy – Visual Assessment Bulletin, December 2016 (the Bulletin) as required by the New South Wales Government, Department of Planning, Industry and Environment (DPIE). This LVIA supports the EIS and has been prepared to specifically address the Bulletin requirements applicable to a new wind farm development application for a State Significant Development (SSD) through the Planning Secretary's Environmental Assessment Requirements (SEARs).

Information and stated requirements from the Bulletin included in this LVIA are presented in *italics*.

1.2 Professional assessment skills

The Bulletin states that *'Professional assessment skills are critical to the effective application of visual assessment'*, and that *'The proponent is expected to engage professionals from relevant natural resource management and design professions (for example environmental planners, geographers, landscape architects, architects, or other visual resource specialists), with demonstrated experience and capabilities in visual assessment to carry out a wind energy project visual assessment'.*

GBD confirms that this LVIA has been prepared by GBD Principal Landscape Architect Andrew Homewood. Andrew is a Registered Landscape Architect with over 30 years' experience in landscape design and landscape architectural consulting. Andrew has prepared numerous wind and solar farm LVIA in New South Wales and across Australia and provided independent peer reviews for wind farm LVIA on behalf of DPIE.

Methodology

Section 2

2.1 Introduction

This LVIA has addressed the key steps and analysis set out in the Bulletin (refer the Bulletin Figure 1 Steps in Visual Assessment), and as identified in **Table 2-1**.

2.2 Report structure

This LVIA report has been structured as follows:

Table 2-1 – Report structure

Report section	Description
1 – Introduction	This section describes the intent and purpose of the LVIA.
2 – Methodology	This section sets out the structure and methodology employed in the LVIA preparation.
3 – SEARs and Wind Energy Visual Assessment Bulletin	This section sets out the objectives, stages and key steps described in the SEARs and Bulletin as applicable to this LVIA.
4 – Community consultation	This section describes community consultation activities undertaken by the Proponent.
5 – Project description	This section describes the wind energy project design, the layout and structural elements.
6 – Visual Baseline Study	This section establishes existing landscape and visual conditions and considers: ○ Sensitive Land Use Designation ○ Landscape Character Type ○ Key Landscape Features ○ Scenic Quality Classes ○ Viewpoint Inventory and sensitivity levels

Table 2-1 – Report structure

Report section	Description
	○ Visibility distance zones ○ Wind Resource Categories ○ Wind Turbine Locations and Heights (Optional Scenarios) and ○ Other Wind Farm Projects.
7 – Zones of Visual Influence	This section identifies the overall extent of wind turbine visibility beyond the wind farm site.
8 – Visual Influence Zones	This section establishes the relative landscape significance against which the potential impacts of wind turbines assessed against Table 8 in Appendix 1 of the Bulletin.
9 – Visual Performance Evaluation	This section provides an evaluation of the proposed wind energy project and its various components against the visual performance objectives of the project. Performance objectives include: ○ Visual Magnitude ○ Landscape Scenic Integrity ○ Key Feature Disruption and ○ Multiple Wind Turbine Effects.
10 – Shadow flicker and blade glint	This section describes the shadow flicker assessment and presents results from the main EIS report.
11 – Aviation hazard lighting	This section considers aviation hazard lighting in accordance with the Bulletin.

Table 2-1 – Report structure

Report section	Description
12 – Impact Mitigation Options	This section considers potential methods of avoiding or minimising potential visual impacts.
13 - Summary	This section presents a summary of the LVIA key findings.
Appendix A	Appendix A presents figures illustrating landscape character areas and panorama photos of landscape areas within and surrounding the project site.
Appendix B	Appendix B presents photomontages from dwellings and key public view locations.

SEARs and Wind Energy Visual Assessment Bulletin

Section 3

3.1 SEARs

The Bowmans Creek Wind Farm SEARs state that the EIS must address Landscape and Visual issues and that:

'the EIS must include a detailed assessment of the visual impacts of all components of the project (including turbines, transmission lines, substations, lighting and any other ancillary infrastructure) in accordance with the Wind Energy: Visual Assessment Bulletin (DPE, 2016)'.

3.2 Wind Energy Visual Assessment Bulletin

The Bulletin's stated objectives are to:

- *provide the community, industry and decision-makers with a framework for visual impact analysis and assessment that is focused on minimising and managing the most significant impacts*
- *facilitate improved wind turbine and ancillary infrastructure siting and design during the pre-lodgement phase of a project, and encourage early consideration of visual impacts to minimise conflicts and delays where possible, and provide for a better planning outcome*
- *provide the community and other stakeholders with greater clarity on the process along with an opportunity to integrate community landscape values into the assessment process and*
- *provide greater consistency in assessment by outlining appropriate assessment terminology and methodologies.*

GBD confirm that this LVIA has been prepared to satisfy the key objectives of the Bulletin.

The Bulletin breaks the visual assessment process in to 2 main stages. These include:

- Stage 1 Preliminary Environmental Assessment and
- Stage 2 Assessment and Determination.

Stage 1 was prepared to accompany the Scoping Report in 2019. This LVIA has been prepared to address the requirements of Stage 2 (EIS), which is to be submitted to DPIE as part of an application for Development Consent. Stage 2 of the EIS must incorporate the following elements:

- *the visual representation of the proposed wind turbine and ancillary infrastructure layout and the visual landscape, including written descriptions, photographs, maps and diagrams*
- *an assessment of the numbers of hours of potential 'shadow flicker'*
- *an assessment of the proposed wind energy project against each visual performance objective and demonstration of whether each objective is achieved and how the standard has been achieved*

- *justification of proposed wind turbines that do not meet the visual performance objectives; and*
- *an outline of any mitigation and management options proposed, including consultation with affected property owners regarding the proposed mitigation works.*

The Bulletin also sets out the basic steps of visual assessment and states the visual assessment process for an EIS comprises three main steps:

- *preparation of visual baseline study inputs, including consulting the community on aspects of the baseline study*
- *establish visual influences zones from viewpoints using data collected in the baseline study and*
- *visual performance evaluation requiring application of visual performance objectives to the proposed wind turbine layout.*

GBD confirms that this LVIA has been prepared in accordance with the Bulletin for Stage 2 EIS (Assessment and determination). Table **3-1** outlines key requirements set out in the Bulletin and the sections of this LVIA where they have been addressed.

Table 3-1 – Key requirements and LVIA response

Key requirement	LVIA response
the visual representation of the proposed wind turbine and ancillary infrastructure layout and the visual landscape, including written descriptions, photographs, maps and diagrams	Refer LVIA Sections 5 and 6, site photographs in Appendix A and photomontage in Appendix B
an assessment of the numbers of hours of potential 'shadow flicker'	Refer LVIA Section 10 and the main EIS Report for the detailed Shadow Flicker Assessment.
an assessment of the proposed wind energy project against each visual performance objective and demonstration of whether each objective is achieved and how the standard has been achieved	Refer LVIA Sections 8 and 9
justification of proposed wind turbines that do not meet the visual performance objectives	Refer LVIA Section 9

Table 3-1 – Key requirements and LVIA response

Key requirement	LVIA response
an outline of any mitigation and management options proposed, including consultation with affected property owners regarding the proposed mitigation works	Refer LVIA Sections 9 and 12
preparation of visual baseline study inputs, including consulting the community on aspects of the baseline study	Refer LVIA Sections 4 and 6
establish visual influences zones from viewpoints using data collected in the baseline study	Refer LVIA Section 9
visual performance evaluation requiring application of visual performance objectives to the proposed wind turbine layout	Refer LVIA Section 9

Source: ***The Visual Bulletin, 2016 (Figure 1 Steps in Visual Assessment)***

Community Consultation

Section 4

4.1 Introduction

The Bulletin notes that it is important for the Proponent to engage in consultation with the community and potentially affected landholders at an early stage to establish landscape values and appropriate design responses that avoid impacts. *'Consultation with the community at this early stage may be broad, but should include discussions about the proposed project area, likely corridors for development, or preliminary turbine layouts and must involve people from the visual catchment'.*

As part of the EIS the proponent is required to further consult with the community to verify the findings from the scoping stage including; scenic quality classes, key viewpoints and key landscape features as well as verifying the outcomes of the baseline study.

The Proponent prepared and implemented a Stakeholder Engagement Plan (SEP) during the Scoping Report and revised the SEP for the EIS stage of the Project.

The SEP's for both stages were integrated into the various stages of the NSW planning approval's process. Stakeholders were afforded multiple opportunities to comment and provide feedback on the Project during the consultation process.

During the Scoping Report stage, the Proponent conducted a review of the Wind Energy Guideline along with the relevant SEP from its previous wind farm projects to update and refine its approach to consultation and to develop a site-specific SEP.

The Scoping Report SEP was utilised until the submission of the Scoping Report in May 2019 with its focus was to ensure that those with the potential for the greatest impact were given every opportunity to provide early and meaningful feedback on the Project.

In preparation for commencement of the EIS studies the SEP and consultation objectives were revised with an emphasis on: addressing responses to the Scoping Document SEP, verifying findings from the scoping and design stage and utilising consultation methods and tools specifically for the EIS stage.

4.2 Potentially affected landholders

A focus of the SEP is to ensure that those with the potential to have the greatest impact are given every opportunity to provide early and meaningful feedback on the Project. Direct contact was made with all neighbouring dwellings within 3km of a potential turbine location. Face to face meetings were offered and arranged on behalf of Epuron by Brett Peterkin & Associates and was joined by members of the development team from the Proponent. The intention of the meetings was to introduce the Project and provide as much information as possible, to allow for questions and issued to be raised and for feedback on the Project to be given. Where possible this feedback has been incorporated into the design of the project.

Face to face meetings with near-by dwellings continued to be offered through the development of the EIS including offers for photomontages from private viewpoints (dwellings) showing a visualisation of the

proposed layout for the project. Following creation of the photomontages a subsequent face to face meeting was offered to explain technical aspects of the process, gather feedback on the proposed layout and discuss possible mitigation measures including vegetative screening, turbine removal and neighbour agreements.

Where face to face meetings were declined, or NSW Government recommendations around essential travel prohibited in person meetings, the printed photomontages were posted and a followed up with a phone call or email to collect feedback.

The proposed layout in the Scoping Document was used for the initial photomontages. Changes to the layout were made in July 2020 following community feedback and recommendations from specialist studies. The photomontages were updated to reflect the revised layout and again printed and posted to landowners.

4.3 Wider community

Introduction letters were sent to landowners within 5km of the investigation area, where details could be obtained.

In July 2018, the Muswellbrook Shire Council held a Community Meeting at the McCullys Gap Community Hall and invited the Proponent to attend and provide an update on the feasibility activities it had been conducting. Members of the Proponents team presented to the community of approximately 60 attendees and fielded questions on the potential development, approval process and estimated timings. A newsletter hand-out with this information summarised was provided and subsequently uploaded to the project website. Attendees were invited to leave contact details for future communications regarding the project.

Following feedback from the community meeting in McCullys Gap, the Proponent arranged a series of 'drop-in' information sessions at four locations around the site to introduce the project to the wider community. Community information sessions were held during October 2018 and November 2019. There were four in-person sessions held in each series at McCullys Gap, Muscle Creek, Hebden and Mt Pleasant in 2018 and 2019.

There were three additional sessions held in July 2020 via the software platform Zoom. Over 200 people attended the community information sessions in total.

The 2018 information sessions focused on introducing the Project and the describing the investigation area where the proponent was exploring. Feedback forms were provided with an emphasis on understanding the key landscape features and values to the local community as well as learning about how the area is used. Maps of the investigation area and other visual aids were on display to guide discussion around typical land uses and features. Analysis from the feedback forms was incorporated into the Scoping Document and Preliminary Visual Impact Assessment.

To support the community consultation process, GBD prepared a number of figures to illustrate the results of preliminary site work. The figures outline landscape characteristics associated with Scenic Quality Areas (SQAs). The landscape characteristics are generally defined by land use, land cover and topography. A

preliminary landscape analysis identified 10 landscape areas within and surrounding the Project site (refer **Appendix A Figure 11**). These included:

- Prominent hills and mountains timbered
- Low undulating hills
- River flood plain
- Mining activities
- Township-urban
- Rural properties
- Water body
- Power generation
- Ridgelines timbered, and
- Hills and ridges pastures.

Each landscape area was photographed and described for the purpose of the community consultation 'drop in' sessions. The figures presented at the four 'drop-in' information sessions were used to inform the community about the approach to landscape analysis and processes involved in the determination of scenic quality.

Notable observations or comments made during face-to-face meetings, information sessions and as provided in the feedback forms are summarised below.

Attendees from the communities surrounding the project area were all interested to understand the proposed locations for wind turbines. During the consultation process maps were prepared showing the area of investigation and identifying elevated ridges that had the potential to host wind turbines. This was done to allow for feedback to be incorporated into the design of the layout at the earliest stage.

Key landscape features included in the consideration of visual impact during the application of the performance objectives (key features disruption) included:

- Yellow Rock
- Well Mountain, and
- Native Dog Mountain.

Additionally, some residents expressed interest in viewing photomontages of the proposed turbine locations from their house, these included:

- Properties along Muscle Creek Road
- Properties along Sandy Creek Road, and
- Properties along Scrumlo Road.

Residents generally within 3km of proposed turbine locations expressed a desire for visual impact to be minimised and keen to understand where turbines may be visible.

The information sessions in November 2019 followed the issue of the Project's SEARs and the commencement of the specialist studies. The focus for these sessions was to present the layout as submitted in the Scoping Document, verify findings from earlier consultation sessions and explain the assessment process for wind farms in NSW. Maps showing the proposed turbine layout, key landscape features identified by the community and other points of interest were on display along with the NSW Wind Energy Framework documents, the Scoping Report and updated feedback forms.

Photomontages were prepared from four locations and printed on one or two A1 pages depending on the respective field of view. The four locations included:

- Sandy Creek Road, approximately 2km from Dolahentys Road towards the Project site
- Muscle Creek Road, near Beggary Creek Road
- Scrumlo Road, approximately 6.5km from Hebden Road and
- Bowmans Creek Road, near Marshalls Creek Road.

During the information sessions many residents requested photos to be taken from private viewpoints to create photomontages. The requests were recorded photos taken over the following months with photomontages provided in printed format.

The 2020 information sessions were held online via the video conferencing software Zoom following recommendations from the NSW Department of Health regarding essential travel and social distancing due to COVID-19. The focus of these sessions was to provide the revised layout resulting from community feedback and specialist recommendations during the environmental assessment phase of the project. Epuron team members provided an overview of the industry and the Project with the aid of a presentation which was made available on the project website. Following the presentation attendees were invited to ask questions and participate in a discussion on the key issues they would like answers. The Proponent representatives fielded several questions from attendees covering a range of environmental and socio-economic issues. The matters raised were discussed at the time with additional follow up information provided as required.

Project description

Section 5

5.1 Introduction

Epuron Projects Pty Ltd (the Proponent) is seeking approval for the construction, operation, maintenance and decommissioning of the Bowmans Creek Wind Farm (the Project).

The Project is located at Bowmans Creek, approximately 10km east of Muswellbrook and 120km from the Port of Newcastle in New South Wales. The Project extends predominantly across two Local Government Areas (LGAs), being the Muswellbrook and Singleton Council LGAs. A small number of turbines are additionally proposed in the Upper Hunter Shire LGA.

The Project regional locality is illustrated in **Figure 1**.

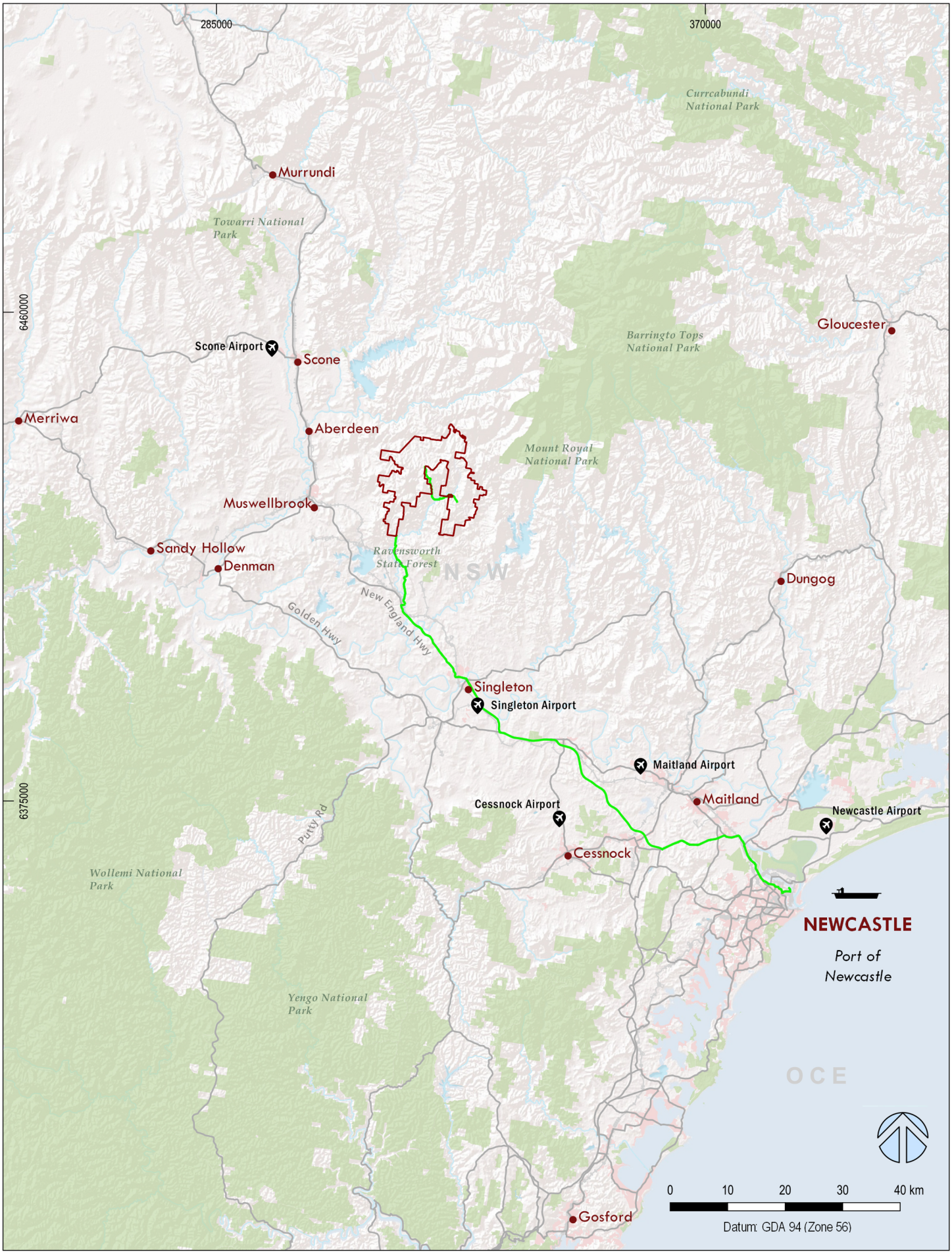
5.2 Project description

The Project will generally involve the construction, operation, maintenance and decommissioning of:

- Up to 60 wind turbine sites consisting of:
  - A three-blade rotor mounted onto a tubular tower
  - Crane hardstand area and
  - Turbine laydown area
- Electrical infrastructure:
  - Up to two substations
  - A 330kV transmission line (overhead and underground) to transmit the generated electricity into the existing TransGrid network and
  - Connections between the wind turbines and the substations, which will include a combination of underground reticulation cables and overhead powerlines.
- Ancillary infrastructure
  - Operation and Maintenance Facility (O&M Facility)
  - Construction compound and storage facilities
  - Unsealed access tracks within the Project Boundary
  - Ongoing use of existing and additional monitoring masts and other monitoring and
  - Temporary construction facilities (including concrete batching plant, laydown areas and rock crushing facilities).

The conceptual project layout is shown in **Figure 2**.

Source: Airports courtesy of Oz runways (Airservices Aust), Oz Runways, WAC Chart, 9 October 2019; World Shaded Relief © Esri



Base image source: Epuron Projects Pty Ltd 2020

Bowmans Creek Wind Farm | Fig01_NSW Locality | 15.03.2021

Legend

- Project Boundary
- Site Access
- Access track
- Reserve / State Forest
- Railway
- Major road
- Major drianage
- Town
- Airport

Figure 1
Regional locality

GREEN BEAN DESIGN
landscape architects

Bowmans Creek Wind Farm LVIA

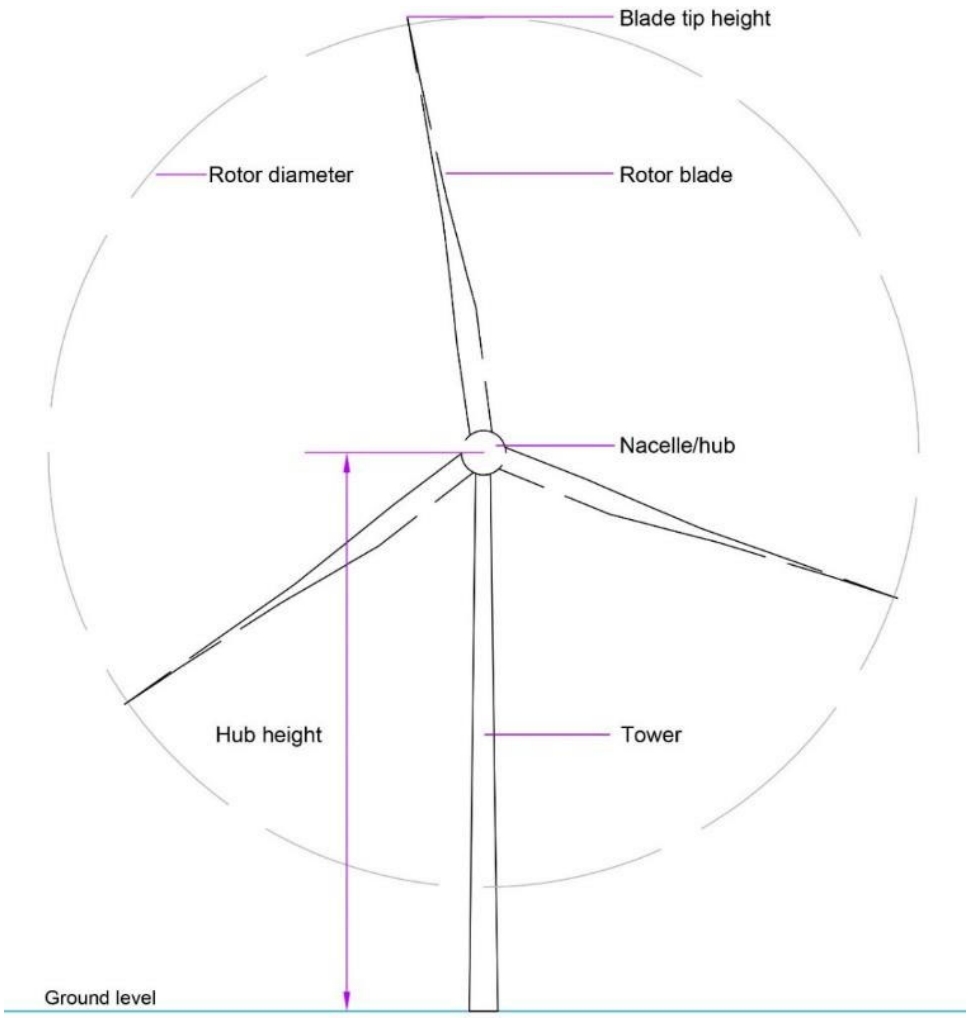
Plate 1 – Typical wind turbine (Vestas V126) and hardstand, Sapphire NSW (Image: ©GBD Pty Ltd 2018)

5.3 Wind turbines

The constructed elements of wind turbines typically comprise:

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

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



5.4 Aviation obstacle lighting

The aviation assessment included a detailed consideration regarding obstacle lighting needs and requirements for the installation and operation of obstacle lighting. The aviation assessment concluded that there will be an acceptable level of aviation safety risk associated with the potential for an aircraft collision without obstacle lighting on the wind turbines. The assessment concluded that no lights were required for wind turbines or wind monitoring towers.

This LVIA has reviewed and responded to the Bulletin Aviation Hazard Lighting performance objectives (refer Section 11).

5.5 Wind monitoring masts

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

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

5.6 On-site access roads

The onsite access track layout will be designed to utilise existing tracks and consider the topography of the land, reducing the need for vegetation clearing, minimising the amount of land required for access and avoiding steep areas where possible. It is likely that approximately 80km of access track will be required within the Project Site. The following design criteria were applied to the access track and access corridor layout to minimise impacts:

The access tracks will typically be 6 m wide, which may be expanded to accommodate crane and delivery vehicle requirements during construction. After construction, these will be subsequently rehabilitated to a lesser width.

The access road design is developed on several environmental grounds, including minimising the potential for visual impact by considering:

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

5.7 Electrical services plan and infrastructure

The wind turbines would be connected to the Liddell Power Station substation which would connect to the national electricity grid. The electrical works would generally include:

- a single pole mounted 330kV transmission line extending generally south from the south west portion of the project site toward Hebden Road. An underground section of 330kV transmission line extending for around 3.5km south toward, and then west along the Hebden Road corridor, and a further section of overhead transmission line adjoining the rail corridor and to the north and west of Lake Liddell (refer Plate 11 for typical illustration)
- onsite 33kV reticulation cabling (underground and overhead) to connect wind turbines to the control room substations/switchyards
- substation/switchyard to step the voltage up from the reticulation voltage to the transmission voltage suitable for connection to the TransGrid transmission line, and
- onsite underground control and communications cabling between the wind turbines and the substation/switchyard.

Each wind turbine will be connected to the relevant on-site substation through both underground and overhead transmissions lines. The substations will connect the proposed development to an on-site switchyard. This switchyard and/or substations which will be the point of connection to the New South Wales transmission network via the Liddell Substation.

The Project overhead/underground powerlines and substation are shown on the Concept Project Layout **Figure 2**.

5.8 Construction

There are potential visual impacts that could occur during the construction phase of the project. The key construction activities that will be visible from areas surrounding the Project include:

- ongoing detailed site assessment including sub surface geotechnical investigations
- various civil works to upgrade local roads and access point
- construction compound buildings and facilities
- construction facilities, including portable structures and laydown areas
- various construction and directional signage
- excavation and earthworks and
- various construction activities including erection of wind turbines, monitoring masts and terminal substation with associated electrical infrastructure works.

Most of the and construction activities, some of which will result in physical changes to the landscape, are generally temporary in nature and are typically restricted to various discrete areas within or just beyond the immediate Project Boundary. Most construction activities will be unlikely to result in an unacceptable level of visual impact given their duration and temporary nature.

Plate 2 – Typical wind farm infrastructure, Sapphire Wind Farm NSW (Image: ©GBD Pty Ltd 2018)

Plate 3 – Typical substation facility, Hornsdale SA (Image: ©GBD Pty Ltd 2018)

Plate 4 – Typical substation facility, Boco Rock Wind Farm NSW (Image: ©GBD Pty Ltd 2015)

Plate 5 – Typical maintenance facility and car park, White Rock Wind Farm NSW (Image: ©GBD Pty Ltd 2018)

Plate 6 – Site entry signage, Sapphire Wind Farm NSW (Image: ©GBD Pty Ltd 2018)

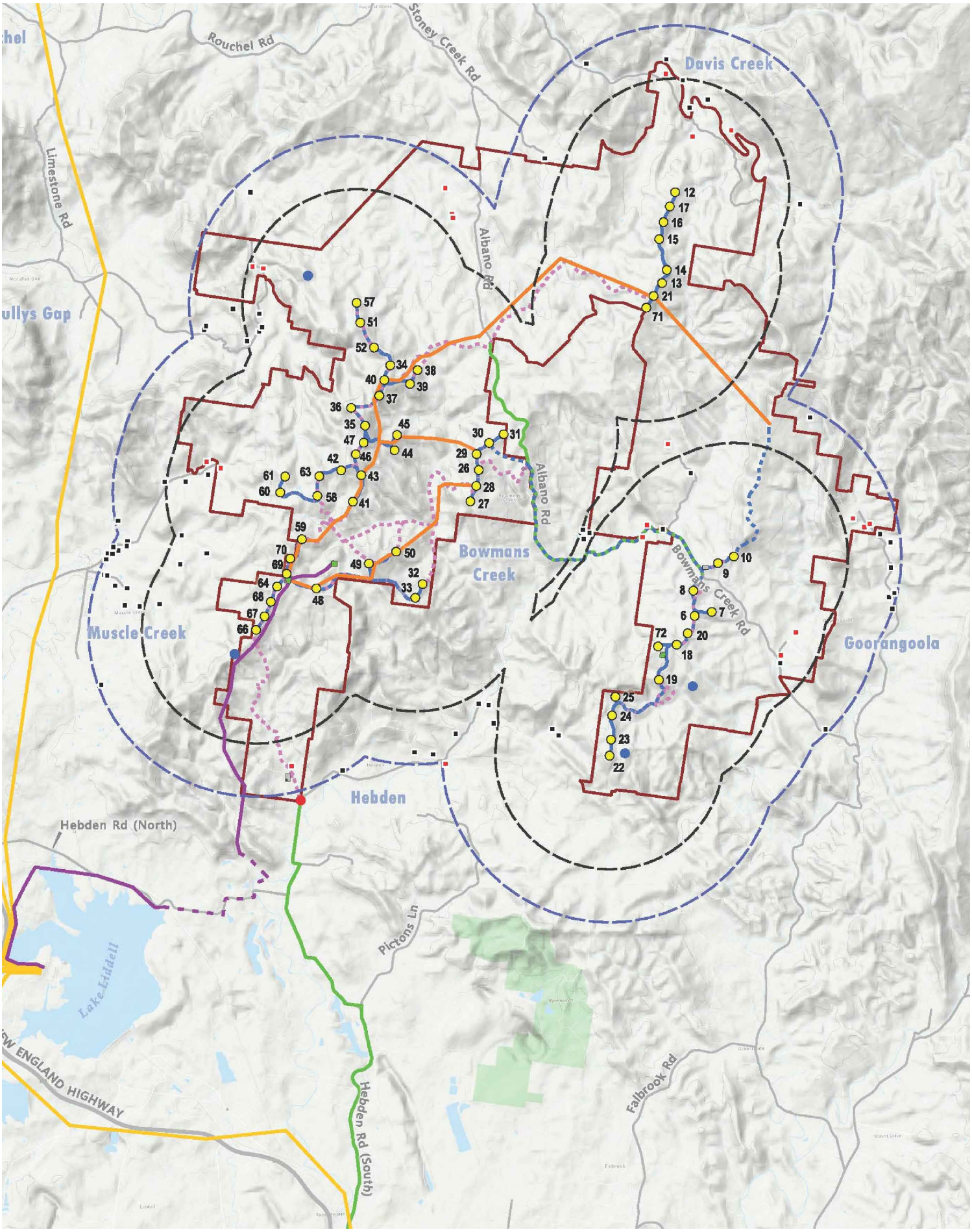
Plate 7 – Wind farm construction, Murra Warra Wind Farm VIC (Image: ©GBD Pty Ltd 2019)

Plate 8 – Cable laying, Crookwell 2 Wind Farm NSW (Image: ©GBD Pty Ltd 2018)

Plate 9 – Crane at Crookwell 2 Wind Farm NSW (Image: ©GBD Pty Ltd 2018)

Plate 10 – Internal access road at Crookwell 2 Wind Farm NSW (Image: ©GBD Pty Ltd 2018)

Plate 11 – 330kV transmission line structure (typical illustration)



Base image source: Epuron Projects Pty Ltd 2020

Figure 2
Concept Project Layout

GREEN BEAN DESIGN
landscape architects

Visual Baseline Study

Section 6

6.1 Introduction

A visual baseline study has been undertaken to establish the existing landscape and visual conditions in accordance with the Bulletin. The Bulletin states the LVIA should consider the following inputs in the visual catchment for the Project:

- *elements of the landscape important to the community, including public and private viewpoints*
- *the sensitivity of the viewers who use those viewpoints, and the distances at which they may view the landscape and potential wind turbines and other ancillary facilities*
- *the character of the landscape involved, its key features and the relative scenic quality of the area and*
- *the location of any existing operational or approved wind energy projects within both a regional and local context, including any nearby surrounding wind energy projects within eight kilometres which may have the potential to create direct or indirect visual impacts between the proposed and any other operational, approved or proposed wind energy projects.*

6.2 Sensitive Land Use Designation

The Bulletin identifies Sensitive Land Use Designations (SLUDs) as:

- *the applicable land use zone and primary nature of the land use (agricultural, industrial, rural residential), including identification of sensitive land use designations. Sensitive land use designations are those types of land uses that wind energy proponents should be aware of when designing the project. Particularly sensitive land uses include those sites listed at the National and State level such as heritage sites and impacts on these sites should be minimised.*

SLUDs within and surrounding the Project Site have been identified and presented in **Figure 3**. Only RU 1 Rural occurs within the Project Boundary. SLUDs illustrated in **Figure 3** surrounding the Project Boundary include:

National and State SLUDs

- National Parks
- National Reserve Systems reserves and
- State Heritage Register Sites.

LEP Zones

RU1 Primary Production

R1 General Residential

R5 Large Lot Residential

RE2 Private Recreation

E1 National Parks and Nature Reserves

E2 Environmental Conservation

E3 Environmental Management and

W2 Recreational Waterways.

6.3 Scenic Quality Classes

Introduction

The Bulletin states that *'In order to assess and map scenic quality classes (i.e., high, moderate and low), a descriptive scenic quality "frame of reference" will need to be developed that is suitable for identifying those landform, vegetation, waterform and, sometimes, cultural features that may be considered to be scenically outstanding or of high quality for the area. The frame of reference can categorise features that are more commonly occurring or of moderate scenic quality and those that may be considered low or below the average for the area due to their lack of variety, distinctiveness or their degree of alteration'.*

6.4 Landscape Character Type and Key Landscape Features

The project site is located within the Sydney Basin and North Coast Bioregions as delineated in the Interim Biogeographic Regionalisation for Australia (IBRA) Version 7. The project site is located within 2 Sub Regions including the Hunter (within the Sydney Basin Bio Region) and Manning-Macleay (within the North Coast Bioregion). The following Scenic Quality Classes have been derived from landscape character data for the Sydney Basin and North Coast Bioregions.

Table 6-1 Scenic Quality Classes

Description	High Scenic Quality	Moderate Scenic Quality	Low Scenic Quality
Landforms	Isolated peaks, tabletop hills, escarpments with distinctive form and/or colour contrast that become focal points Larger areas of distinctive rock outcrops or boulders Well defined, steep sided valley gorges	Rounded hills, ridges and peaks which are visually prominent but not dominant. Broad shallow valleys Moderately deep gorges or moderately steep valley walls Minor rock outcrops	Large expanses of indistinctly dissected or unbroken landforms that provide little illusion of spatial definition or landmarks with which to orient

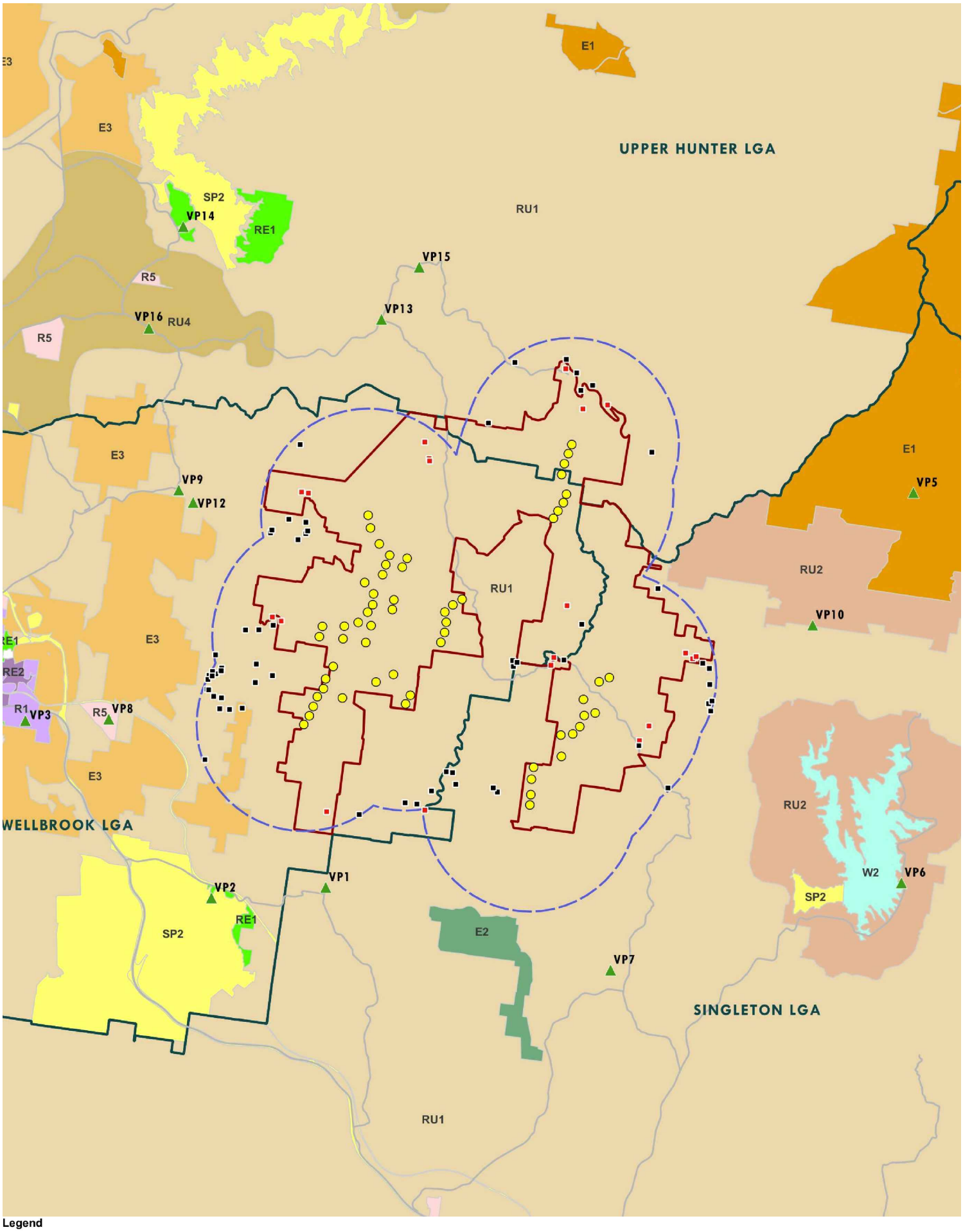
Description	High Scenic Quality	Moderate Scenic Quality	Low Scenic Quality
Vegetation	Strongly defined patterns with combinations of eucalypt forest, naturally appearing openings, streamside vegetation and/or scattered exotics Distinctive stands of vegetation that may create unusual forms, colours or textures in comparison to surrounding vegetation	Predominantly open forest or woodland combined with some natural openings in patterns that offer some visual relief Vegetative stands that exhibit a range of size, form, colour, texture and spacing	Extensive areas of similar vegetation, such as grasslands, pasture or plantations with very limited variation in colour and texture
Waterform	Visually prominent lakes, reservoirs, rivers, streams and swamps	Intermittent streams, lakes, rivers, swamps and reservoirs	Waterform absent

To support the Visual Baseline Study GBD prepared several figures to illustrate the results of site work. The figures details landscape character types and key landscape features associated with Scenic Quality Areas (SQA's). The landscape character types are generally defined by land use, land cover and topography. A landscape analysis identified 10 landscape areas within and surrounding the project site. These included:

- Landscape Character Type 1 Prominent hills and mountains
- Landscape Character Type 2 Low undulating hills
- Landscape Character Type 3 River flood plain
- Landscape Character Type 4 Mining activities
- Landscape Character Type 5 Township-urban
- Landscape Character Type 6 Rural properties
- Landscape Character Type 7 Water body
- Landscape Character Type 8 Power generation
- Landscape Character Type 9 Ridgelines timbered and
- Landscape Character Type 10 Hills and ridges (pasture).

The general locality of the landscape character types is illustrated in Appendix A **Figure 11** and in the photo images 1 to 10 below. Landscape characteristics are also illustrated in Appendix A **Figures 12** to **16**.

Landscape character options have been selected to assist in the description of the existing landscape character type and used during the performance evaluation phase to assess to what extent the existing landscape character may potentially be modified by the proposed wind energy project.



Base image source: Epuron Projects Pty Ltd 2020

Legend

- Project Boundary
- LGA Boundary
- 4.4km to turbine
- Existing road
- Viewpoint
- Wind turbine

Dwelling within 4.4km
- Associated
- Non-associated

Land Zoning
- Environmental Management (E3)
- Infrastructure (SP2)
- Large Lot Residential (R5)
- National Parks and Nature Reserves (E1)
- Primary Production (RU1)
- Public Recreation (RE1)
- Rural Landscape (RU2)
- Environmental Conservation (E2)
- Rural Small Holdings (RU4)
- Recreational Waterways (W2)
- General Residential (R1)
- Private Recreation (RE2)
- Environmental Living (E4)

0km 5km

Figure 3
Sensitive Landuse Designation

GREEN BEAN DESIGN
landscape architects

Bowmans Creek Wind Farm LVIA

6.4.1 Landscape Character Type 1 Prominent hills and mountains

- Prominent timbered hills and mountains are visually prominent and large-scale landscape features.
- They introduce a degree of visually strong topographical variety and are visually uniform in colour and texture.
- The prominent timbered hills and mountains can be viewed within both close and distant views and can form backdrop and skyline views.

Photo 1 Landscape Character Type 1 Prominent Hills and mountains (Image: ©GBD Pty Ltd 2019)

Landscape Character Options:

- Naturally evolving
- Natural Appearing
- Cultural (minor)

Scenic Quality Assessment - Moderate

6.4.2 Landscape Charter Type 2 Low undulating hills

- Low undulating hills are not overly visually dominant within the landscape and are generally located below more prominent distant hills to the west of the Hunter River flood plain.
- They introduce a degree of moderate topographical variety and are largely visually uniform in colour and texture. Scattered tree planting across slopes and ridgelines introduces some visual interest.
- The low undulating hills can be viewed within close and distant views occasionally forming backdrops and skyline views.

Photo 2 Landscape Character Type 2 Low undulating hills (Image: ©GBD Pty Ltd 2019)

Landscape Character Options:

- Natural Appearing
- Pastoral
- Cultural (minor)

Scenic Quality Assessment - Moderate

6.4.3 Landscape Charter Type 3 River flood plain

- The river flood plain is a broad, but visually small-scale landform with little topographical variation. Views within the river flood plain are more likely to be contained by tree planting along or beyond the river corridor.

- There is a variety of human scale features and built structures within the river flood plain, with some variation in colour and texture associated with agricultural and rural activities.

- The river flood plain can be viewed at proximity from roads and dwellings and offers opportunities for distant views toward more prominent landscape features from elevated locations.

Photo 3 Landscape Character Type 3 River flood plain (Image: ©GBD Pty Ltd 2019)

Landscape Character Options:

- Natural Appearing
- Pastoral
- Agricultural

- Cultural (minor)

- **Scenic Quality Assessment -** Moderate

6.4.4 Landscape Charter Type 4 Mining activities

- Mining activities tend to result in visually prominent and medium to large scale landscape features. They are more readily identified by overburden placement areas from middle to long distant viewpoints.

- Mine workings introduce some degree of visual topographical variety and can be visually uniform in colour and texture, although overburden stockpiles can present some contrast in both colour and texture depending upon the nature of excavated materials.

- Mining activities can be viewed within close and distant views, with some mining activities forming backdrops and skyline views. Excavated voids are more likely to be contained by constructed bunds and overburden stockpiles.

Photo 4 Landscape Character Type 4 Mining activities (Image: ©GBD Pty Ltd 2019)

Landscape Character Options:

- Industrial modification

- Power generation

- **Scenic Quality Assessment -** Low

6.4.5 Landscape Charter Type 5 Township/urban

- Townships and urban areas are located on gently sloping to level areas in proximity to the river flood plain and connected by the New England Highway. Most structures within township and urban areas are small to moderate scale.

- There are a variety of human scale features and built structures located within commercial, residential, and industrial areas, creating complex and visually diverse backdrops. Colour is varied but generally muted in constructed elements.

- Views are largely constrained and directed along road corridors within built areas or screened and filtered by tree planting within urban areas. Elevated residential areas offer broader views across the river flood plain and/or toward prominent landforms.

Photo 5 Landscape Character Type 5 Township/Urban (Image: ©GBD Pty Ltd 2019)

Landscape Character Options:

- Cultural

- Urban/Rural villages

Scenic Quality Assessment – Low to Moderate

6.4.6 Landscape Charter Type 6 Rural Residential properties

- Rural properties, beyond township and urban areas, are located throughout the landscape and form collections of relatively small scale-built elements within the context of surrounding landforms. Rural properties tend not to be visually prominent and are largely screened by tree planting.

- Rural properties tend to follow local topography and can be positioned on relatively level to sloping hillside locations.

- The majority of rural properties have limited views into and beyond the surrounding landscape where both landform and tree cover confine and filter longer distance views. A smaller number of rural properties in elevated locations or open landscape areas will have some potential for greater prospects toward more distant views.

Photo 6 Landscape Character Type 6 Residential properties (Image: ©GBD Pty Ltd 2019)

Landscape Character Options:

- Cultural

- Urban/Rural villages

Scenic Quality Assessment - Moderate

6.4.7 Landscape Charter Type 7 Water body

- Water bodies are visually prominent from proximate view locations but can be enclosed by undulating landforms and tree cover.

- Water bodies vary in scale but generally form moderate 'naturalistic' features within the surrounding landscape. The water features are relatively level by nature but surrounded by undulating to steep sided hills with timbered areas.

- Views toward and from areas surrounding water bodies are partially screened by surrounding landforms and vegetation.

Photo 7 Landscape Character Type 7 Water body (Image: ©GBD Pty Ltd 2019)

Landscape Character Options:

- Naturally appearing

- Cultural

- Power generation and transmission

Scenic Quality Assessment – Moderate to High

6.4.8 Landscape Charter Type 8 Power Generation

- Power generation is largely associated with the Liddell and Bayswater coal fired power station sites. Both power stations contain moderate to large scale constructed elements; however, both sites are not considered to be visually prominent within the local landscape, with views largely screened by tree cover. Taller constructed elements including stacks and cooling towers are visible from moderate to distant view locations but are not overly dominant.

Photo 8 Landscape Character Type 7 Power Generation (Image: ©GBD Pty Ltd 2019)

Landscape Character Options:

- Large scale built form
- Industrial modification
- Power generation

Scenic Quality Assessment - Moderate

6.4.9 Landscape Charter Type 9 Ridgelines (timbered)

- Timbered ridgelines are visually prominent and moderate to large scale landscape features.
- They introduce a degree of visually strong topographical variety and are visually uniform in colour and texture, generally defined by timbered areas.
- Timbered ridgelines can be viewed within both close and distant views and can form backdrop and skyline views.

Photo 9 Landscape Character Type 9 Ridgelines (timbered) (Image: ©GBD Pty Ltd 2019)

Landscape Character Options:

- Natural Appearing
- Pastoral
- Cultural (minor)

Scenic Quality Assessment - Moderate

6.4.10 Landscape Charter Type 10 Hills and ridges (pasture)

- Pasture hills and ridges form a moderate scale landform, that is partially visually contained between timbered ridgelines and prominent hills and mountains to the east.
- They introduce a degree of visually strong topographical variety and are visually uniform in colour and texture.
- Pasture hills and ridges can be viewed within both close and distant views, but do not tend to form distinct backdrops and skyline views.

Photo 10 Landscape Character Type 10 Hills and ridges (pasture) (Image: ©GBD Pty Ltd 2019)

Landscape Character Options:

- Natural Appearing
- Pastoral
- Cultural (minor)

Scenic Quality Assessment - Moderate

6.5 Viewpoint inventory and sensitivity level

A viewpoint inventory and sensitivity map illustrating public and private viewpoints of Level 1 to Level 3 sensitivity is presented in **Figure 3**. Sensitivity levels have been applied in accordance with the Bulletin (*Table 5 Viewer Sensitivity Level classification of travel routes and use areas).*

Table 6-2 Viewpoint inventory and sensitivity level

Viewer Sensitivity Level	Travel routes and use areas
Level 1 SENSITIVITY (High)	Residential areas and rural villages (*defined as land zoned R1, R2, R3, R4, R5 and RU5 in the Standard LEP*) Recreation, cultural or scenic sites and viewpoints of National or State significance. Any buildings, historic rural homesteads/residences on the State or local Government Heritage List
Level 2 SENSITIVITY (Moderate)	Rural dwelling Tourist and visitor accommodation (definition in Standard Instrument Local Environmental Plan) Recreation, cultural or scenic sites and viewpoints of regional significance
Level 3 SENSITIVITY (Low)	Interstate and state passenger rail lines with daily daylight services State highways, freeways and classified main roads, classified tourist roads Land management roads with occasional recreation traffic Walking tracks of moderate local significance or infrequent recreation usage Other low use and low concern viewpoints and travel routes Navigable waterways

Source: ***The Visual Bulletin, 2016 (Table 5 Viewer Sensitivity Level classification)***

6.6 Visibility distance zones

The Bulletin states that '*the relative apparent size (visual magnitude) of wind turbines decrease with distance. Visibility or viewshed mapping is usually performed using GIS analysis of terrain contours when assessing what may be visible from a given viewpoint looking in selected directions or in 360°. This mapping can also be calibrated to map the distance zones for the visible areas, while distinguishing those areas that are unseen from the selected viewpoint'.*

Visibility distance zones have been applied to the visual analysis of the Project in accordance with the Bulletin (*Table 6 Visibility distance zones)* and are noted for each viewpoint included in the Performance Objectives Evaluation.

Table 6-3 Visibility distance zones

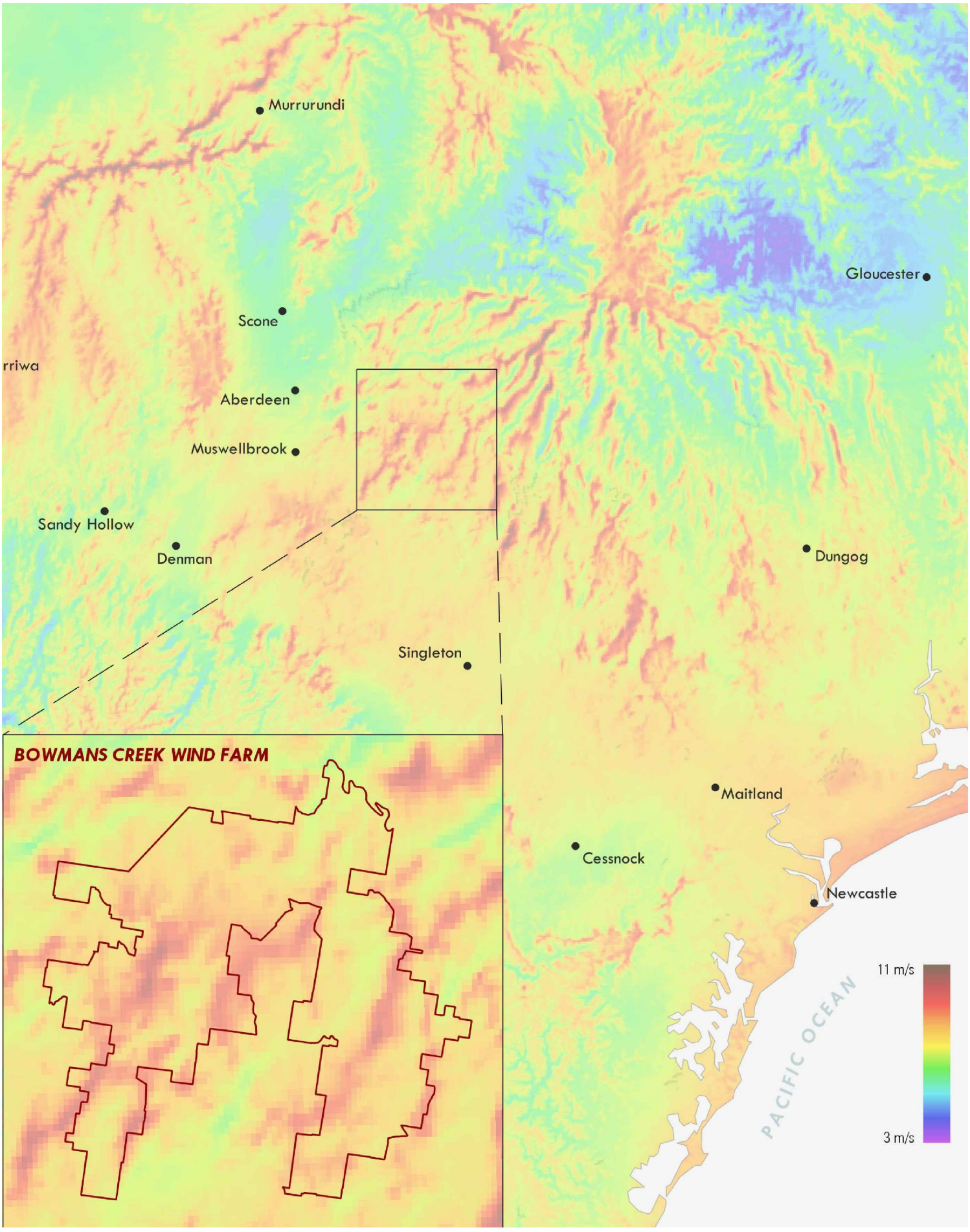
Distance of view	Distance zone	Relative Visual Magnitude and Influence
0 – 500 m	Near Foreground (NF)	Zone of Greatest Visual Influence
500 m – 1km	Mid Foreground (MF)	
1 – 2km	Far Foreground (FF)	
2 – 4km	Near Middleground (NM)	
4 – 8km	Far Middleground (FM)	
8 – 12km	Near Background (NB)	
12 – 20km	Mid Background (MB)	
20 – 32km +	Far Background (FB)	Zone of Least Visual Influence

Source: ***The Visual Bulletin, 2016 (Table 6 Visibility Distance Zones)***

6.7 Wind Resource Categories

The Bulletin requires a *'map showing the relative wind resources of the proposed development area expressed as relative ranges of average wind strength in metres per second'.*

A Wind Resource Map has been prepared and is presented in **Figure 4**.



Base image source: Epuron Projects Pty Ltd 2020

Figure 4
Wind Resource Map

GREEN BEAN DESIGN
landscape architects

6.8 Other Wind Farm Projects

This LVIA has not identified any other wind farm projects within 8km of the proposed Bowmans Creek Wind Farm project.

The nearest approved wind farm project is the Upper Hunter Energy Park located around 35km north west of the closest Project wind turbine.

Opportunities for simultaneous direct and indirect views to wind turbines within both projects would be limited by distance and hill/ridgeline landforms between Scone and the project site.

Other wind farms within a regional locality include the approved Liverpool Range Wind Farm and proposed Valley of the Winds Wind Farm both located over 100km north west of the Bowmans Creek project site.

Zones of Visual Influence

Section 7

7.1 Introduction

The Zone of Visual Influence (ZVI) diagrams are used to identify theoretical areas of the landscape from which a defined number of wind turbines, or portions of turbines, could be visible within the viewshed. They are useful for providing an overview as to the extent to which the Project may be visible from surrounding view locations.

ZVI diagrams have been prepared to include:

- ZVI Diagram 1 from tip of blade and
- ZVI Diagram 2 from hub height

The extent to which the wind turbines may be visible are illustrated in **Figure 5**, and the ZVI Diagrams in **Figures 6** and **7**.

7.2 ZVI methodology

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

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

- to blade tips (essentially a view toward any part of the wind turbine rotor, including views toward the tips of blades above ridgelines) and
- to hub height (essentially a view towards half the swept path of the wind turbine blades).

The calculations also take into account the terrain relief and earth curvature. This assessment methodology is considered to be very conservative as:

- the screening effects of any structures and vegetation above ground level are not considered in any way. Therefore the wind turbines may not be visible at many of the locations indicated on the ZVI diagrams due to the local presence of trees or other screening materials.
- additionally, the number of turbines visible is also affected by the weather conditions at the time. Inclement or cloudy weather tends to mask the visibility of the proposed wind project.#

Accordingly, while ZVI diagrams are a useful visualisation tool, they are very conservative in nature.#

7.3 ZVI summary

The most extensive and continuous area of visibility toward the Project would generally occur where the tips of the wind turbine rotor blades are visible above surrounding ridgelines or vegetation; however, views toward the tips and upper portions of the wind turbine rotors are likely to become less noticeable at reasonably short

distances from the wind farm due to the screening influence of topography and dense tree cover. Views toward tip of blade are visually negligible from medium to longer distance receiver locations.

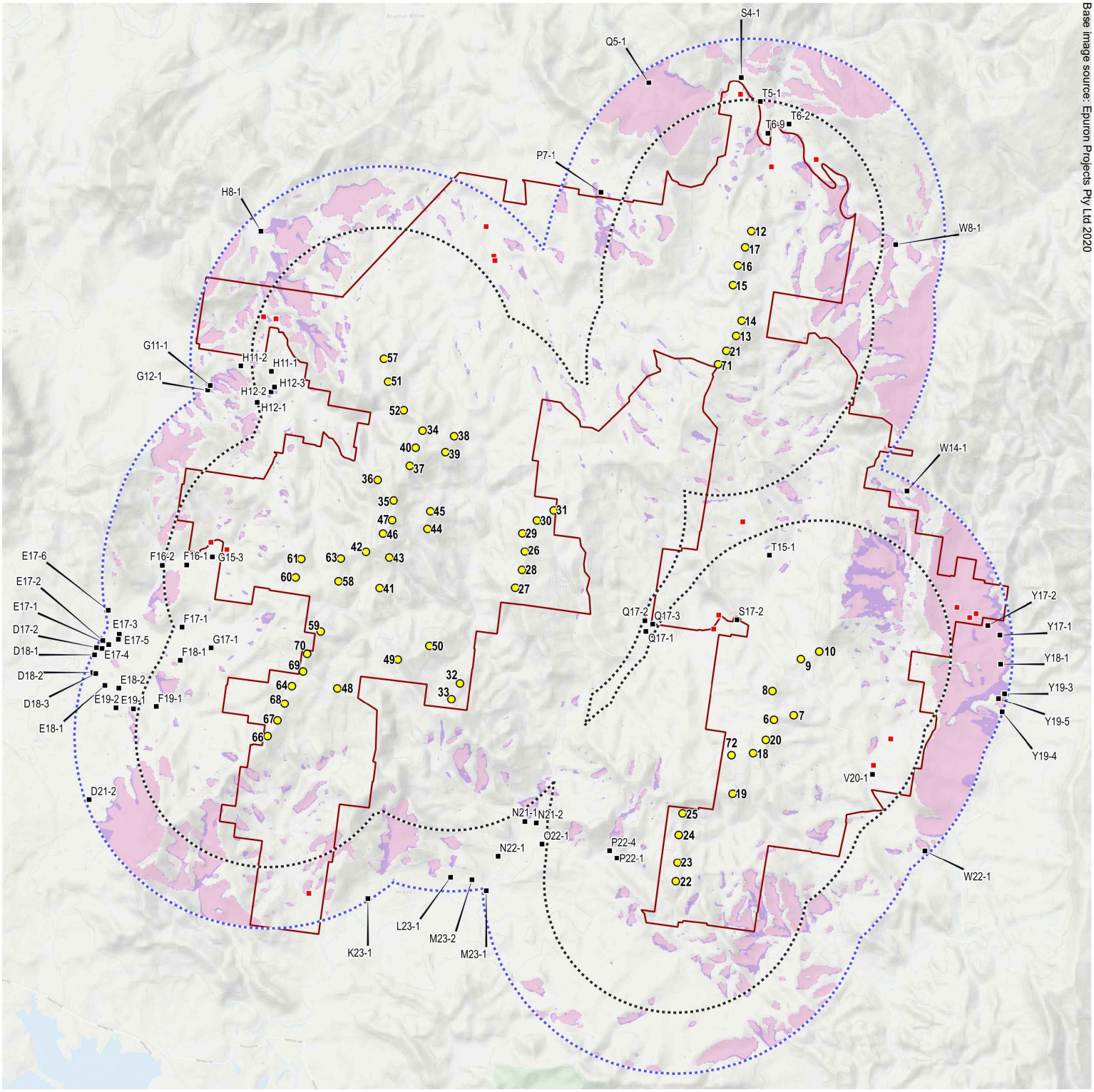
The ZVI diagrams for 'tip' and 'hub height' cover similar extents of landscape surrounding the wind farm and extend toward isolated pockets of rural landscape beyond 10km of the nearest wind turbine. The number and distribution of turbines visible between 'tip' and 'hub' height is influenced by ridgelines and surrounding hills for several areas between the 5km to 10km distance offsets.

The ZVI diagrams illustrate areas of landscape which are likely to offer views toward the wind turbines and demonstrate that most views generally occur within private property and across tracts of unoccupied rural landscape.

The ZVI diagrams also illustrate a number of discrete pockets within portions of the 5km to 10km distance offset from which the wind turbines would not be visible, although this band of the viewshed also represents areas from which a greater number of turbines would also be visible.

The ZVI diagrams illustrate that the influence of surrounding landform begins to disperse visibility from beyond 5km, although opportunities to view turbines from elevated, but moderately distant and generally unoccupied areas occur from areas beyond 5km.

It should be noted that the wind turbines, when viewed from distances of around, or greater than 10km, will generally be less distinct from other distant elements within the same field of view, and that the majority of land within the viewshed comprises rural agricultural land and areas of dense timber growth.



Base image source: Epuron Projects Pty Ltd 2020

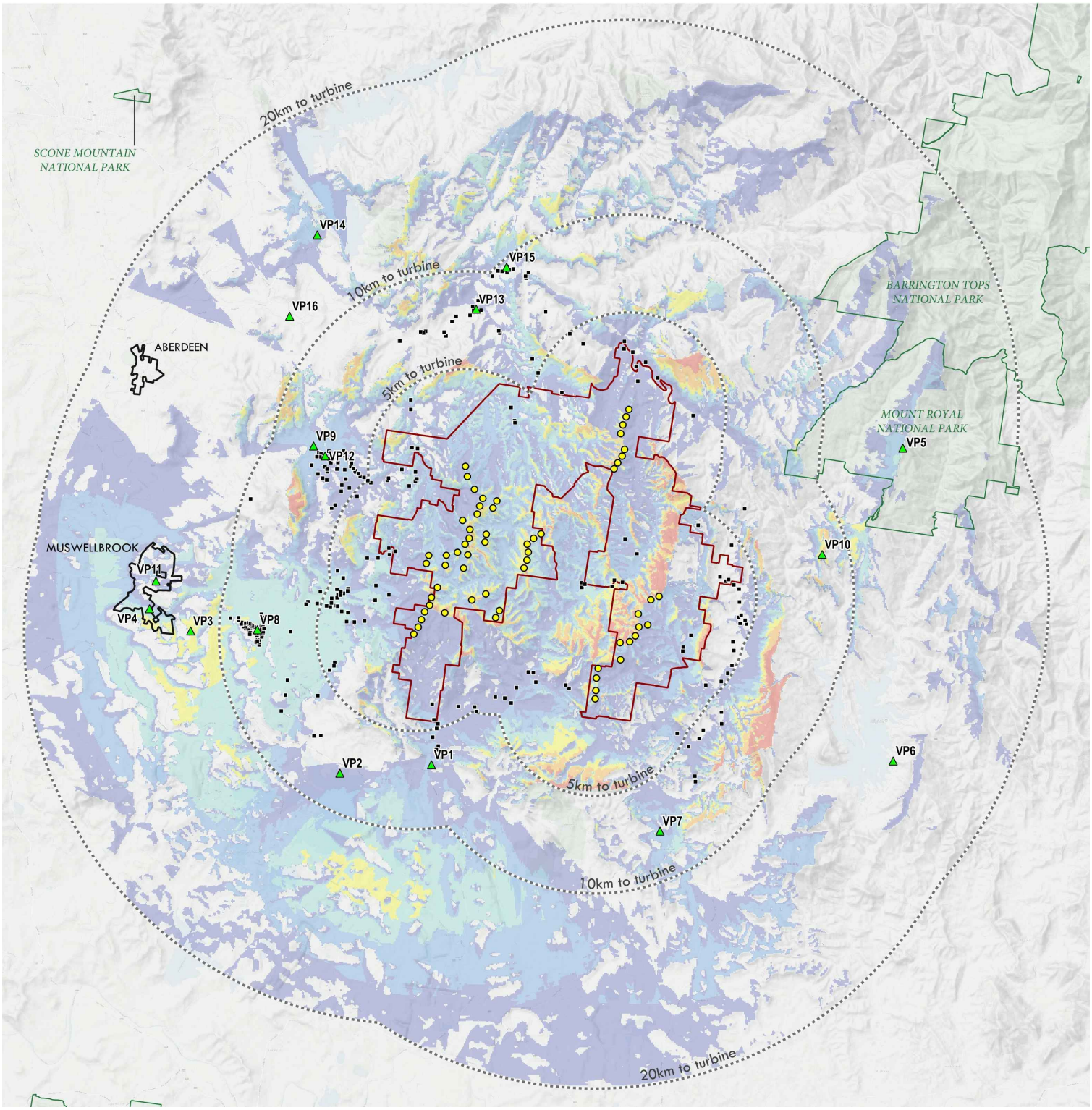
Legend

- Site boundary
- Wind turbine
- 3km black line
- 4.4km blue line
- Associated dwelling
- Non associated dwelling
- Area where wind turbines are not visible
- Areas where wind turbines are visible above the nacelle only

0km 4km

Figure 5
Wind Turbine Visibility Map

GREEN BEAN DESIGN
landscape architects



Base image source: Epuron Projects Pty Ltd 2020

Legend

- Site boundary
- Wind turbine
- Known dwelling within 10km
- Representative viewpoints beyond 5km
- National Park

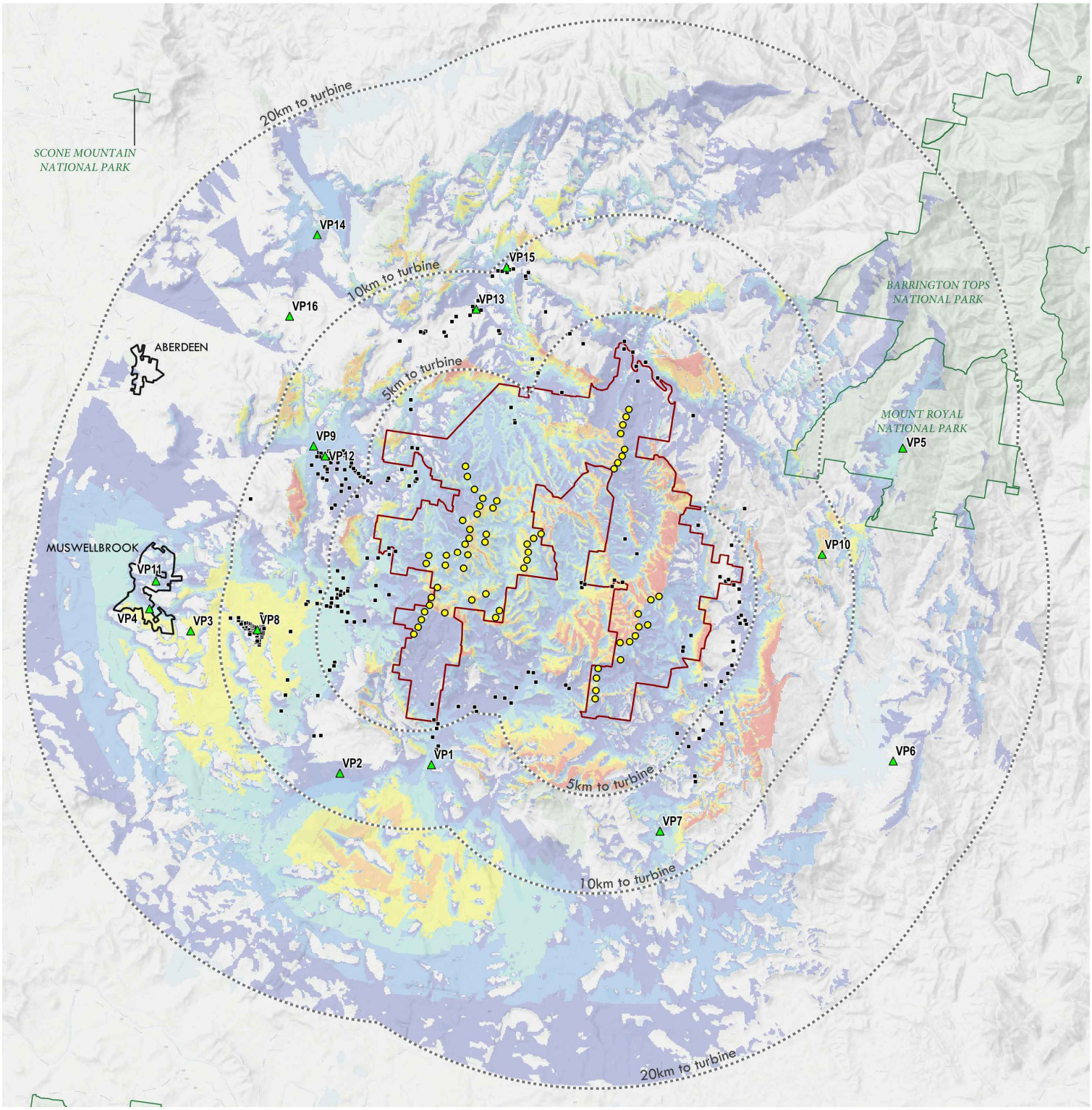
Number of hubs visible

- 50 - 60
- 40 - 50
- 30 - 40
- 20 - 30
- 10 - 20
- 1 - 10

0km 5km

Figure 6
Zone Visual Influence (hub)

GREEN BEAN DESIGN
landscape architects



Base image source: Epuron Projects Pty Ltd 2020

Legend

- Site boundary
- Wind turbine
- Known dwelling within 10km
- Representative viewpoints beyond 5km
- National Park

Number of tips visible

- 50 - 60
- 40 - 50
- 30 - 40
- 20 - 30
- 10 - 20
- 1 - 10

0km 5km

Figure 7
Zone Visual Influence (tip)

GREEN BEAN DESIGN
landscape architects

Visual Influence Zones

Section 8

8.1 Introduction

Three zones of visual influence (low, moderate and high) have been established for the Project area from dwellings and key public viewpoints. This has established the relative landscape significance against which the potential impacts of wind turbines may be assessed. The LVIA **Table 8-1** relies on the data gathered for the baseline study and consideration of the following key factors as detailed in the Bulletin:

- Viewer sensitivity levels
- Visibility distance zones and
- Scenic quality class.

Each visual influence zone has a corresponding set of visual performance objectives including different visual objectives and levels of landscape protection for the assessment and determination of the Project. The consideration of the performance objectives is included in Section 9 of this LVIA.

Table 8-1 Visual Influence Zone matrix

Viewer Sensitivity Level – Distance Zone	Scenic Quality Class		
	High	Moderate	Low
Level 1 Viewpoints			
Near Foreground 0 – 500 m	VIZ1	VIZ1	VIZ1
Mid Foreground 500 m – 1 km	VIZ1	VIZ1	VIZ1
Far Foreground 1 – 2 km	VIZ1	VIZ1	VIZ1
Near Middleground 2 – 4 km	VIZ1	VIZ2	VIZ2
Far Middleground 4 – 8 km	VIZ2	VIZ2	VIZ2
Near Background 8 – 12 km	VIZ2	VIZ2	VIZ2
Mid Background 12 – 20 km	VIZ2	VIZ2	VIZ3
Far Background 20 – 32+ km	VIZ2	VIZ2	VIZ3
Level 2 Viewpoints			
Near Foreground 0 – 500 m	VIZ1	VIZ1	VIZ1
Mid Foreground 500 m – 1 km	VIZ1	VIZ1	VIZ1
Far Foreground 1 – 2 km	VIZ1	VIZ1	VIZ2
Near Middleground 2 – 4 km	VIZ2	VIZ2	VIZ2
Far Middleground 4 – 8 km	VIZ2	VIZ2	VIZ3
Near Background 8 – 12 km	VIZ2	VIZ3	VIZ3
Mid Background 12 – 20 km	VIZ2	VIZ3	VIZ3
Far Background 20 – 32+km	VIZ3	VIZ3	VIZ3
Level 3 Viewpoints			
Near Foreground 0 – 500 m	VIZ1	VIZ1	VIZ2
Mid Foreground 500 m – 1 km	VIZ2	VIZ2	VIZ2
Far Foreground 1 – 2 km	VIZ2	VIZ2	VIZ3
Near Middleground 2 – 4 km	VIZ2	VIZ3	VIZ3
Far Middleground 4 – 8 km	VIZ2	VIZ3	VIZ3
Near Background 8 – 12 km	VIZ3	VIZ3	VIZ3
Mid Background 12 – 20 km	VIZ3	VIZ3	VIZ3
Far Background 20 – 32+ km	VIZ3	VIZ3	VIZ3
Areas Not Visible	VIZ3	VIZ3	VIZ3

Source: ***The Visual Bulletin, 2016 (Table 8 Visual Influence Zones)***

Table 8-2 Visual Influence Zone analysis

Representative view location (and other proximate dwellings) and Sensitivity Level	Distance from representative dwelling to closest wind turbine and wind turbine ID (visible or not visible)	Scenic Quality Class	Visual Influence Zone
D18-3 (D18-2 and E18-1) Level 2	4.17km Turbine 66 (D18-2 at 4.24km) (E18-1 at 3.88km)	Moderate	VIZ2
D21-2 Level 2	4.31km Turbine 66	Moderate	VIZ2
E17-3 (E17-1, E17-2, and E17-5) Level 2	4.09km Turbine 68 (E17-1 at 4.18km) (E17-2 at 4.34km) (E17-5 at 4.06km)	Moderate	VIZ2
E17-4 Level 2	4.27km Turbine 66	Moderate	VIZ2
E17-6 Level 2	4.33km Turbine 60	Moderate	VIZ2
E19-1 (E18-2) Level 2	3.12km Turbine 66 (E18-2 at 3.56km)	Moderate	VIZ2
F16-1 Level 2	2.49km Turbine 60	Moderate	VIZ2

Table 8-2 Visual Influence Zone analysis

Representative view location (and other proximate dwellings) and Sensitivity Level	Distance from representative dwelling to closest wind turbine and wind turbine ID (visible or not visible)	Scenic Quality Class	Visual Influence Zone
F16-2 Level 2	3.05km Turbine 60	Moderate	VIZ2
F17-1 Level 2	2.83km Turbine 60	Moderate	VIZ2
F18-1 Level 2	2.58km Turbine 68	Moderate	VIZ2
F19-1 Level 2	2.63km Turbine 66	Moderate	VIZ2
G12-1 (G11-1) Level 2	4.08km Turbine 57 (G11-1 at 4.00km)	Moderate	VIZ2
G15-3 Level 1	1.96km Turbine 60	Moderate	VIZ1
G17-1 Level 2	2.04km Turbine 64	Moderate	VIZ1
H8-1 (H7-1) Level 2	4.03km Turbine 57 (H7-1 at 4.41km)	Moderate	VIZ2
H11-2	3.26km	Moderate	VIZ2

Table 8-2 Visual Influence Zone analysis

Representative view location (and other proximate dwellings) and Sensitivity Level	Distance from representative dwelling to closest wind turbine and wind turbine ID (visible or not visible)	Scenic Quality Class	Visual Influence Zone
Level 2	Turbine 57		
H12-1 Level 2	3.02km Turbine 51	Moderate	VIZ2
H12-3 (H11-1 and H12-2) Level 2	2.57km Turbine 57 (H11-1 at 2.57km) (H12-2 at 2.67km)	Moderate	VIZ2
K23-1 Level 2	4.35km Turbine 66	Moderate	VIZ2
L23-1 Level 2	4.07km Turbine 33	Moderate	VIZ2
M23-2 (M23-1) Level 2	4.15km Turbine 33 (M23-1 at 4.32km)	Moderate	VIZ2
N21-1 (N21-2) Level 2	3.25km Turbine 24 (N21-2 at 3.26km)	Moderate	VIZ2
N22-1 Level 2	3.73km Turbine 33	Moderate	VIZ2

Table 8-2 Visual Influence Zone analysis

Representative view location (and other proximate dwellings) and Sensitivity Level	Distance from representative dwelling to closest wind turbine and wind turbine ID (visible or not visible)	Scenic Quality Class	Visual Influence Zone
O22-1 Level 2	3.12km Turbine 23	Moderate	VIZ2
P7-1 Level 2	3.52km Turbine 17	Moderate	VIZ2
P22-1 (P22-4) Level 1	1.38km Turbine 23 (P22-4 at 1.57)	Moderate	VIZ1
Q5-1 Level 2	4.11km Turbine 12	Moderate	VIZ2
Q17-3 (Q17-1 and Q17-2) Level 2	3.13km Turbine 8 (Q17-1 at 3.14km) (Q17-2 at 3.03km)	Moderate	VIZ2
S4-1 Level 2	3.51km Turbine 12	Moderate	VIZ2
S17-2 Level 1	1.71km Turbine 9	Moderate	VIZ1
T5-1 Level 2	2.95km Turbine 12	Moderate	VIZ2

Table 8-2 Visual Influence Zone analysis

Representative view location (and other proximate dwellings) and Sensitivity Level	Distance from representative dwelling to closest wind turbine and wind turbine ID (visible or not visible)	Scenic Quality Class	Visual Influence Zone
T6-2 Level 2	2.58km Turbine 12	Moderate	VIZ2
T6-9 Level 2	2.26km Turbine 12	Moderate	VIZ2
T15-1 Level 2	2.47km Turbine 10	Moderate	VIZ2
V20-1 Level 2	2.25km Turbine 7	Moderate	VIZ2
W8-1 Level 2	3.31km Turbine 12	Moderate	VIZ2
W14-1 Level 2	4.17km Turbine 10	Moderate	VIZ2
W22-1 Level 2	4.30km Turbine 7	Moderate	VIZ2
Y17-1 (Y17-2) Level 2	4.13km Turbine 10 (Y17-2 at 3.89km)	Moderate	VIZ2
Y18-1 Level 2	4.14km Turbine 10	Moderate	VIZ2

Table 8-2 Visual Influence Zone analysis

Representative view location (and other proximate dwellings) and Sensitivity Level	Distance from representative dwelling to closest wind turbine and wind turbine ID (visible or not visible)	Scenic Quality Class	Visual Influence Zone
Y19-5 (Y19-3 and Y19-4) Level 2	4.22km Turbine 10 (Y19-3 at 4.33km) (Y19-4 at 4.39km)	Moderate	VIZ2

Visual Performance Evaluation

Section 9

9.1 Introduction

The Bulletin requires an evaluation of the Project and its various components, turbines and ancillary facilities against the visual performance objectives, using a combination of desktop and field evaluations.

The Bulletin notes that *'visual performance objectives are used as a framework for evaluation that enables potential impacts and management options to be considered objectively, against the varying levels of landscape significance established by the baseline study. Application of the visual performance objectives allows for a transparent and robust assessment process, which still provides flexibility for proponents and consent authorities'.* Visual performance objectives included in the Bulletin relate to:

- Visual Magnitude
- Landscape Scenic Integrity
- Key Features Disruption
- Multiple Wind Turbine Effects
- Shadow Flicker and Blade Glint
- Aviation Hazard Lighting

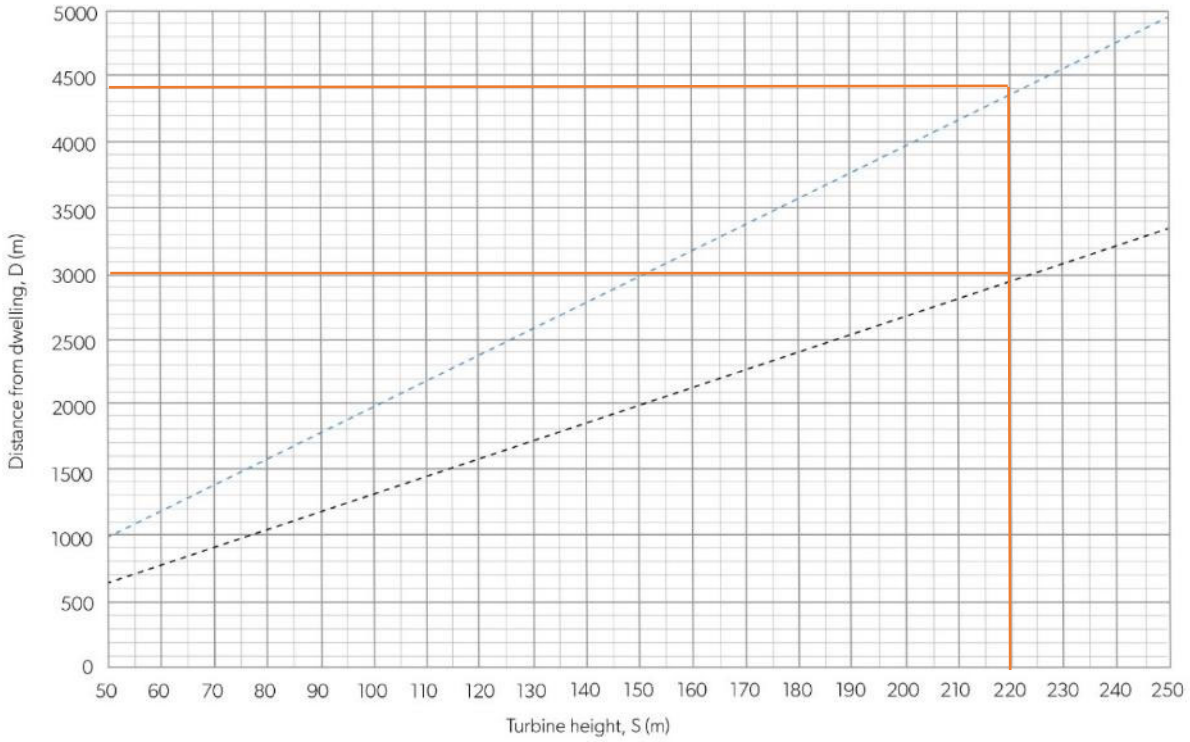
The performance objectives as set out in the Bulletin are described below:

9.2 Visual Magnitude

Visual magnitude is noted as a key visual parameter. The black threshold line on the graph below (from the Bulletin Figure 5) indicates where turbines may potentially have significant visual magnitude impacts based on their relative height and their distance from viewpoints.

For this visual assessment, an additional threshold blue line has been added to the visual magnitude graph which identifies potentially high visual magnitude impacts, to allow more detailed assessment as part of this LVIA.

The Bulletin notes that *'the assessment of potential impacts relating to visual magnitude is a key factor as it is acknowledged that wind turbines are very large structures that will be visible in the landscape'*.



Source: ***The Visual Bulletin, 2016 (Figure 5 Visual magnitude thresholds for visual assessment)***

9.3 Landscape Scenic Integrity

The Bulletin notes that *'the landscape scenic integrity criterion assesses the extent to which the current landscape character and scenic quality of the visual catchment would be maintained given a proposed landscape alteration, such as a wind energy project'.*

9.4 Key features disruption

The Bulletin notes that '*the key features disruption parameter describes proposed wind turbines that are likely to disrupt or interrupt the central line of sight and/or the central focal viewing field surrounding it, when seen from a viewpoint looking toward the identified key features of a landscape. Identification of these key landscape features will also be informed by community consultation undertaken for the proposal, as discussed above. Examples include visually prominent mountain peaks, large rock outcrops, waterfalls, rivers or creeks, distinctive stands of vegetation and distinctive cultural buildings'.*

9.5 Multiple Wind Turbine Effects

The Bulletin notes that *'multiple wind turbine effect is the other key visual parameter utilised in the preliminary assessment tool. For the visual assessment, the effects of multiple wind turbines visible from individual viewpoints as part of the proposed wind energy project, as well as the cumulative landscape and visual impacts must be considered having regard to existing and approved wind energy projects located within eight*

kilometres of the proposed wind energy project. Depending on the viewer sensitivity level, the location of the proposed turbines should avoid, where possible, views to turbines of one or more wind energy projects, within the effective horizontal views of two or more 60° sectors (from Level 1 viewpoints), or in three or more 60° sectors (from Level 2 viewpoints)'.

Multiple Wind Turbine Tool (MWTT) diagrams have been generated through GIS analysis and presented in the performance objective assessment for each non-associated dwelling within 4.4km of wind turbine locations as well as key public view locations beyond the project site. Each MWTT diagram includes a separate visibility rose to illustrate the number of 60° sectors occupied by wind turbines.

9.6 Shadow Flicker and Blade Glint

The Bulletin notes that *'shadow flicker caused by certain sun angles in relation to the rotation of wind turbine blades on dwellings will be limited to 30 hours per year, and may require mitigation measures such as amended siting and design of turbines to minimise the amount of shadow flicker. Similarly, the direct reflection of the sun from the wind turbine structure (glint) is to be minimised through appropriate turbine treatments (such as the use of low sheen and matte finishes)'.*

The Proponent has undertaken a shadow flicker assessment which is included in the main EIS Report. The shadow flicker assessment has determined that no non-associated dwellings will experience shadow flicker more than 30 hours per year.

9.7 Aviation Hazard Lighting

The Bulletin notes that *'wind turbines located in the vicinity of an aerodrome are subject to standards imposed by the National Airports Safeguarding Framework 10. CASA must be notified by the proponent if a proposed wind turbine or wind monitoring tower is greater than 150 metres in height or infringes on the Obstacle Limitation Surface (OLS) of an aerodrome. CASA may determine, and subsequently advise a proponent and relevant planning authorities, whether night-lighting is required'*.

If such lighting is required, the CASA guidelines recommend that to minimise visual impacts "*obstacle lights may be partially shielded, provided it does not compromise their operational effectiveness. Where obstacle lighting is provided, lights should operate at night, and at times of reduced visibility. All obstacle lights on a wind farm should be turned on simultaneously and off simultaneously*."

Aviation hazard lighting has been assessed in the Aviation Impact Assessment (Aviation Projects, 2020) which concluded that ***'Aviation Projects has assessed that the Project will not require obstacle lighting to maintain an acceptable level of safety to aircraft.'***

9.8 Visual Performance Evaluation Overview

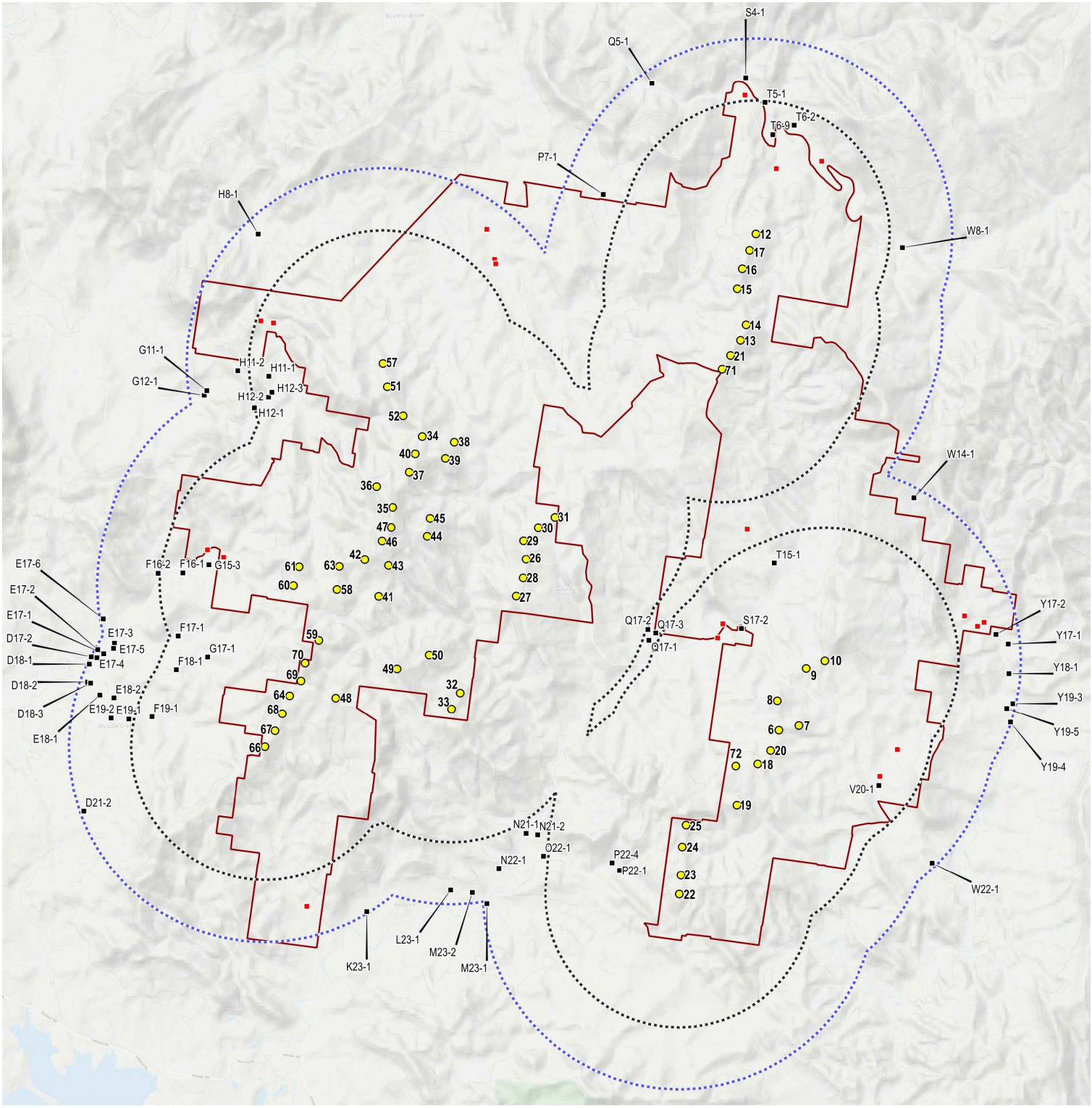
The Bulletin notes that '*Visual assessment requires an evaluation of the proposed wind energy project and its various components, turbines and ancillary facilities against the visual performance objective of the project, using a combination of desktop and field evaluations'.*

Visual performance objectives are used as a framework for evaluation that enables potential impacts and management options to be considered objectively, against the varying levels of landscape significance established by the baseline study. Application of the visual performance objectives will allow for a transparent and robust assessment process, which still provides flexibility for proponents and consent authorities.

The visual performance objectives are set out in **Tables 9-1** to **9-41** for all non-associated dwellings out to 4.4km from the wind turbine locations. Key public view locations beyond 4.4km from the wind turbine locations are shown in **Tables 9-43** to **9-58**. Dwellings are shown in **Figure 8** and presented in alphabetical order in the following tables. Scenic views and public view locations are in **Figure 9**.

No key public view locations have been identified within 4.4km of the wind turbines. However, the assessment of scenic locations has been undertaken to at least 8 km from the wind turbines. It should be noted that wind turbines beyond the extent of each MWTT diagram are not visible from the dwelling and/or dwellings as illustrated on each MWTT diagram.

In accordance with the Bulletin requirements, visual influence zones have been established from individual viewpoints looking inward and toward the proposed wind turbines and not in reverse from the wind turbines out. A separate analysis of wind turbine visibility looking out from the wind turbines has been prepared and is presented in the Zone of Visual Influence diagrams for hub height and tip of blade (refer **Figures 6** and **7**).



Base image source: Epuron Projects Pty Ltd 2020

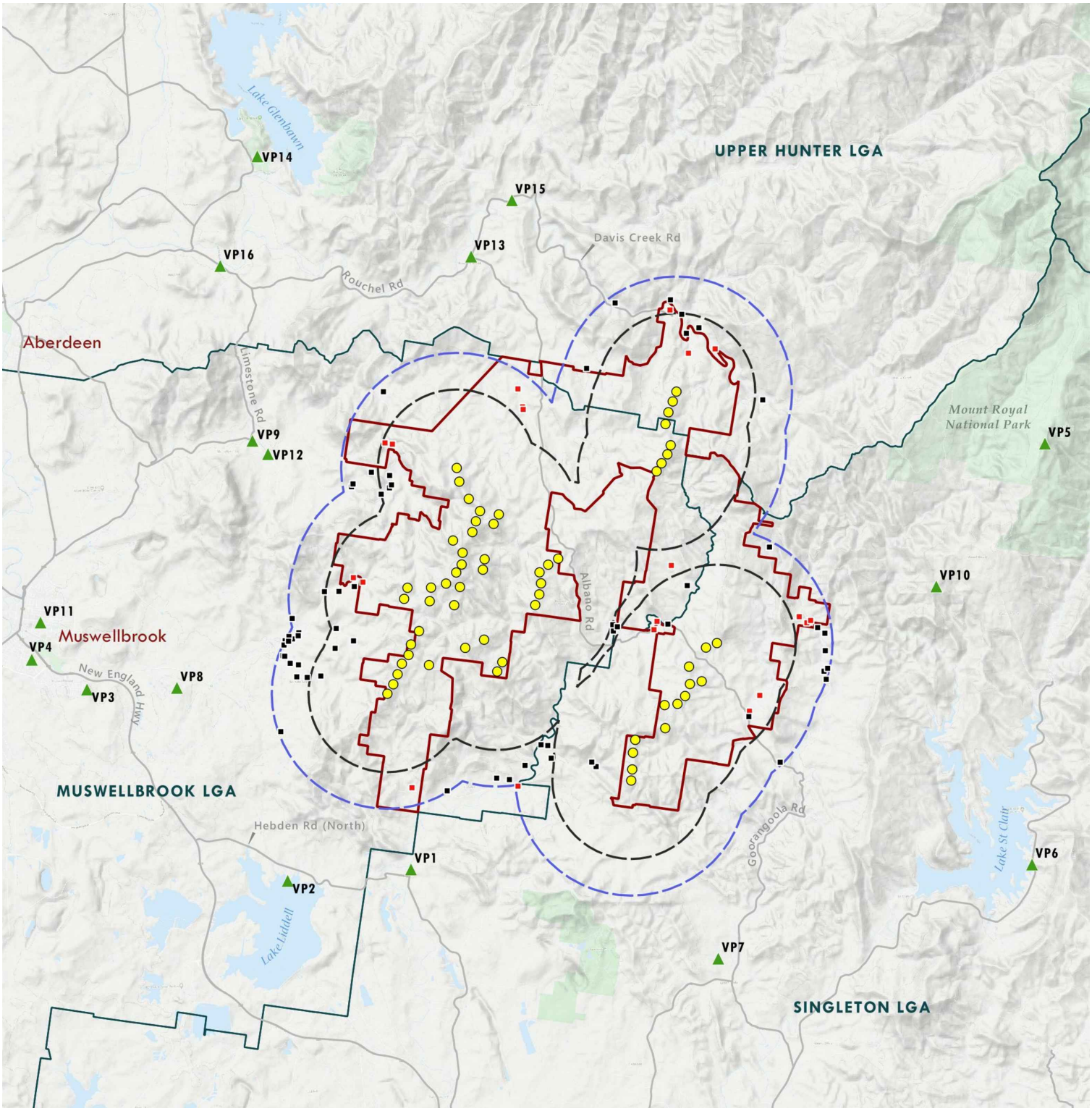
Legend

- Site boundary
- Wind turbine
- 3km black line
- 4.4km blue line
- Associated dwelling
- Non associated dwelling

0km 5km

Figure 8
Key view locations - dwellings

GREEN BEAN DESIGN
landscape architects



Base image source: Epuron Projects Pty Ltd 2020

Legend

- Site boundary
- Wind turbine
- 3km black line
- 4.4km blue line
- Associated dwelling
- Non associated dwelling
- VP10 Key public view locations

0km 5km

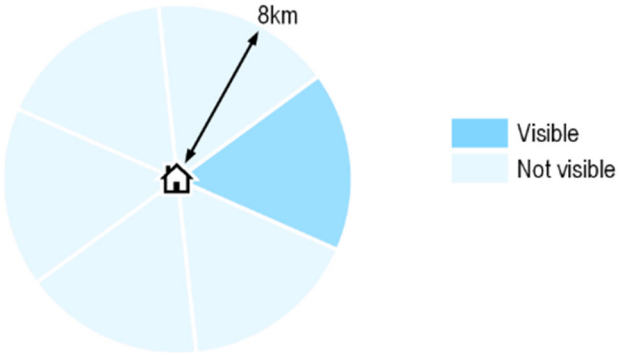
Figure 9
Key public view locations

GREEN BEAN DESIGN
landscape architects

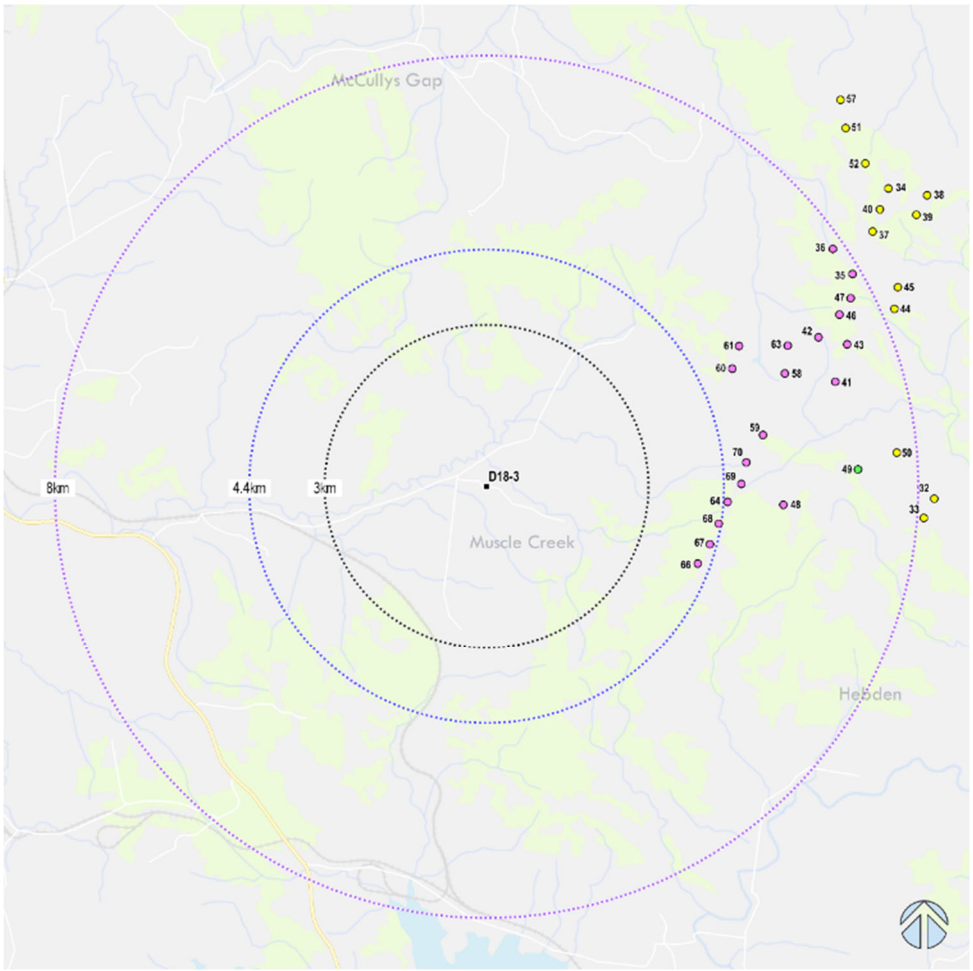
Dwelling D18-3 (D18-2 and E18-1)

9.8.1 Viewpoint D18-3 aerial photo

9.8.2 Viewpoint D18-3 Visibility rose



9.8.3 Viewpoint D18-3 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-1 Viewpoint D18-3, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (66) is located 4.17km (Far Middleground) from dwelling D18-3. The MWTT diagram illustrates 3 wind turbines would be visible (discounting vegetative screening) below the blue line with additional wind turbines extending up to 8km beyond the blue line north east to south east of the dwelling. Lightly scattered tree cover around and beyond the dwellings may offer some filtering of views toward wind turbines from the dwellings. Whilst wind turbines may be visible the potential for visual impact is not significant and largely mitigated by distance. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Wind turbines are located beyond the black line at Far Middleground, therefore no mitigation measures are proposed below the black line.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view.

Table 9-1 Viewpoint D18-3, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the	Visible wind turbines within 8km of the view location occupy one 60-degree sector and is therefore compliant with the Multiple Wind Turbine Effects performance objectives.

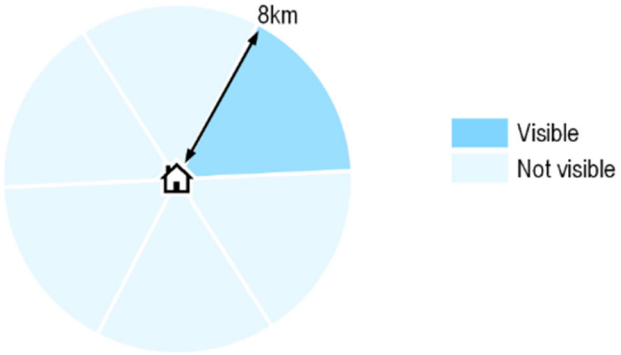
Table 9-1 Viewpoint D18-3, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	effective horizontal views in three or more 60° sectors.	
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

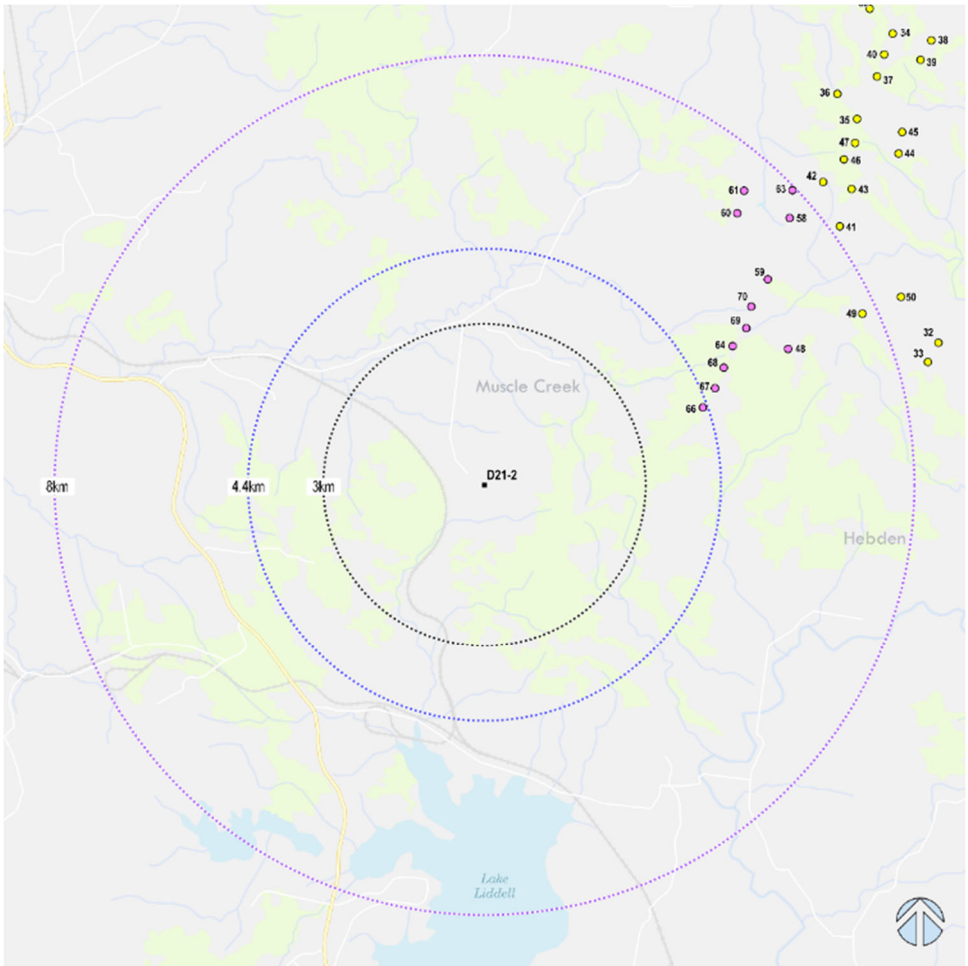
Dwelling D21-2

9.8.4 Viewpoint D21-2 aerial photo

9.8.5 Viewpoint D21-2 Visibility rose



9.8.6 Viewpoint D21-2 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-2 Viewpoint D21-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (66) is located 4.31km (Far Middleground) from dwelling D21-2. The MWTT diagram indicates that 1 wind turbines would be visible (discounting vegetative screening) below the blue line with additional wind turbines extending up to 8km beyond the blue line north east of the dwelling. Scattered tree cover around the dwelling may present some filtering toward distant views of wind turbine hubs and blades. Whilst wind turbines may be visible the potential for visual impact is not significant and largely mitigated by distance. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Wind turbines are located beyond the black line at Far Middleground, therefore no mitigation measures are proposed below the black line.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view.

Table 9-2 Viewpoint D21-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location occupies one 60-degree sector and is therefore compliant with the Multiple Wind Turbine Effects performance objectives.

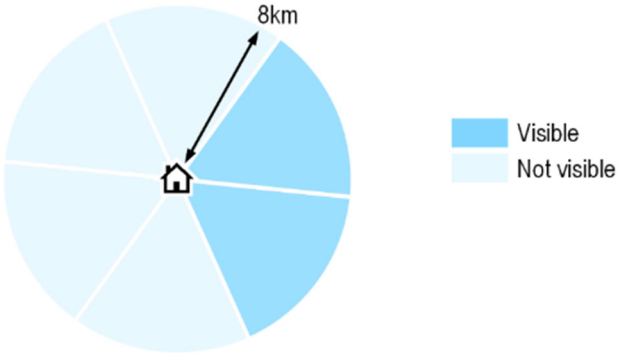
Table 9-2 Viewpoint D21-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

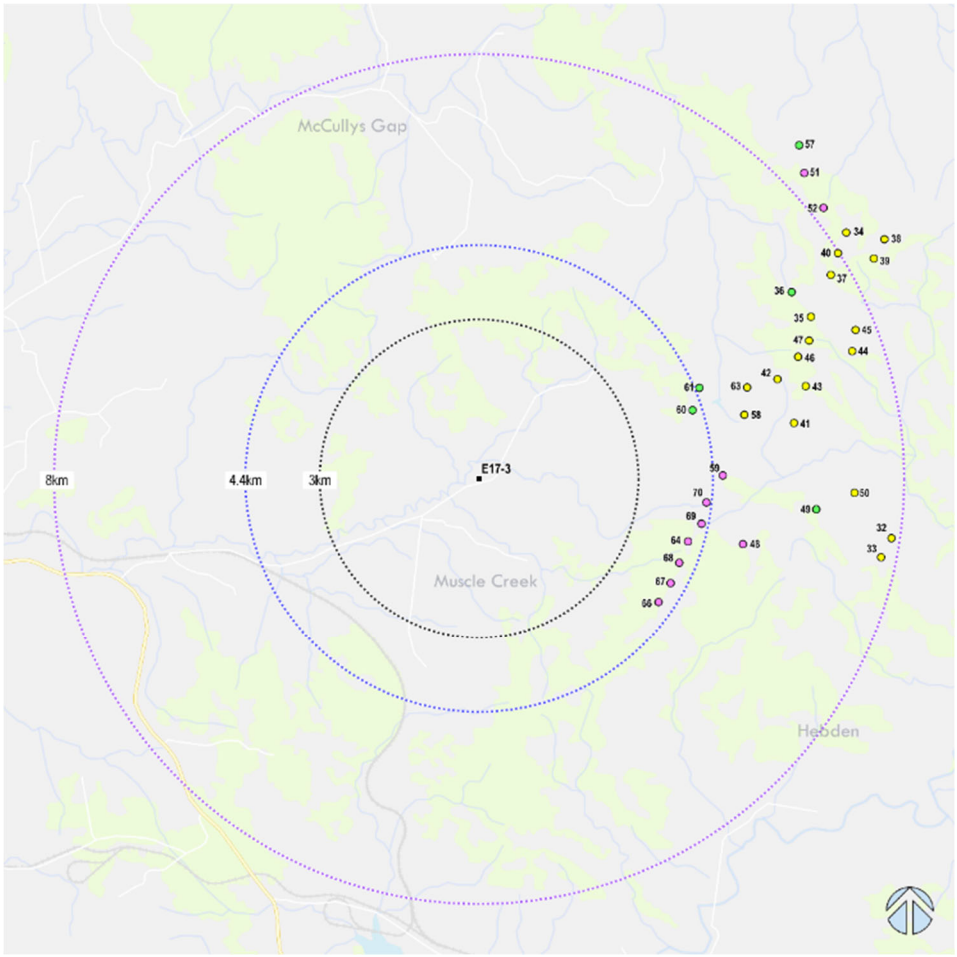
Dwelling E17-3 (E17-1, E17-2 and E17-5)

9.8.7 Viewpoint E17-3 aerial photo

9.8.8 Viewpoint E17-3 Visibility rose



9.8.9 Viewpoint E17-3 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-3 Viewpoint E17-3, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 18 and Figure 19)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (68) is located 4.09km (Far Middleground) from dwelling E17-3. The MWTT diagram indicates that 7 wind turbines would be visible (discounting vegetative screening) below the blue line with additional wind turbines extending up to 8km beyond the blue line north east of the dwelling. Scattered tree cover around the dwellings may present some filtering toward distant views of wind turbine hubs and blades. Whilst wind turbines may be visible the potential for visual impact is not significant and largely mitigated by distance. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Wind turbines are located beyond the black line at Far Middleground, therefore no mitigation measures are proposed below the black line. Photomontage analysis (E17-1): The photomontage illustrates that tree cover beyond the dwelling will largely screen and filter views toward the wind turbines.
Landscape Scenic Integrity	Objective:	Overall wind turbine visibility will not cause any significant modification to the visual

Table 9-3 Viewpoint E17-3, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.

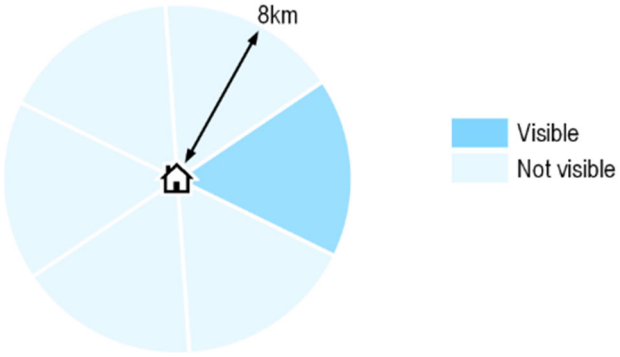
Table 9-3 Viewpoint E17-3, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location occupy 2 60-degree sectors and is therefore compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

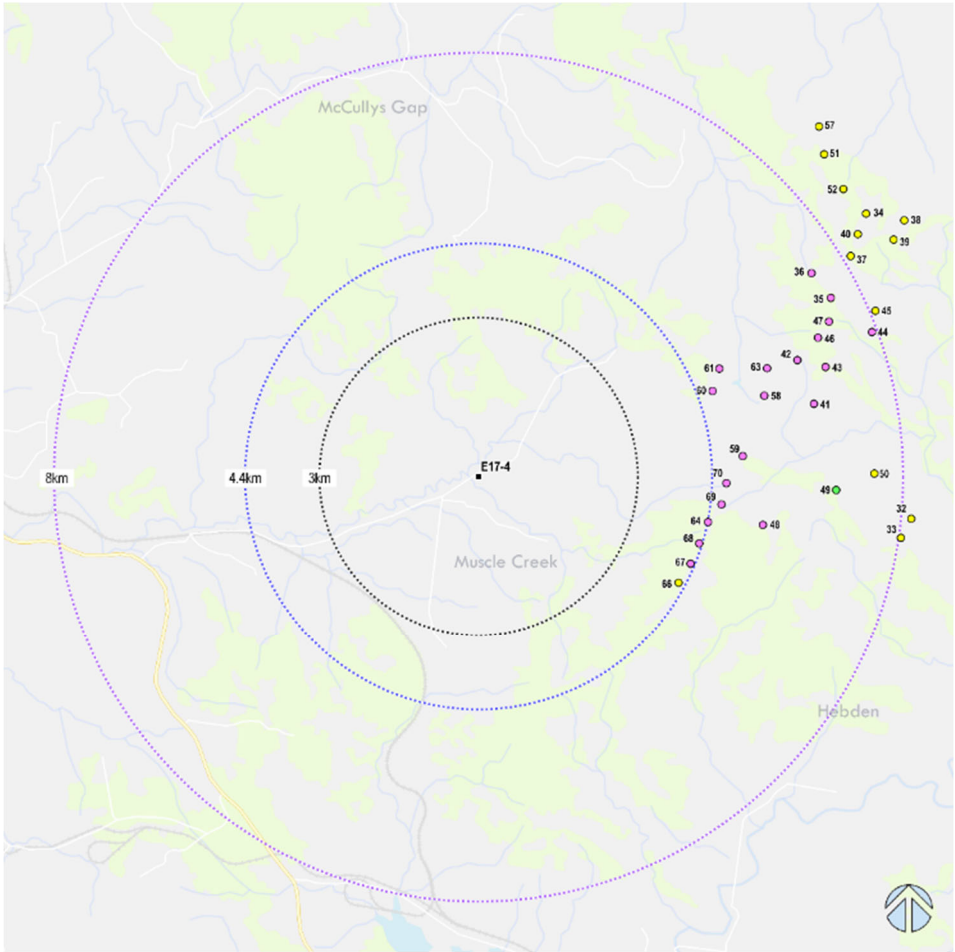
Dwelling E17-4

9.8.10 Viewpoint E17-4 aerial photo

9.8.11 Viewpoint E17-4 Visibility rose



9.8.12 Viewpoint E17-4 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-4 Viewpoint E17-4, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (66) is located 4.27km (Far Middleground) from dwelling E17-4. The MWTT diagram indicates that 3 wind turbines would be visible (discounting vegetative screening) below the blue line with additional wind turbines extending up to 8km beyond the blue line north east of the dwelling. Tree cover beyond the dwelling may present some filtering toward distant views of wind turbine hubs and blades. Whilst wind turbines may be visible the potential for visual impact is not significant and largely mitigated by distance. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Wind turbines are located beyond the black line at Far Middleground, therefore no mitigation measures are proposed below the black line.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view.

Table 9-4 Viewpoint E17-4, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location occupy one 60-degree sector and is compliant with the Multiple Wind Turbine Effects performance objectives.

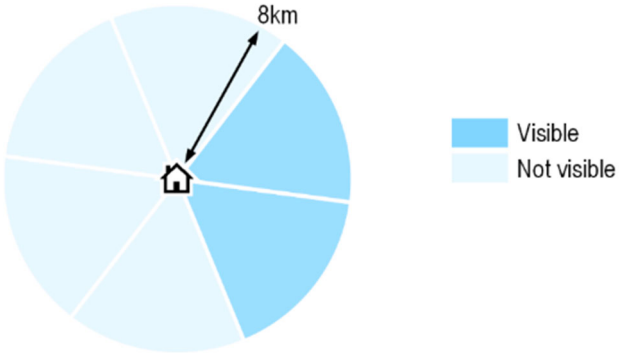
Table 9-4 Viewpoint E17-4, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

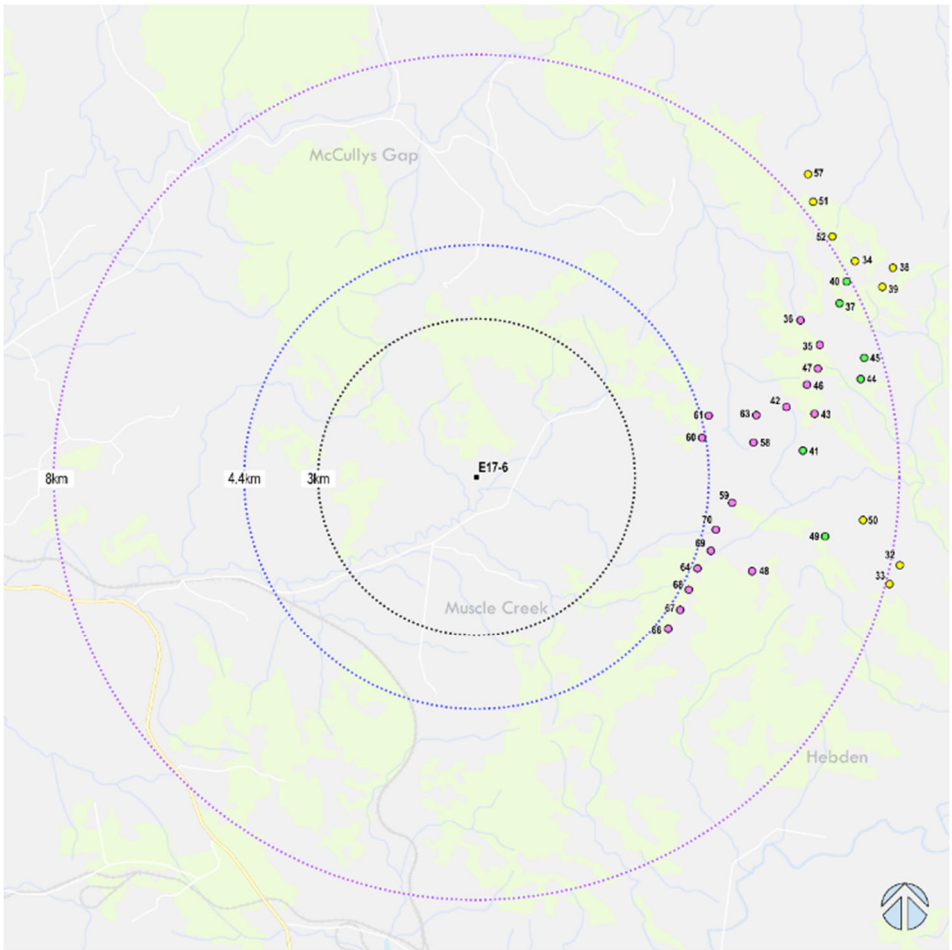
Dwelling E17-6

9.8.13 Viewpoint E17-6 aerial photo

9 .8.14 Viewpoint E17-6 Visibility rose



9.8.15 Viewpoint E17-6 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-5 Viewpoint E17-6, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (60) is located 4.33km (Far Middleground) from dwelling E17-6. The MWTT diagram indicates that 1 wind turbine would be visible (discounting vegetative screening) below the blue line with additional wind turbines extending up to 8km beyond the blue line north east of the dwelling. Tree cover beyond the dwelling may present some filtering toward distant views of wind turbine hubs and blades. Whilst wind turbines may be visible the potential for visual impact is not significant and largely mitigated by distance. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Wind turbines are located beyond the black line at Far Middleground, therefore no mitigation measures are proposed below the black line.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view.

Table 9-5 Viewpoint E17-6, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.

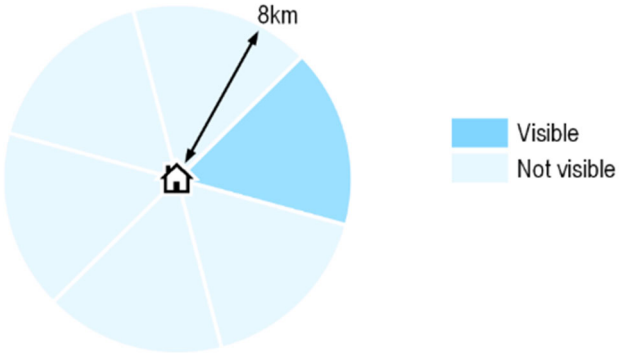
Table 9-5 Viewpoint E17-6, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

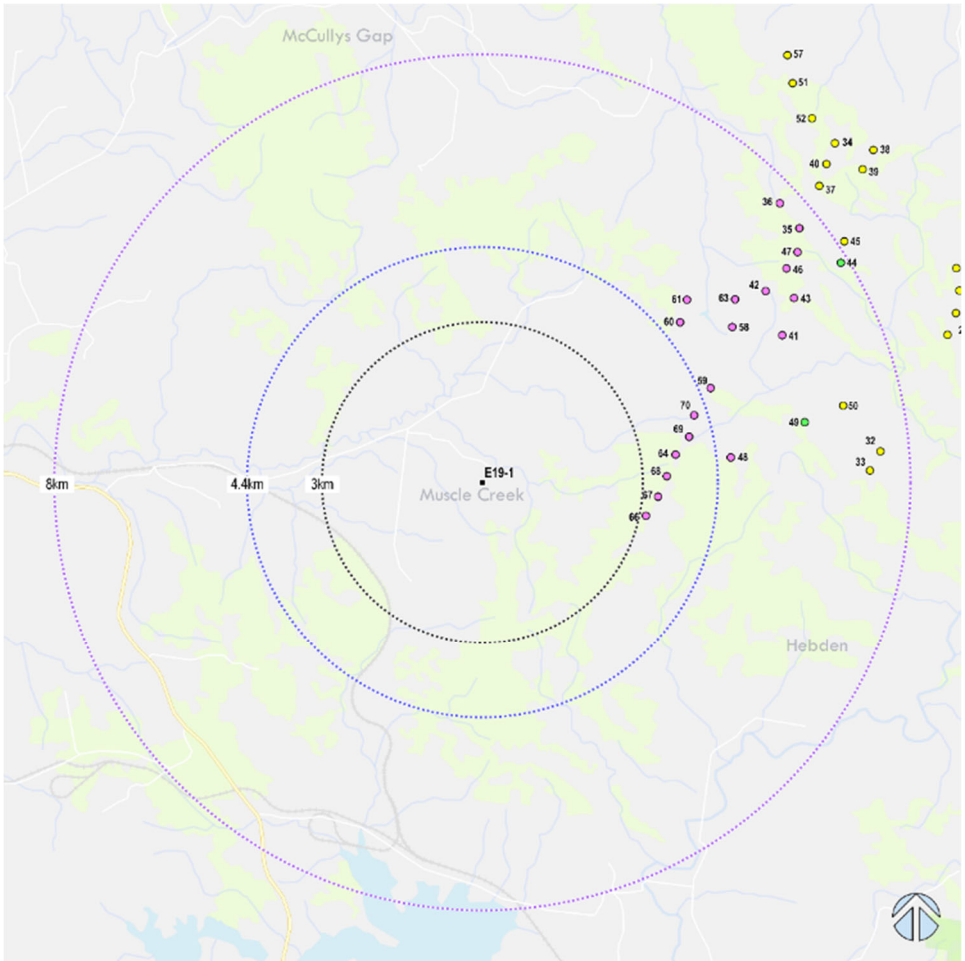
Dwelling E19-1

9.8.16 Viewpoint E19-1 aerial photo

9.8.17 Viewpoint E19-1 Visibility rose



9.8.18 Viewpoint E19-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-6 Viewpoint E19-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 20)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (66) is located 3.12km (Near Middleground) from dwelling E19-1. The MWTT diagram illustrates 6 wind turbines would be visible (discounting vegetative screening) below the blue line with additional wind turbines extending up to 8km beyond the blue line north east to east of the dwelling. Individual tree cover around and beyond the dwellings may offer some filtering of views toward wind turbines from the dwellings. Whilst wind turbines may be visible the potential for visual impact is not significant and largely mitigated by distance. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Wind turbines are located beyond the black line at Near Middleground, therefore no mitigation measures are proposed below the black line. Photomontage analysis: The photomontage illustrates the extent of view toward wind turbines below the blue line. Wind turbines will be visible along a ridgeline landform along the skyline. Some minor screening/filtering of views would be provided by tree cover. Additional spot

Table 9-6 Viewpoint E19-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
		planting of specimen trees may provide some potential for screening/filtering of views toward wind turbines.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.

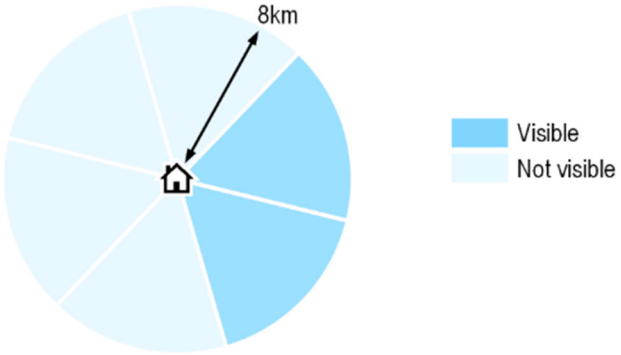
Table 9-6 Viewpoint E19-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	that have visual prominence or are focal points.	
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

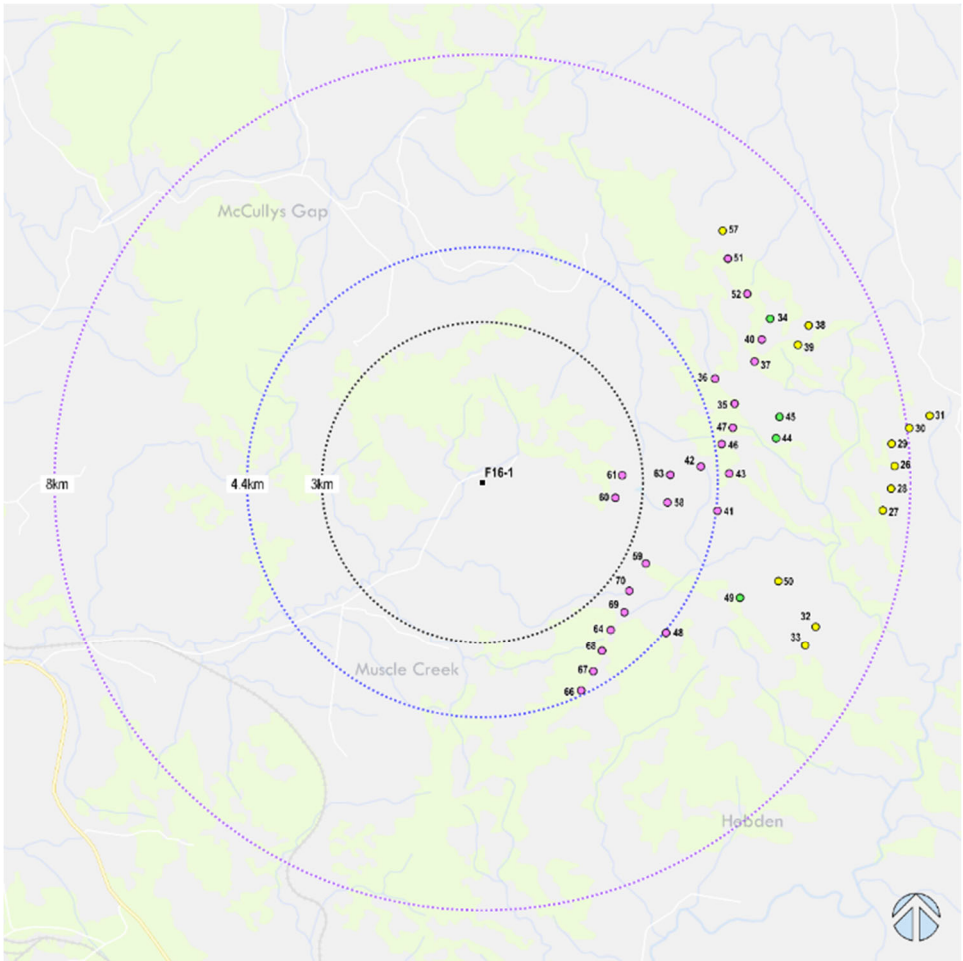
Dwelling F16-1

9.8.19 Viewpoint F16-1 aerial photo

9.8.20 Viewpoint F16-1 Visibility rose



9.8.21 Viewpoint F16-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-7 Viewpoint F16-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 21)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (60) is located 2.49km (Near Middleground) from dwelling F16-1. The MWTT diagram illustrates 2 wind turbines would be visible (discounting vegetative screening) within the black line with an additional 10 wind turbines extending up to the blue line south east to east of the dwelling. Tree cover beyond the dwelling may offer some filtering of views toward wind turbines from the dwelling and at various locations from the surrounding curtilage. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines occupying two 60-degree sectors.

Table 9-7 Viewpoint F16-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines (and specifically turbines 60 and 61) will be visually apparent and become a major element in the landscape but will not dominate the existing visual catchment which extends to hills and ridgelines without wind turbines north north east to south west of the dwelling.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points within the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.

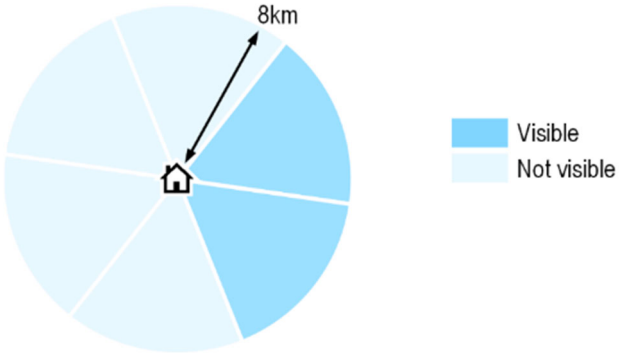
Table 9-7 Viewpoint F16-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	effective horizontal views in three or more 60° sectors.	
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Proponent to offer neighbour agreement and screening (below the black line) to the landowner. Without a neighbour agreement consider removal of wind turbines 60 and 61.

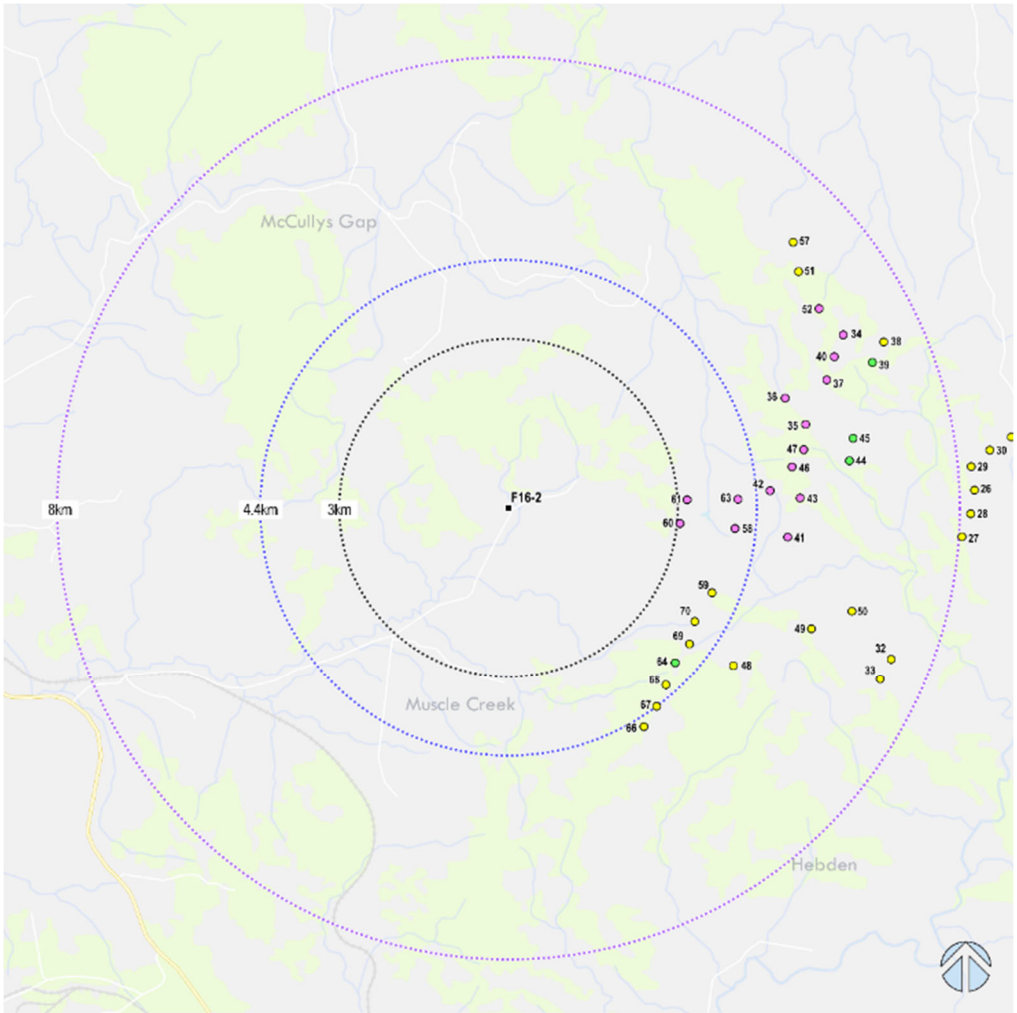
Dwelling F16-2

9.8.22 Viewpoint F16-2 aerial photo

9.8.23 Viewpoint F16-2 Visibility rose



9.8.24 Viewpoint F16-2 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-8 Viewpoint F16-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (60) is located 3.05km (Near Middleground) from dwelling F16-2. The MWTT diagram illustrates 4 wind turbines would be visible (discounting vegetative screening) beyond the black line with additional wind turbines extending beyond the blue line east to north east of the dwellings. Tree cover beyond the dwellings may offer some filtering of views toward wind turbines from the dwelling and at various locations from the surrounding curtilage. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating

Table 9-8 Viewpoint F16-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.

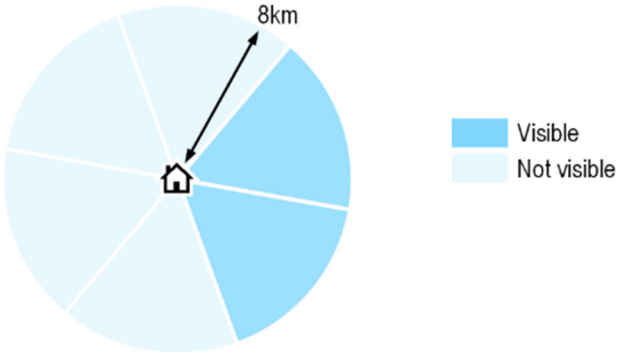
Table 9-8 Viewpoint F16-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	effective horizontal views in three or more 60° sectors.	
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Proponent to offer neighbour agreement and screening (below the black line) to the landowner.

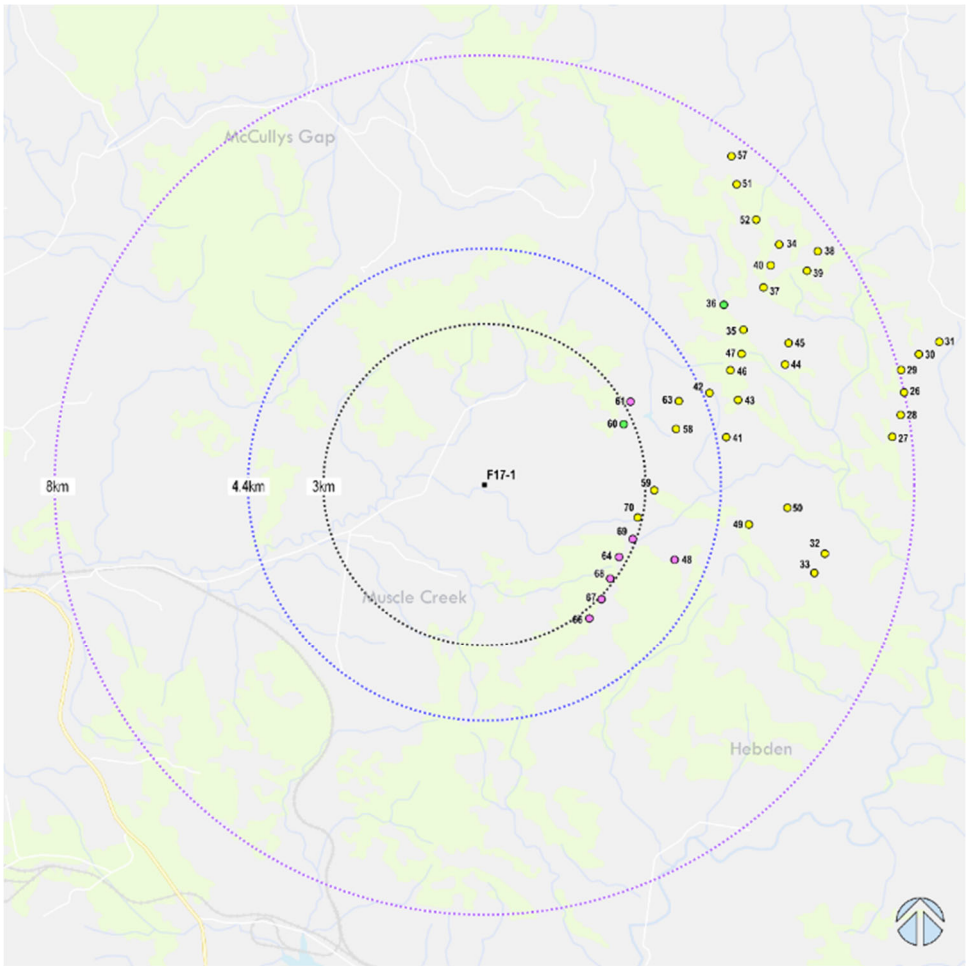
Dwelling F17-1

9.8.25 Viewpoint F17-1 aerial photo

9.8.26 Viewpoint F17-1 Visibility rose



9.8.27 Viewpoint F17-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-9 Viewpoint F17-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (60) is located 2.83km (Near Middleground) from dwelling F17-1. The MWTT diagram illustrates 4 wind turbines would be visible (discounting vegetative screening) below the black line with an additional 3 wind turbines extending beyond the blue line south east of the dwelling. Tree cover beyond the dwelling may offer some filtering of views toward wind turbines from the dwelling and at various locations from the surrounding curtilage. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view.

Table 9-9 Viewpoint F17-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.

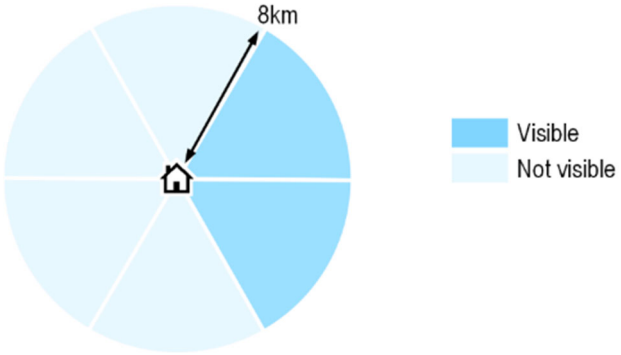
Table 9-9 Viewpoint F17-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	effective horizontal views in three or more 60° sectors.	
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Proponent to offer neighbour agreement and screening (below the black line) to the landowner.

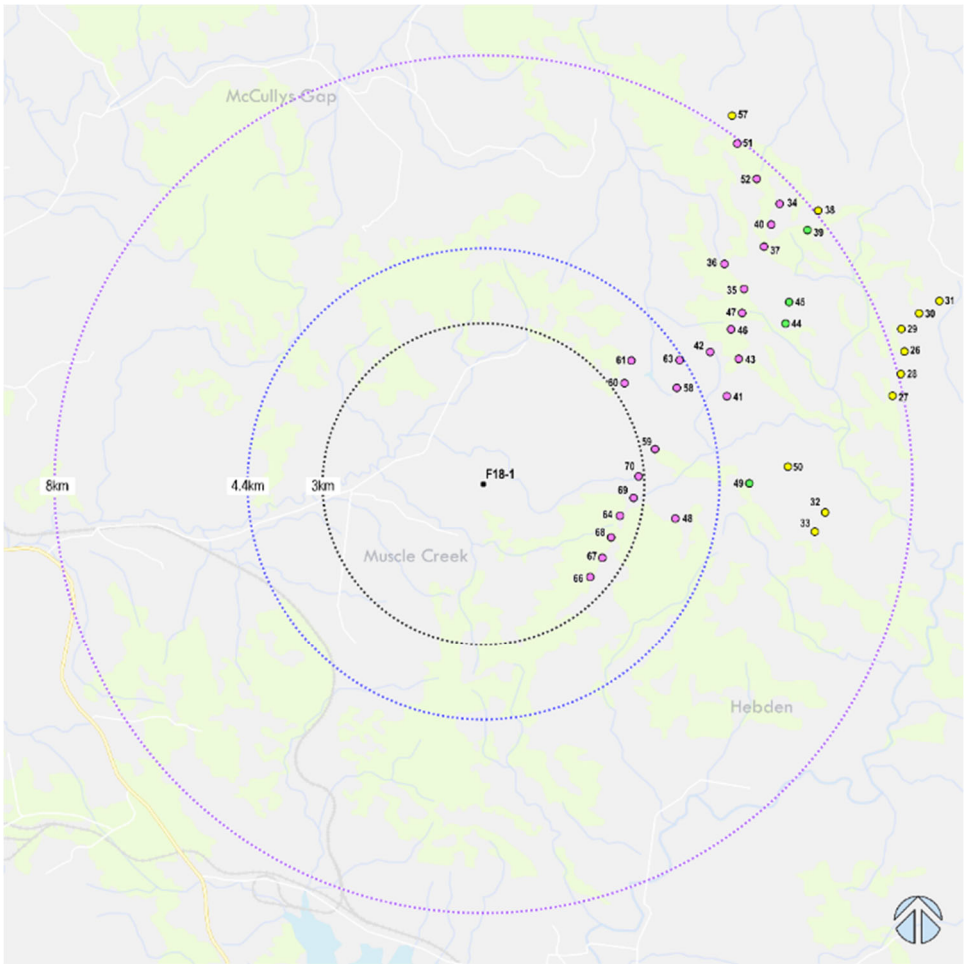
Dwelling F18-1

9.8.28 Viewpoint F18-1 aerial photo

9.8.29 Viewpoint F18-1 Visibility rose



9.8.30 Viewpoint F18-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-10 Viewpoint F18-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (68) is located 2.58km (Near Middleground) from dwelling F18-1. The MWTT diagram illustrates 6 wind turbines would be visible (discounting vegetative screening) within the black line with an additional 6 wind turbines extending to the blue line east to north east of the dwelling. The dwelling and curtilage lacks any significant tree cover therefore views toward wind turbines would be open and direct. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. Whilst the wind turbines do not impart a significant vertical dominance over the dwelling or surrounding curtilage, they will be visible along a sloping ridgeline landform. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view.

Table 9-10 Viewpoint F18-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.

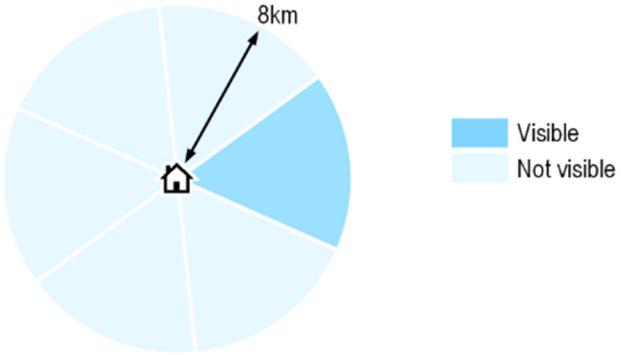
Table 9-10 Viewpoint F18-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	effective horizontal views in three or more 60° sectors.	
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Proponent to offer neighbour agreement and screening (below the black line) to the landowner.

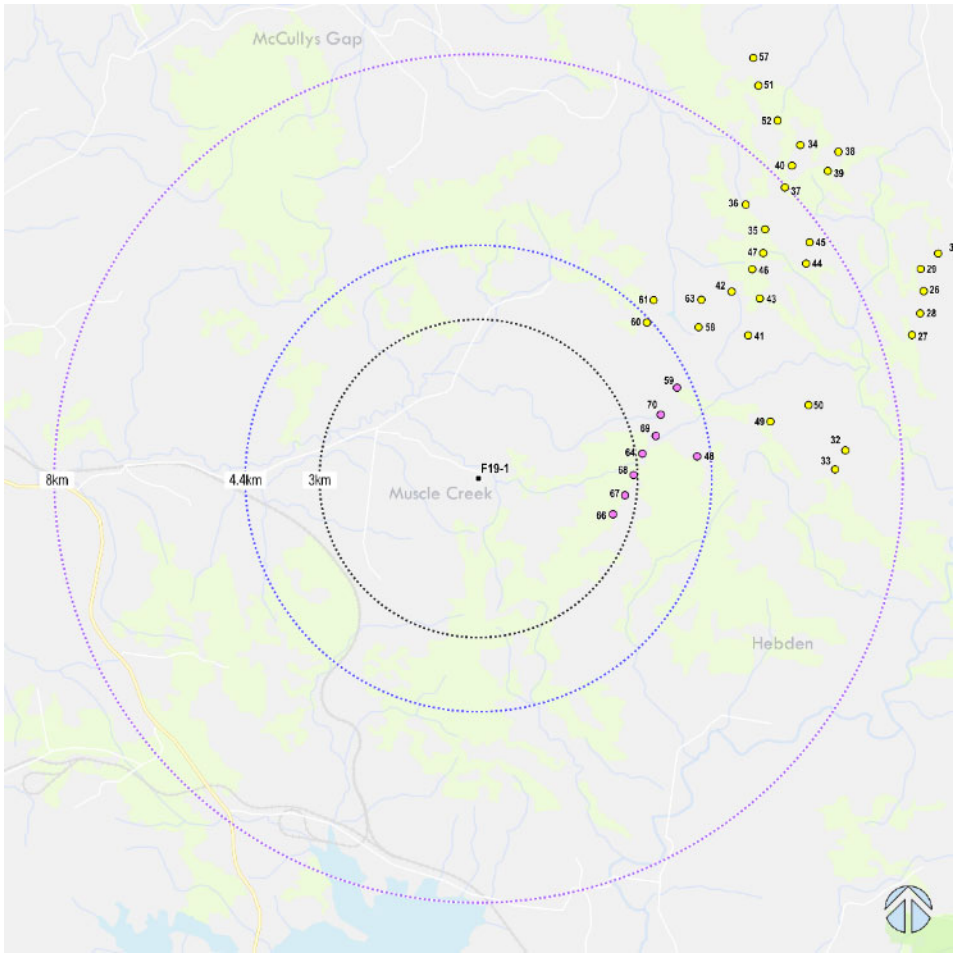
Dwelling F19-1

9.8.31 Viewpoint F19-1 aerial photo

9.8.32 Viewpoint F19-1 Visibility rose



9.8.33 Viewpoint F19-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-11 Viewpoint F19-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 22)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (66) is located 2.63km (Near Middleground) from dwelling F19-1. The MWTT diagram illustrates 3 wind turbines would be visible (discounting vegetative screening) below the black line with an additional 5 wind turbines extending to the blue line east to north east of the dwelling. The MWTT diagram illustrates that wind turbines beyond the blue line will not be visible from this dwelling. The dwelling and curtilage lack any significant tree cover therefore views toward wind turbines would be open and direct. Wind turbines within single 60-degree sector are not considered to dominate the available viewshed. Whilst the wind turbines do not impart a significant vertical dominance over the dwelling or surrounding curtilage, they will be visible along a sloping ridgeline landform. Wind turbines within the single 60-degree sector are not considered to dominate the available viewshed. Whilst the wind turbines do not impart a significant vertical dominance over the dwelling or surrounding curtilage, they will be visible along a sloping ridgeline landform. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent.

Table 9-11 Viewpoint F19-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
		The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Photomontage analysis: The photomontage illustrates the extent of view toward wind turbines below the blue line. Wind turbines will be visible along a ridgeline landform along the skyline.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in	The visible wind turbines will not result in the removal or visual alteration of key landscape

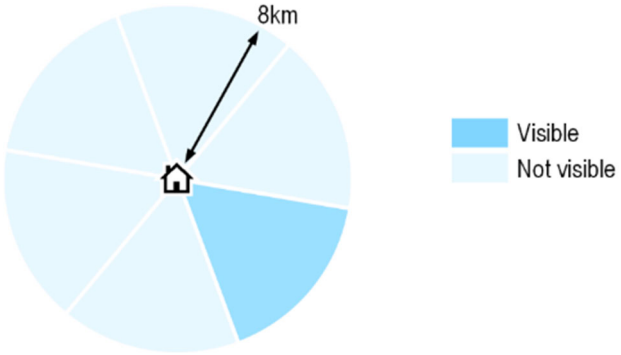
Table 9-11 Viewpoint F19-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Proponent to offer neighbour agreement and screening (below the black line) to the landowner. Spot planting of specimen trees may provide some potential for screening/filtering of views toward wind turbines.

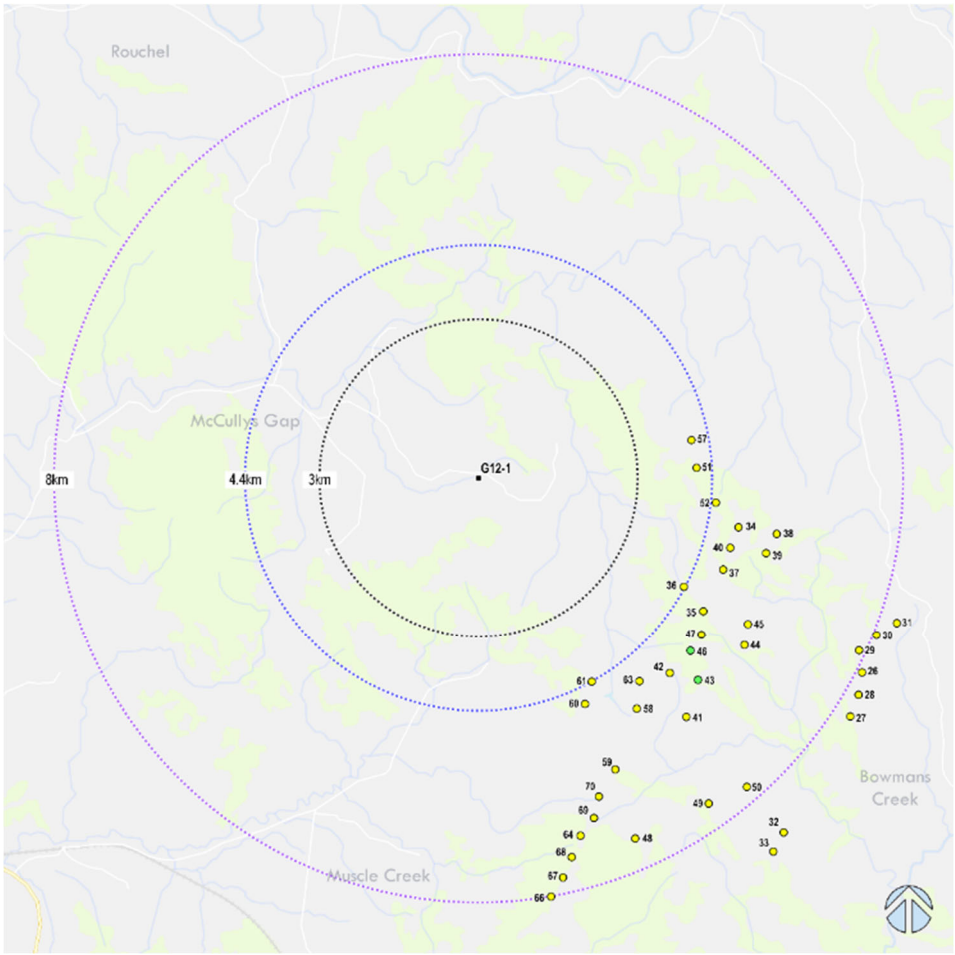
Dwelling G12-1 (and G11-1)

9.8.34 Viewpoint G12-1 aerial photo

9.8.35 Viewpoint G12-1 Visibility rose



9.8.36 Viewpoint G12-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-12 Viewpoint G12-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 23)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (57) is located at 4.08km (Far Middleground) from the dwelling G12-1. The MWTT diagram illustrates the 2 wind turbines (blades only) will be visible beyond the blue line. Photomontage analysis: The photomontage illustrates the general extent of landform and tree cover providing screening toward most wind turbines beyond the blue line.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.

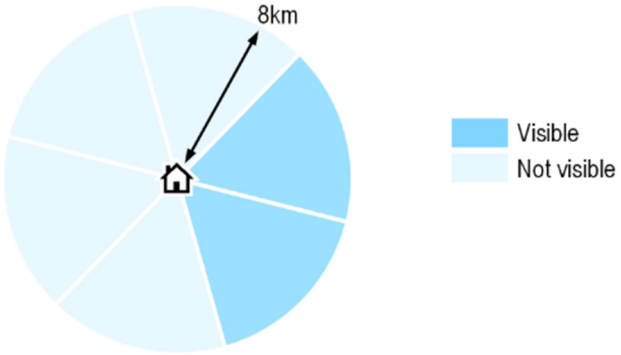
Table 9-12 Viewpoint G12-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		The extent of wind turbine visibility is not considered to require mitigation or management option at this dwelling. This will be confirmed post construction.

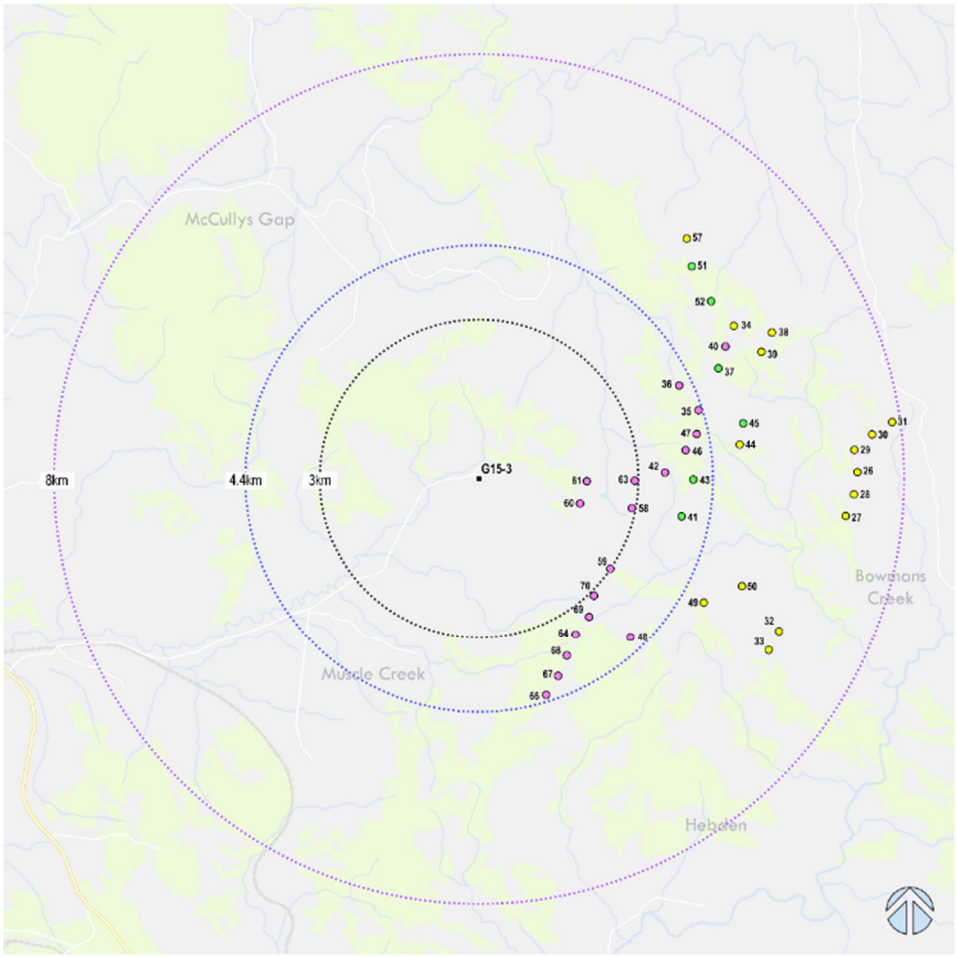
Dwelling G15-3

9.8.37 Viewpoint G15-3 aerial photo

9.8.38 Viewpoint G15-3 Visibility rose



9.8.39 Viewpoint G15-3 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-13 Viewpoint G15-3, Rural dwelling VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 24)	Objective: Avoid turbines or provide detailed justification of turbines below the blue line.	Closest wind turbine (60) is located 1.96km (Near Foreground) from dwelling G15-3. The MWTT diagram illustrates 5 wind turbines would be visible (discounting vegetative screening) below the black line with an additional 14 wind turbines extending up to the blue line east to south south east of the dwelling. Tree cover beyond the dwelling will offer some filtering and screening of views toward wind turbines from the dwelling and the surrounding curtilage. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause more than a low-level modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating

Table 9-13 Viewpoint G15-3, Rural dwelling VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
	Turbines are seen as either very small and/ or faint, or as of a size and colour contrast (under clear, haze-free atmospheric conditions) that they would not compete with major elements of the existing visual catchment. In the moderate scenic quality class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	the existing visual catchment due to extent and potential screening within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Avoid wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 1 (high sensitivity) – wind turbines visible within the	Visible wind turbines within 8km of the view location are restricted to one 60-degree sector through tree screening beyond the dwelling. The Multiple Wind Turbine Effect is compliant with the VIZ1 performance objective.

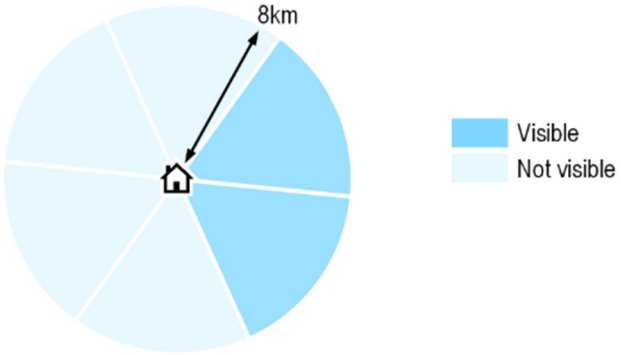
Table 9-13 Viewpoint G15-3, Rural dwelling VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
	effective horizontal views of two or more 60° sectors	
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Proponent to offer neighbour agreement and screening (below the black line) to the landowner.
Visual Magnitude Justification and photomontage analysis	Tree cover illustrated in the photomontage from dwelling G15-3 demonstrates the significant degree of screening toward most wind turbines below the blue line. Tree cover will restrict views to the upper portions (nacelles and blades) of around 5 wind turbines between the black and blue lines. Tree cover will also restrict views to a single 60-degree sector thereby mitigating the potential visual effects of multiple wind turbines across a horizontal viewshed. (refer photomontage Appendix B)	

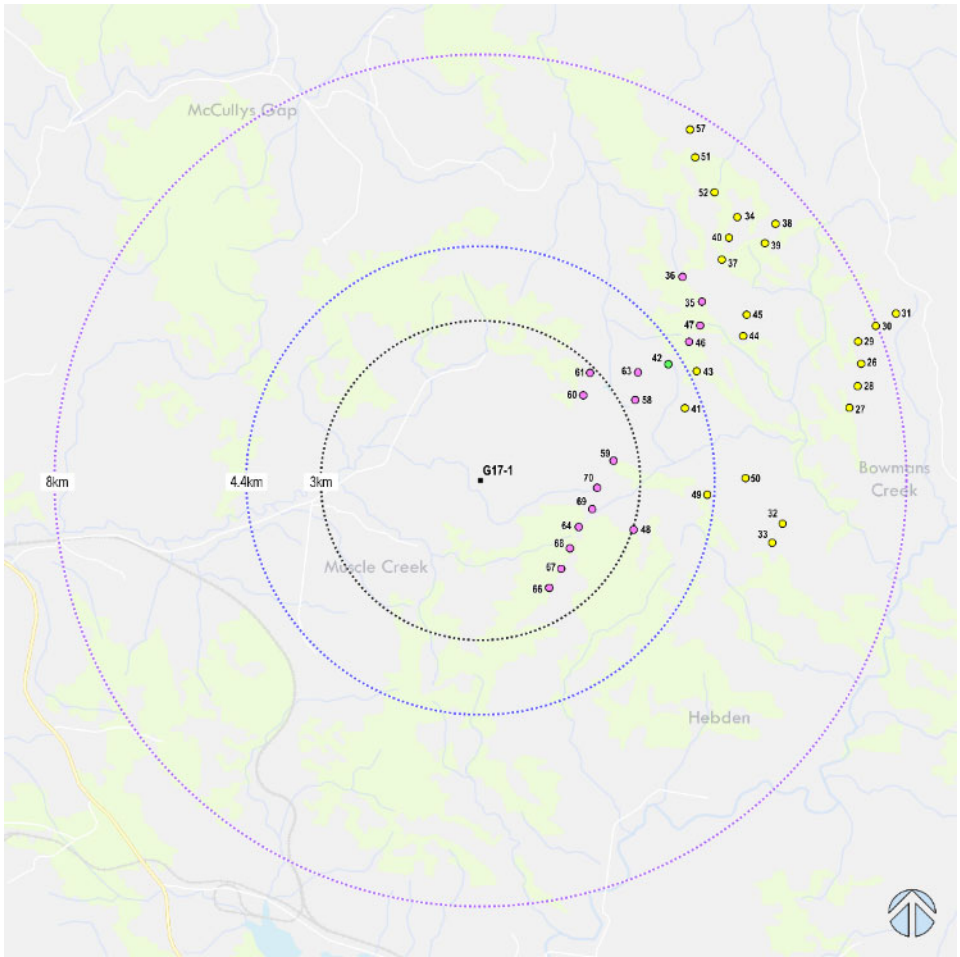
Dwelling G17-1

9.8.40 Viewpoint G17-1 aerial photo

9.8.41 Viewpoint G17-1 Visibility rose



9.8.42 Viewpoint G17-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-14 Viewpoint G17-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 25)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (64) is located 2.04km (Near Middleground) from dwelling G17-1. The MWTT diagram illustrates 8 wind turbines would be visible (discounting vegetative screening) below the black line with an additional 4 wind turbines extending to the blue line south east to north east of the dwelling. The dwelling curtilage lacks significant tree cover therefore views toward wind turbines would be open and direct. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. Whilst the wind turbines do not impart a significant vertical dominance over the dwelling or surrounding curtilage, they will be visible along a sloping ridgeline landform. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment. The wind turbines will be visually apparent and become a major element in the landscape.

Table 9-14 Viewpoint G17-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the	Wind turbines occur within two 60-degree sectors; however, tree planting beyond the

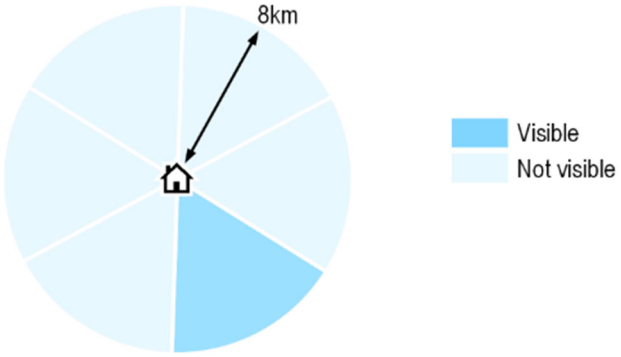
Table 9-14 Viewpoint G17-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	effective horizontal views in three or more 60° sectors.	dwelling will separate and reduce the extent of horizontal views (refer photomontage G17-1)
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Proponent to offer neighbour agreement and screening (below the black line) to the landowner.
Visual Magnitude Justification and photomontage analysis	Tree cover illustrated in the photomontage from dwelling/curtilage G17-1 demonstrates some partial screening toward wind turbines below the black line. However, the degree of screening will alter as the view location changes within the curtilage. The property owner will be offered a neighbour agreement to address potential visual impacts as well as plant screening mitigation.	

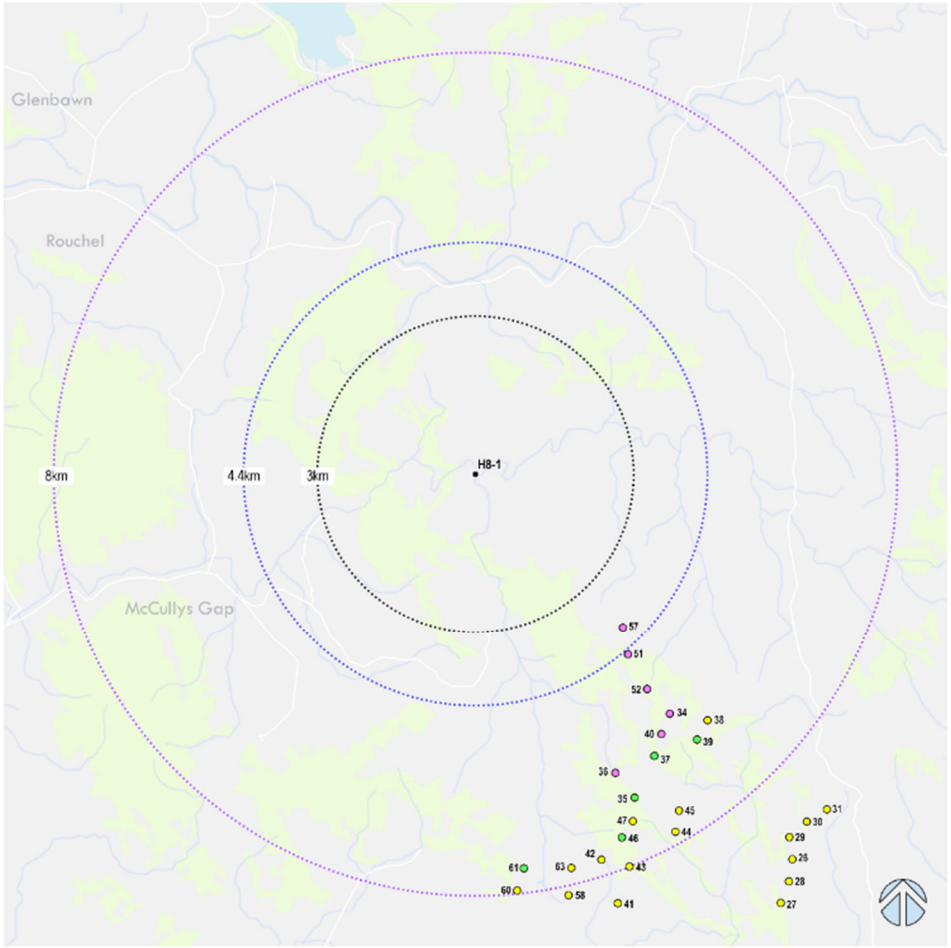
Dwelling H8-1

9.8.43 Viewpoint H8-1 aerial photo

9.8.44 Viewpoint H8-1 Visibility rose



9.8.45 Viewpoint H8-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-15 Viewpoint H8-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (57) is located 4.03km (Far Middleground) from dwelling H8-1. The MWTT diagram illustrates 1 wind turbine would be visible (discounting vegetative screening) between the black and blue line with additional wind turbines extending beyond the blue line south to south east of the dwelling. The dwelling curtilage includes some tree cover with views toward the wind turbine partially screened or filtered from the dwelling and curtilage. The wind turbine within one 60-degree sector is not considered to dominate the available viewshed. Whilst the wind turbine may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view.

Table 9-15 Viewpoint H8-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.

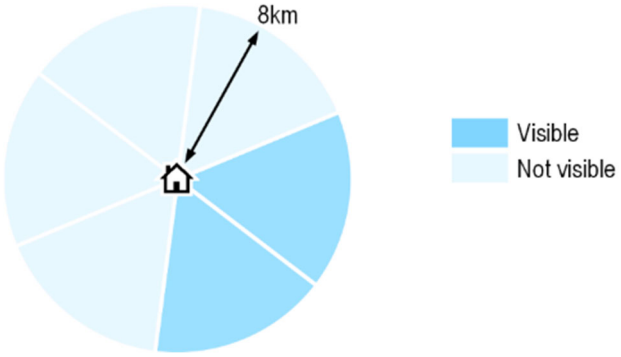
Table 9-15 Viewpoint H8-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

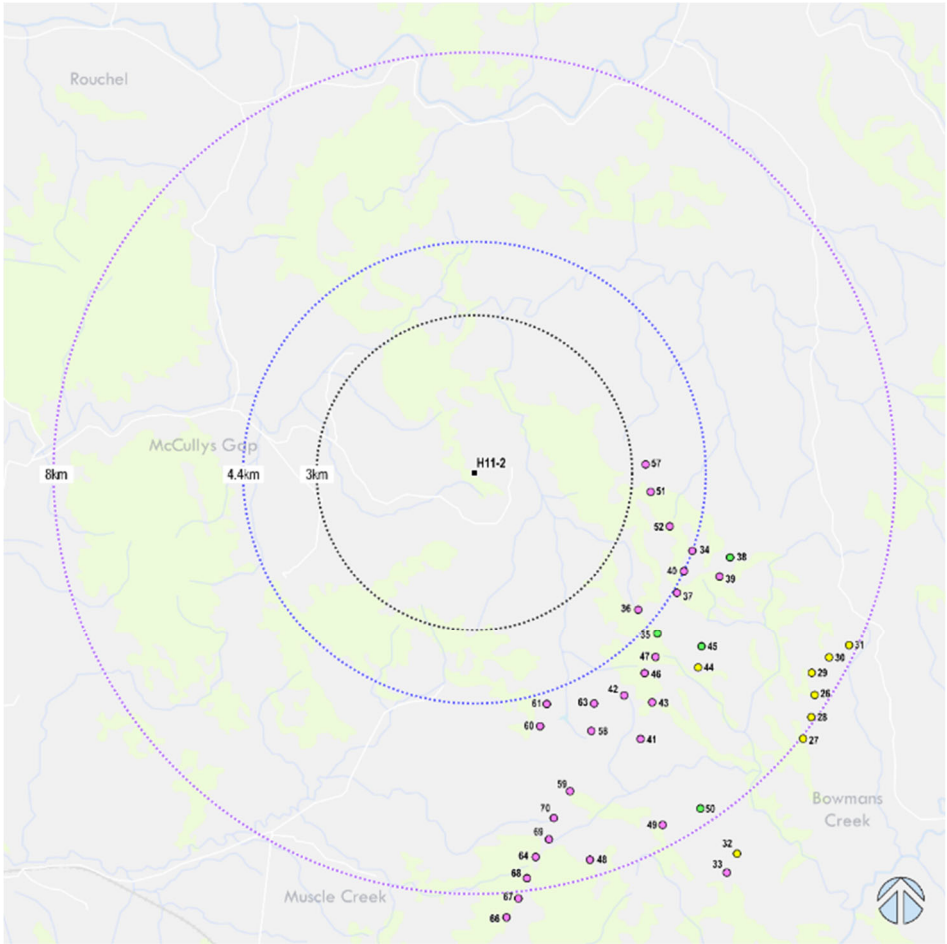
Dwelling H11-2

9.8.46 Viewpoint H11-2 aerial photo

9.8.47 Viewpoint H11-2 Visibility rose



9.8.48 Viewpoint H11-2 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-16 Viewpoint H11-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 27)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (57) is located 3.26km (Near Middleground) from dwelling H11-2. The MWTT diagram illustrates 6 wind turbines would be visible (discounting vegetative screening) between the black and blue line with an additional 20 wind turbines extending beyond the blue line east to south of the dwelling. Tree cover beyond the dwelling may offer some filtering of views toward wind turbines south east to south south east from the dwelling and at various locations from the surrounding curtilage. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Photomontage analysis: The photomontage illustrates views toward wind turbines along timbered ridgelines east to south east of the dwelling. Some potential

Table 9-16 Viewpoint H11-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
		for screening/filtering of views toward wind turbines south east to south of the dwelling would be provided by tree cover beyond the dwelling.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform,	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.

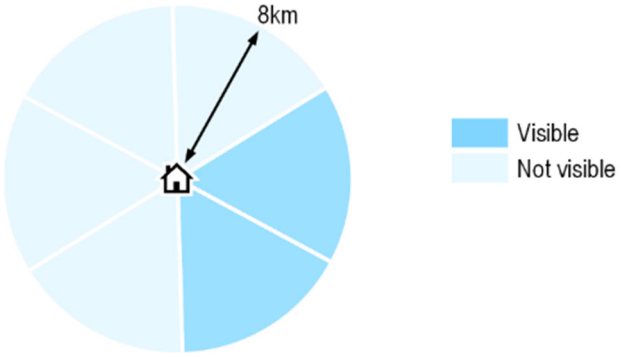
Table 9-16 Viewpoint H11-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	vegetation or cultural features that have visual prominence or are focal points.	
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Proponent to offer neighbour agreement and/or screening to the landowner.

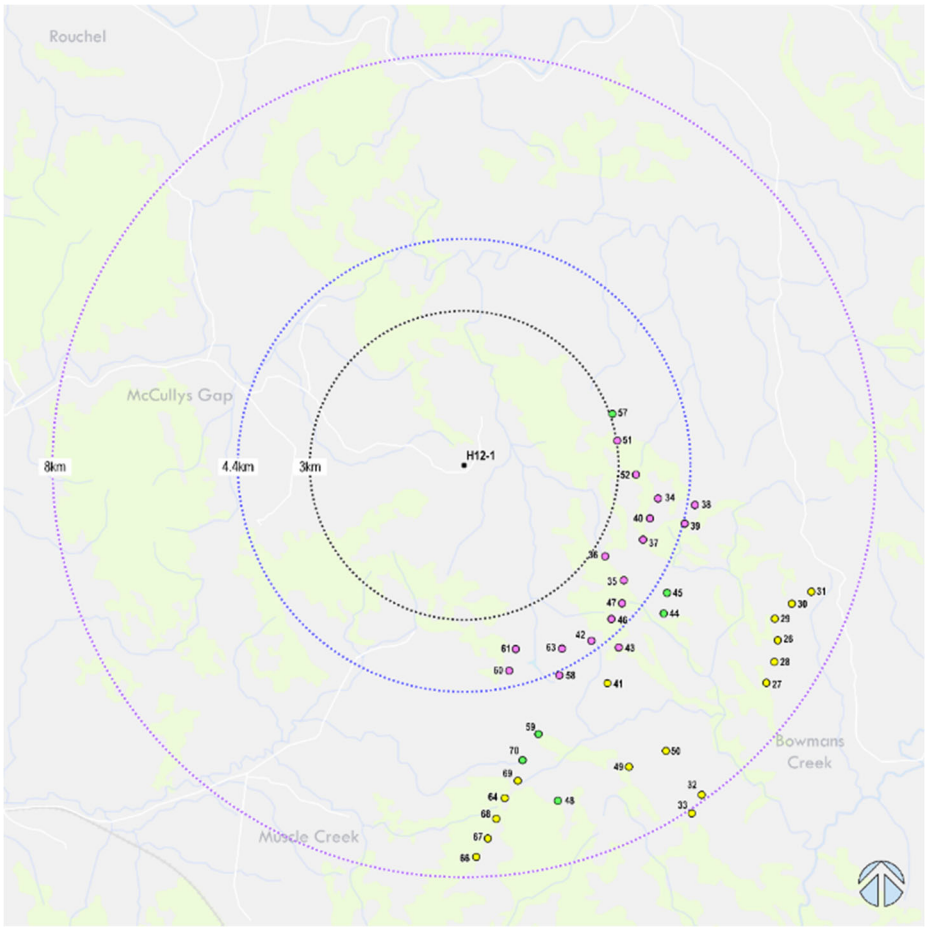
Dwelling H12-1

9.8.49 Viewpoint H12-1 aerial photo

9.8.50 Viewpoint H12-1 Visibility rose



9.8.51 Viewpoint H12-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-17 Viewpoint H12-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (51) is located 3.02km (Near Middleground) from dwelling H12-1. The MWTT diagram illustrates 14 wind turbines would be visible (discounting vegetative screening) between the black and blue line with an additional 9 wind turbines extending beyond the blue line east to south of the dwelling. Landform and tree cover beyond the dwelling may offer some filtering of views toward wind turbines east to south south east from the dwelling and at various locations from the surrounding curtilage. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating

Table 9-17 Viewpoint H12-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.

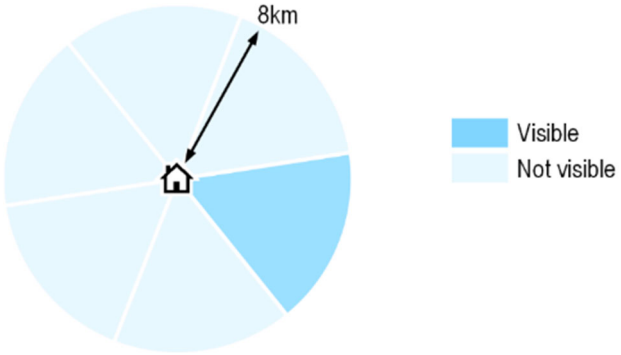
Table 9-17 Viewpoint H12-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	effective horizontal views in three or more 60° sectors.	
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Proponent to offer neighbour agreement and/or screening to the landowner.

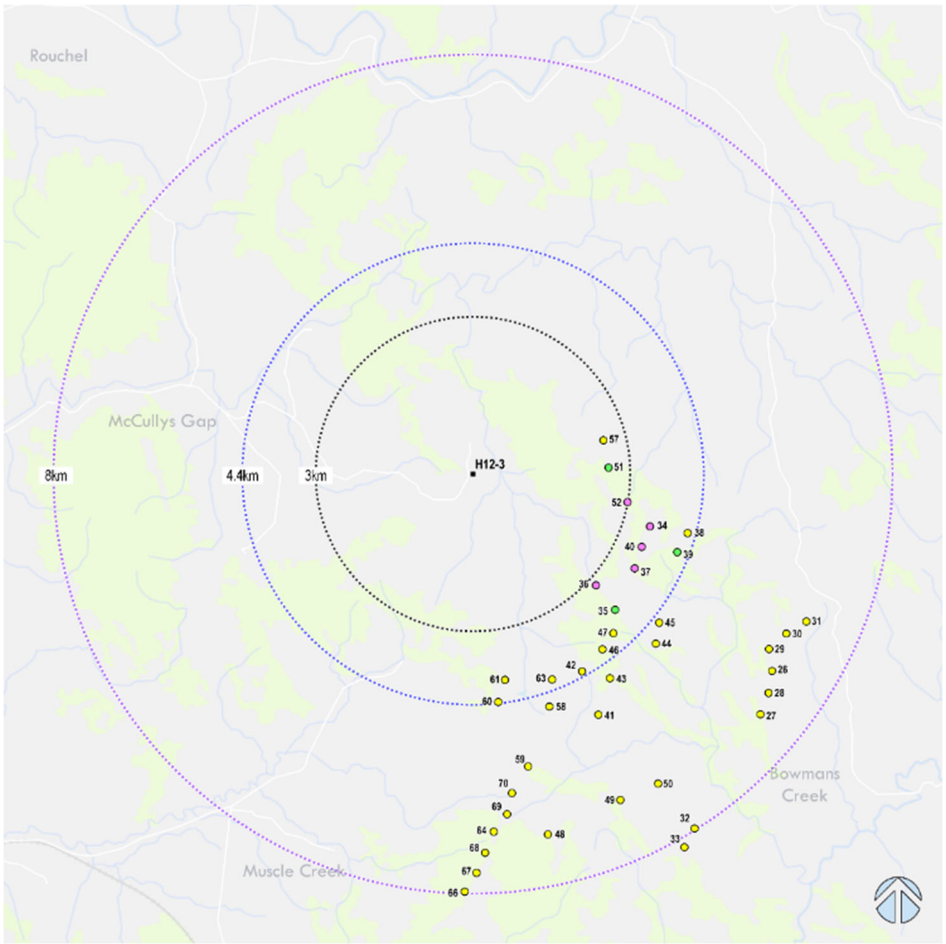
Dwelling H12-3 (H11-1, and H12-2)

9.8.52 Viewpoint H12-3 aerial photo

9.8.53 Viewpoint H12-3 Visibility rose



9.8.54 Viewpoint H12-3 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-18 Viewpoint H12-3, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 26 and Figure 28)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (57) is located 2.57km (Near Middleground) from dwelling H12-3 and would be visible to blade only. The MWTT diagram illustrates 2 visible wind turbines below (and on) the black line and 6 wind turbines visible (discounting vegetative screening) south east of the dwelling. Landform and partial tree cover beyond the dwellings may offer some filtering of views toward wind turbines south east from the dwelling and at various locations from the surrounding curtilage. Wind turbines within one 60-degree sector are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Photomontage analysis (H12-3): The photomontage illustrates the general extent of screening provided by existing tree cover between wind turbines east to south east and the dwelling.

Table 9-18 Viewpoint H12-3, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
		Photomontage analysis (H11-1): The photomontage illustrates the general extent of partial screening provided by existing tree cover between wind turbines east to south east and the dwelling.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.

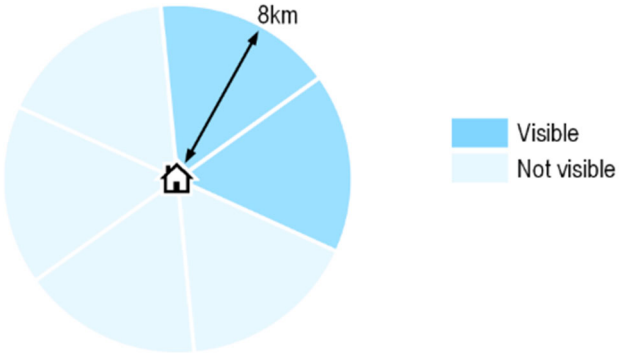
Table 9-18 Viewpoint H12-3, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Proponent to offer neighbour agreement and/or screening to landowners.

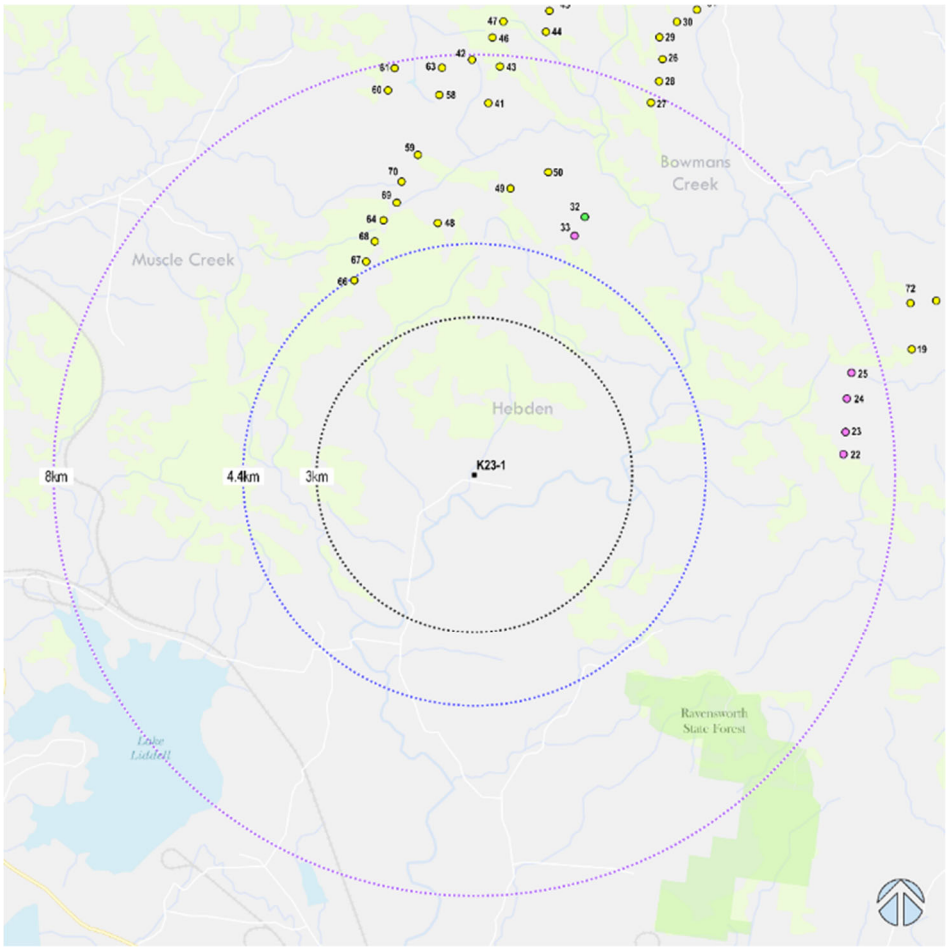
Dwelling K23-1

9.8.55 Viewpoint K23-1 aerial photo

9.8.56 Viewpoint K23-1 Visibility rose



9.8.57 Viewpoint K23-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-19 Viewpoint K23-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (66) is located 4.35km (Far Middleground) from dwelling K23-1. The MWTT diagram illustrates no wind turbines will be visible below the black or blue lines. Distant views (in excess of 4km) will extend toward wind turbines to the east and north north east of the dwelling. Landform and tree cover beyond the dwelling will offer screening of views toward wind turbines north from the dwelling from various locations from the dwelling curtilage. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view.

Table 9-19 Viewpoint K23-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape including views toward Well Mountain.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.

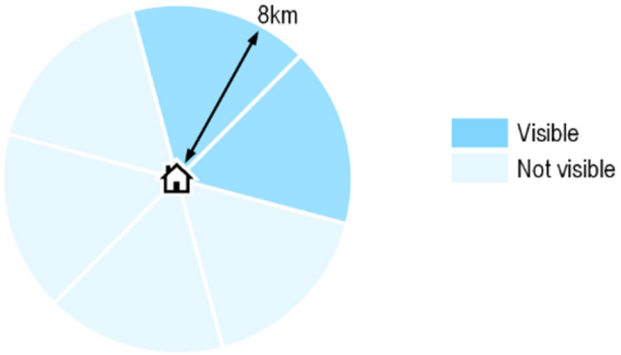
Table 9-19 Viewpoint K23-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	effective horizontal views in three or more 60° sectors.	
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

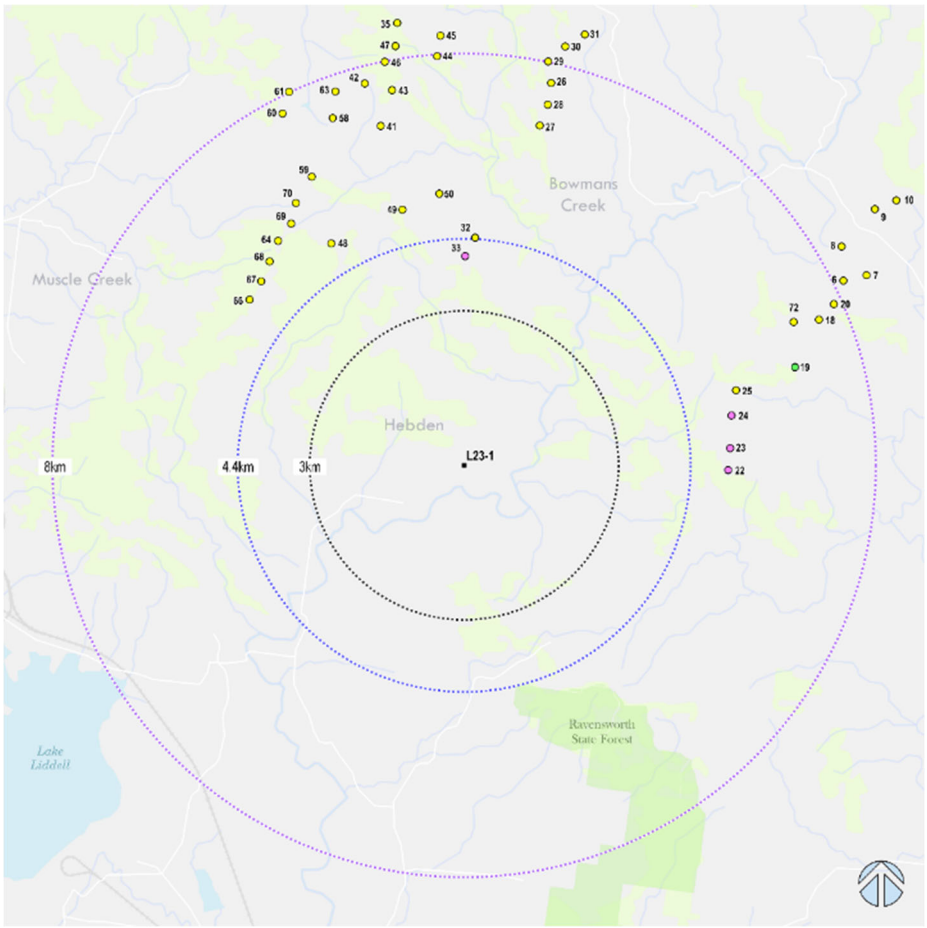
Dwelling L23-1

9.8.58 Viewpoint L23-1 aerial photo

9.8.59 Viewpoint L23-1 Visibility rose



9.8.60 Viewpoint L23-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-20 Viewpoint L23-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (33) is located 4.07km (Far Middleground) from dwelling L23-1. The MWTT diagram illustrates that 1 wind turbine will be visible between the black and blue lines. Distant views (in excess of 4km) will extend toward wind turbines beyond the blue line to the east of the dwelling. Landform and tree cover beyond the dwelling will offer screening of views toward wind turbines north from the dwelling from various locations from the dwelling curtilage. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view.

Table 9-20 Viewpoint L23-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.

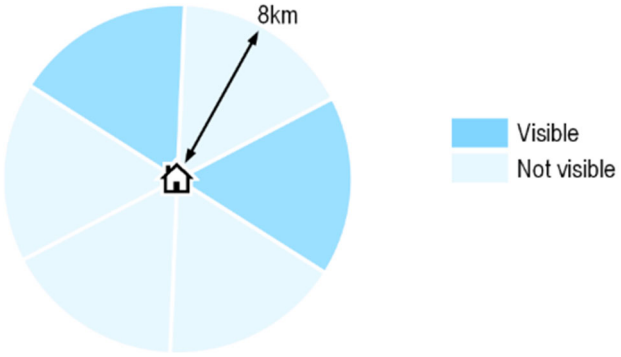
Table 9-20 Viewpoint L23-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	effective horizontal views in three or more 60° sectors.	
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

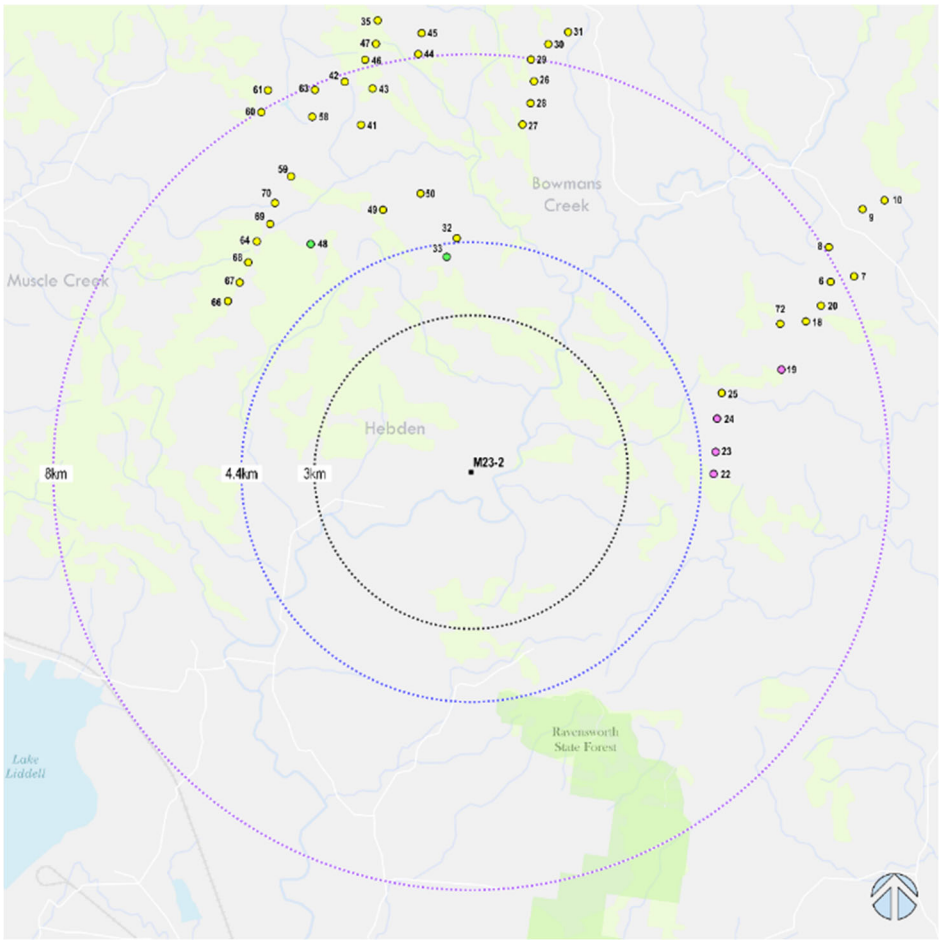
Dwelling M23-2

9.8.61 Viewpoint M23-2 aerial photo

9.8.62 Viewpoint M23-2 Visibility rose



9.8.63 Viewpoint M23-2 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-21 Viewpoint M23-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 29 for M23-1)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (33) is located 4.15km (Far Middleground) from dwelling M23-2. The MWTT diagram illustrates that 1 wind turbine (blade only) will be visible between the black and blue lines. Distant views (in excess of 4km) will extend toward wind turbines beyond the blue line to the east of the dwelling. Landform and tree cover beyond the dwelling will offer screening of views toward wind turbines north from the dwelling from various locations from the dwelling curtilage. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Photomontage analysis (M23-1): The photomontage illustrates that views toward the majority of wind turbines will be screened by extensive tree cover beyond the dwelling.

Table 9-21 Viewpoint M23-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.

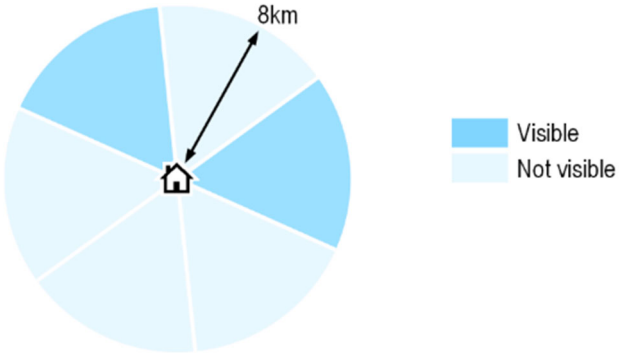
Table 9-21 Viewpoint M23-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

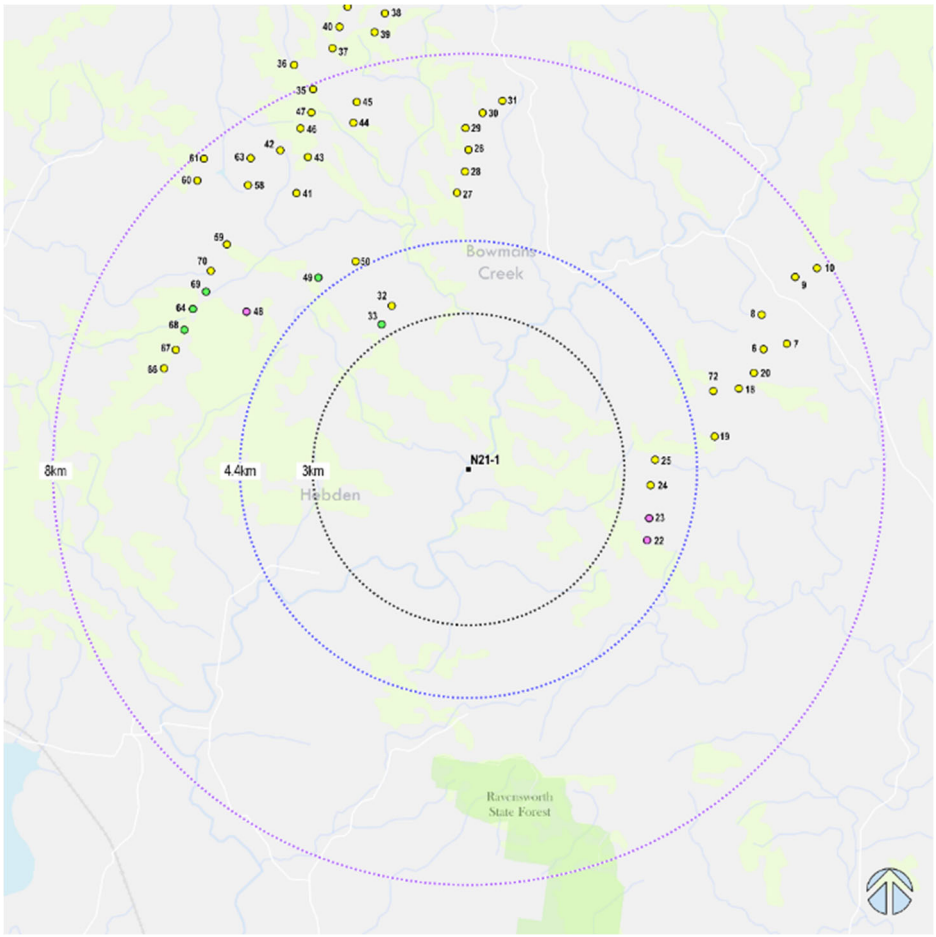
Dwelling N21-1 (and N21-2)

9.8.64 Viewpoint N21-1 aerial photo

9.8.65 Viewpoint N21-1 Visibility rose



9.8.66 Viewpoint N21-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-22 Viewpoint N21-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (24) is located 3.25km (Near Middleground) from dwelling N21-1. The MWTT diagram illustrates that 2 wind turbines will be visible between the black and blue lines south east of the dwelling and 1 wind turbine north west of the dwelling. Distant views (in excess of 4km) will extend toward wind turbines (largely blade only) beyond the blue line to the north west of the dwelling. Landform and tree cover beyond the dwelling will offer screening of views toward wind turbines from the dwellings from various locations from the dwelling curtilages. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective:	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a

Table 9-22 Viewpoint N21-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points including views toward Well Mountain to the north east of the dwelling.

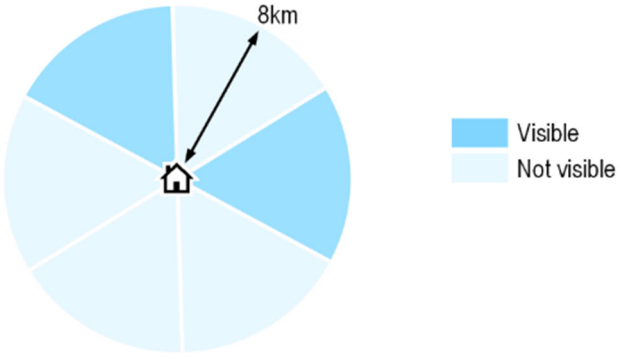
Table 9-22 Viewpoint N21-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

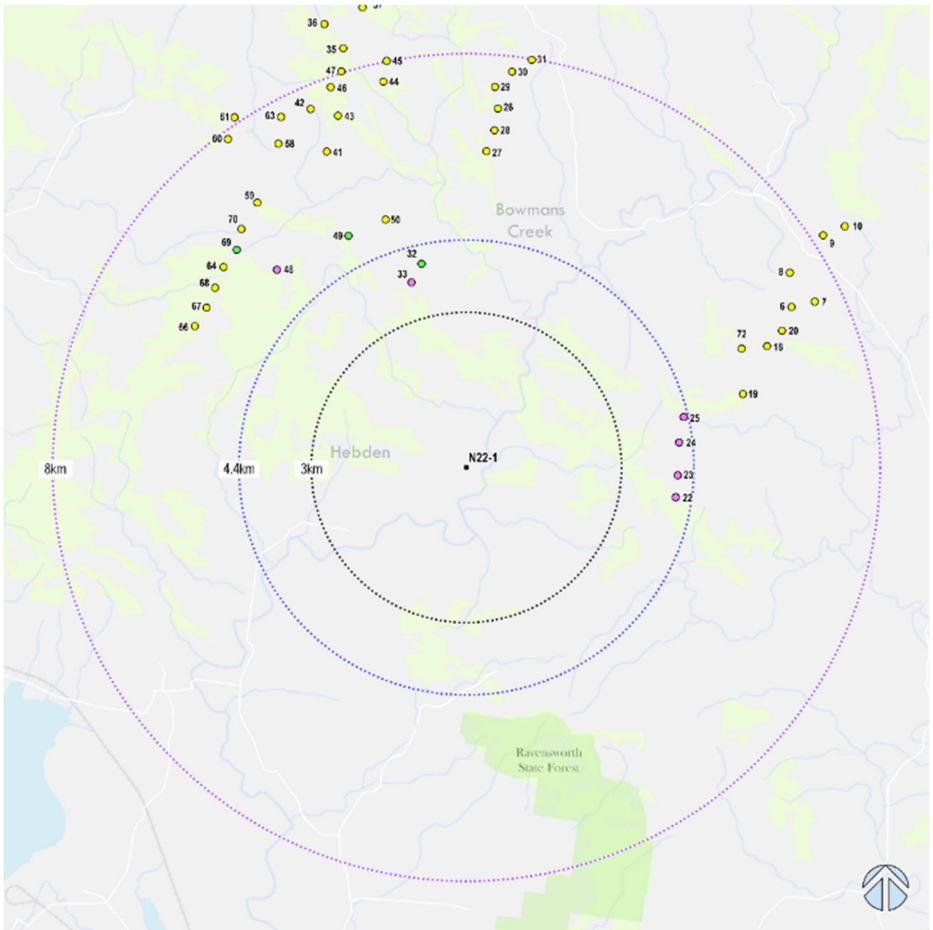
Dwelling N22-1

9.8.67 Viewpoint N22-1 aerial photo

9.8.68 Viewpoint N22-1 Visibility rose



9.8.69 Viewpoint N22-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-23 Viewpoint N22-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (33) is located 3.73km (Near Middleground) from dwelling N22-1. The MWTT diagram illustrates that 6 wind turbines will be visible between the black and blue lines east and north west of the dwelling. Distant views (in excess of 4km) will extend toward 3 wind turbines (hub and blade only) beyond the blue line to the north west of the dwelling. Landform and tree cover beyond the dwelling will offer screening of views toward wind turbines from the dwellings from various locations from the dwelling curtilages. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating

Table 9-23 Viewpoint N22-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points including views toward Well Mountain to the north east of the dwelling.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.

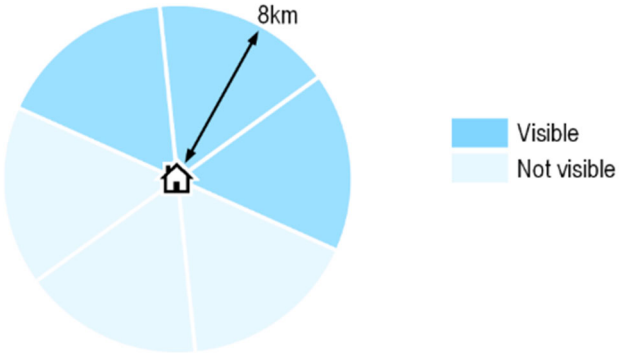
Table 9-23 Viewpoint N22-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	effective horizontal views in three or more 60° sectors.	
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

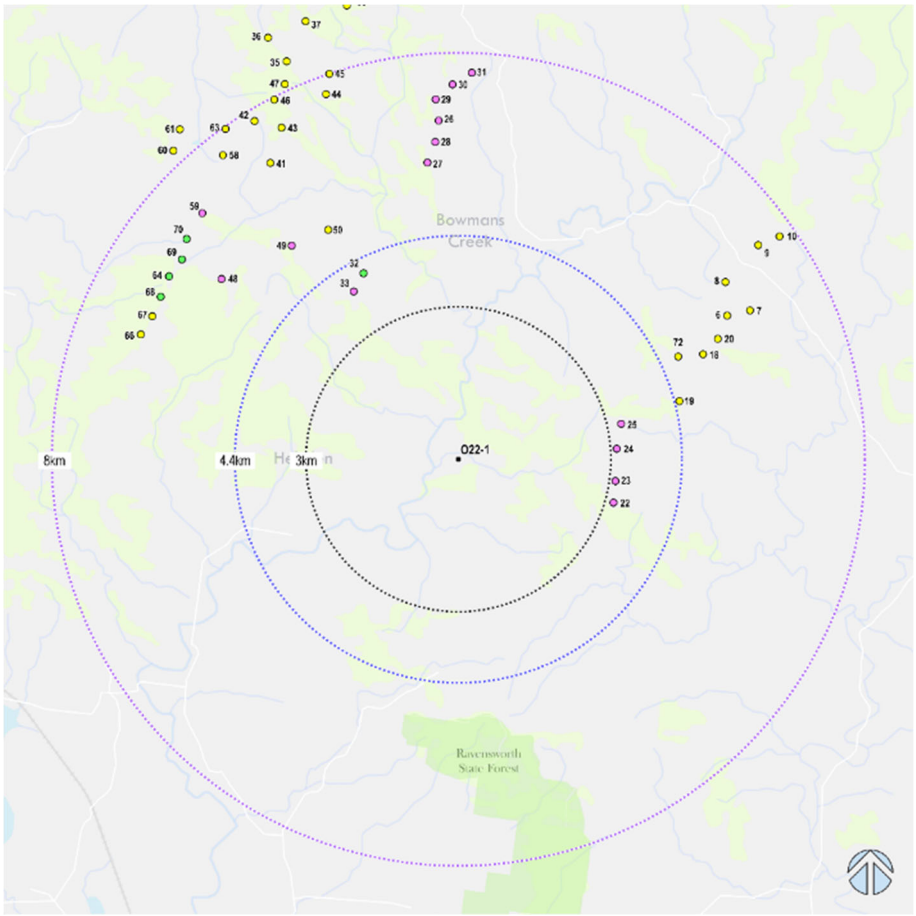
Dwelling O22-1

9.8.70 Viewpoint O22-1 aerial photo

9.8.71 Viewpoint O22-1 Visibility rose



9.8.72 Viewpoint O22-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-24 Viewpoint O22-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 30)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (23) is located 3.12km (Near Middleground) from dwelling N22-1. The MWTT diagram illustrates that 6 wind turbines will be visible between the black and blue lines east and north west of the dwelling. Distant views (in excess of 5km) will extend toward 3 wind turbines (hub and blade only) beyond the blue line to the north and north west of the dwelling. Landform and tree cover beyond the dwelling will offer screening of views toward wind turbines from the dwellings from various locations from the dwelling curtilages. Wind turbines within three 60-degree sectors however given distance the wind turbines within 3 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Photomontage analysis: The photomontage illustrates that views toward the majority of wind turbines will be

Table 9-24 Viewpoint O22-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
		screened by extensive tree cover beyond the dwelling.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points including views toward Well Mountain to the north east of the dwelling.

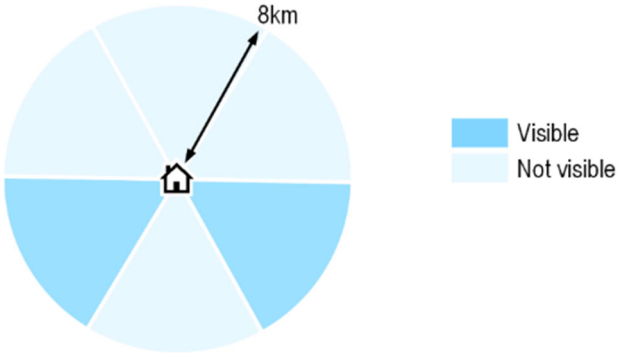
Table 9-24 Viewpoint O22-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	that have visual prominence or are focal points.	
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Wind turbines occur within three 60-degree sectors. The theoretical extent of wind turbine visibility includes wind turbine tip of blades in the third 60 degree sector that are likely to be screened by tree cover on hills and slopes over 5km from the dwelling.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

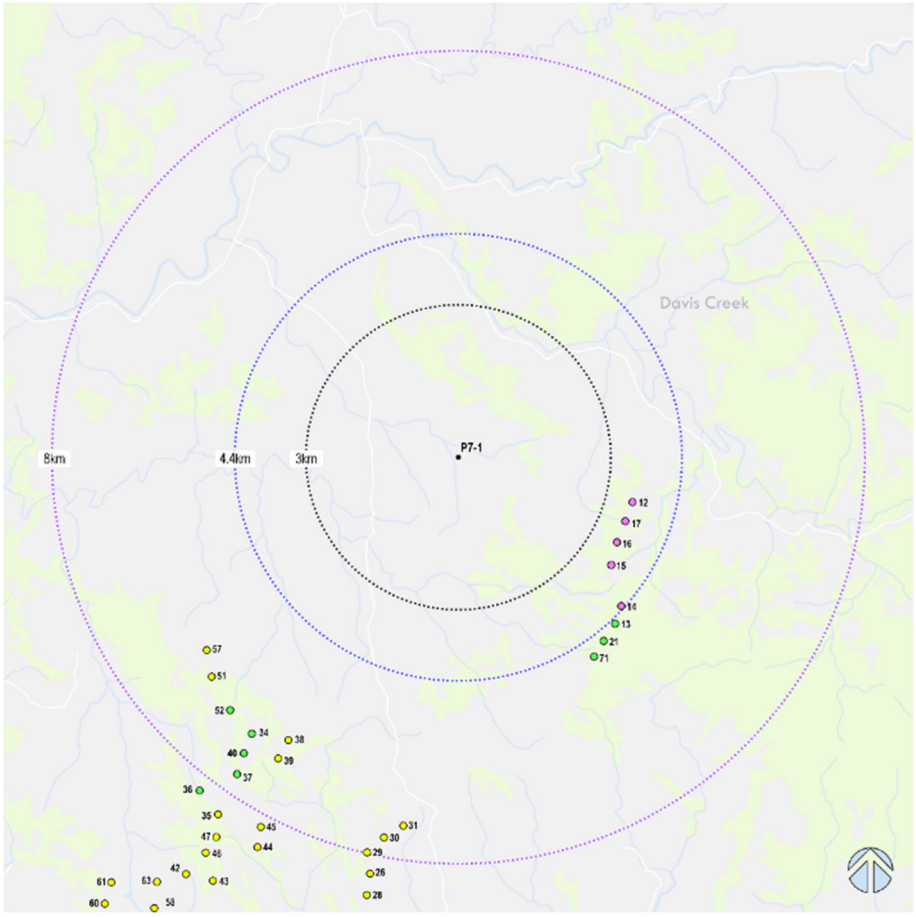
Dwelling P7-1

9.8.73 Viewpoint P7-1 aerial photo

9.8.74 Viewpoint P7-1 Visibility rose



9.8.75 Viewpoint P7-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-25 Viewpoint P7-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 31)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (17) is located 3.52km (Near Middleground) from dwelling P7-1. The MWTT diagram illustrates that 5 wind turbines will be visible between the black and blue lines east and north west of the dwelling. Distant views (in excess of 5km) will extend toward 7 wind turbines (hub and blade only) beyond the blue line to the north and north west of the dwelling. Landform beyond the dwelling will offer partial screening of views toward wind turbines from the dwelling from various locations within the dwelling curtilage. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by distance and extent. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Photomontage analysis: The photomontage illustrates wind turbine visibility to wind turbines south east of the

Table 9-25 Viewpoint P7-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
		dwelling beyond the black line as well as partial screening through tree cover.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points including views toward Well Mountain to the north east of the dwelling.

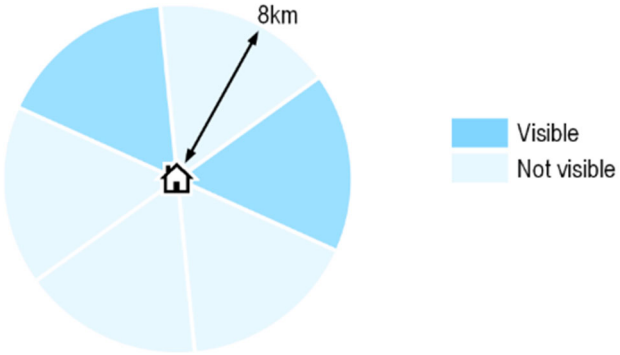
Table 9-25 Viewpoint P7-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	that have visual prominence or are focal points.	
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

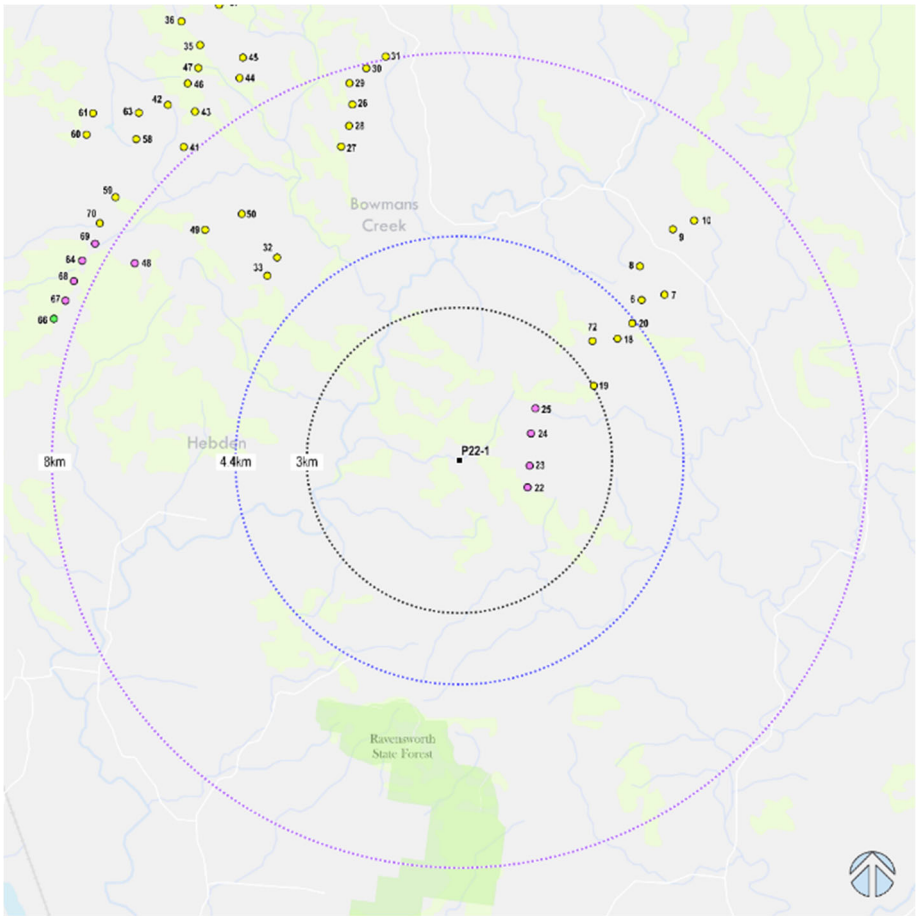
Dwelling P22-1 (and P22-4)

9.8.76 Viewpoint P22-1 aerial photo

9.8.77 Viewpoint P22-1 Visibility rose



9.8.78 Viewpoint P22-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-26 Viewpoint P22-1, Rural dwelling VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figures 32 and 33)	Objective: Avoid turbines or provide detailed justification of turbines below the blue line.	Closest wind turbine (23) is located 1.38km (Far Foreground) from dwelling P22-1. The MWTT diagram illustrates 4 wind turbines would be visible (discounting vegetative screening) below the black line to the east of the dwelling. An additional 6 wind turbines are located beyond the blue and purple (8km) lines north west of the dwelling. The dwelling and curtilage include mature tree cover which also extends to hills and slopes beyond the dwelling. Tree cover and undulating landform will provide some degree of potential screening toward the wind turbines. There is a greater degree of screening toward wind turbines 24 and 25 with existing tree cover generally restricting views to upper portions of rotor blades. Wind turbines within two 60-degree sectors are not considered to dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause more than a low-level modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating

Table 9-26 Viewpoint P22-1, Rural dwelling VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
	Turbines are seen as either very small and/ or faint, or as of a size and colour contrast (under clear, haze-free atmospheric conditions) that they would not compete with major elements of the existing visual catchment. In the moderate scenic quality class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	the existing visual catchment due to landform and tree cover within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Avoid wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points including views toward Well Mountain to the north east of the dwelling.
Multiple Wind Turbine Effects	Objective: Level 1 (high sensitivity) – wind turbines visible within the effective horizontal views of two or more 60° sectors	Wind turbines occur within two 60-degree sectors. The second 60-degree sector includes a view toward 1 wind turbine out toward the 8km line which is likely to be screened through tree cover.

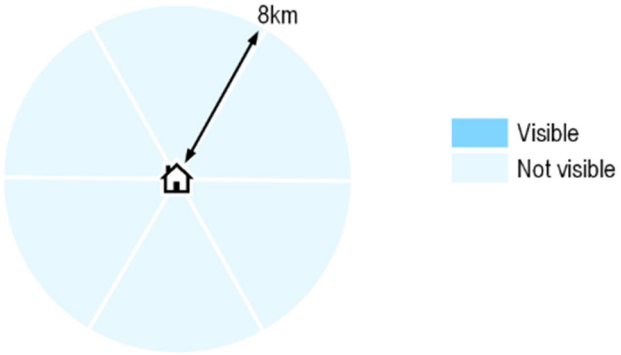
Table 9-26 Viewpoint P22-1, Rural dwelling VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Proponent to offer neighbour agreement and screening (below the black line) to the landowner.
Visual Magnitude Justification and photomontage analysis	Photomontages prepared from dwellings P22-1 and P22-4 (within the same property) illustrates a combination of landform and tree cover providing some degree of screening/filtering of views toward the 4 wind turbines below the black line, with a greater degree of tree screening/filtering of views toward wind turbines 24 and 25. No other wind turbines would be visible below the blue line. Without a neighbour agreement the removal of turbines 22 and 23 has the potential to mitigate visual impacts to an acceptable level (refer photomontages P22-1 and P22-4).	

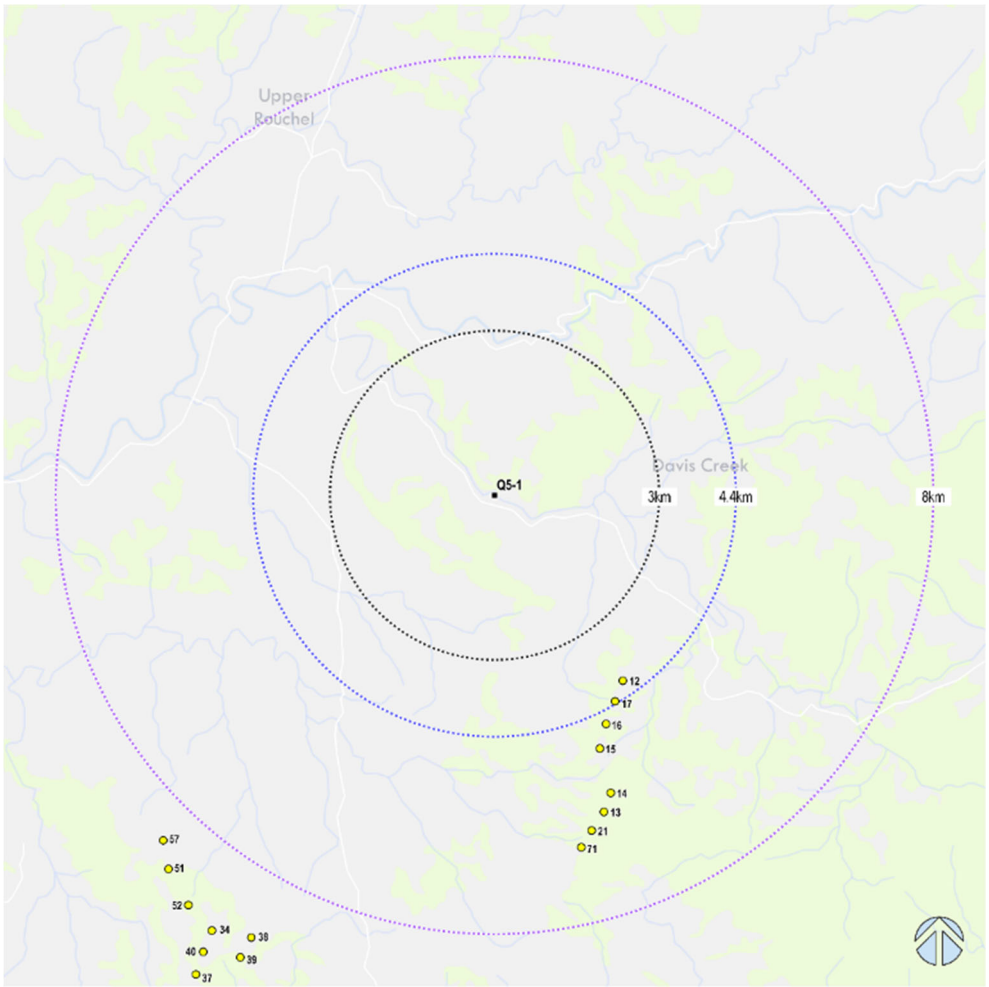
Dwelling Q5-1

9.8.79 Viewpoint Q5-1 aerial photo

9.8.80 Viewpoint Q5-1 Visibility rose



9.8.81 Viewpoint Q5-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-27 Viewpoint Q5-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (12) is located 4.11km (Far Middleground) from dwelling Q5-1. The MWTT diagram illustrates that no wind turbines will be visible from the dwelling.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Lack of wind turbine visibility will not cause any modification to the visual catchment. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective:	Lack of wind turbine visibility will disrupt views from the dwelling.

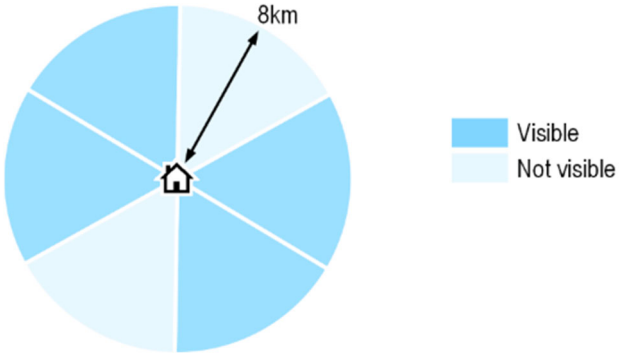
Table 9-27 Viewpoint Q5-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening will be offered to the landowner in accordance with the consent conditions.

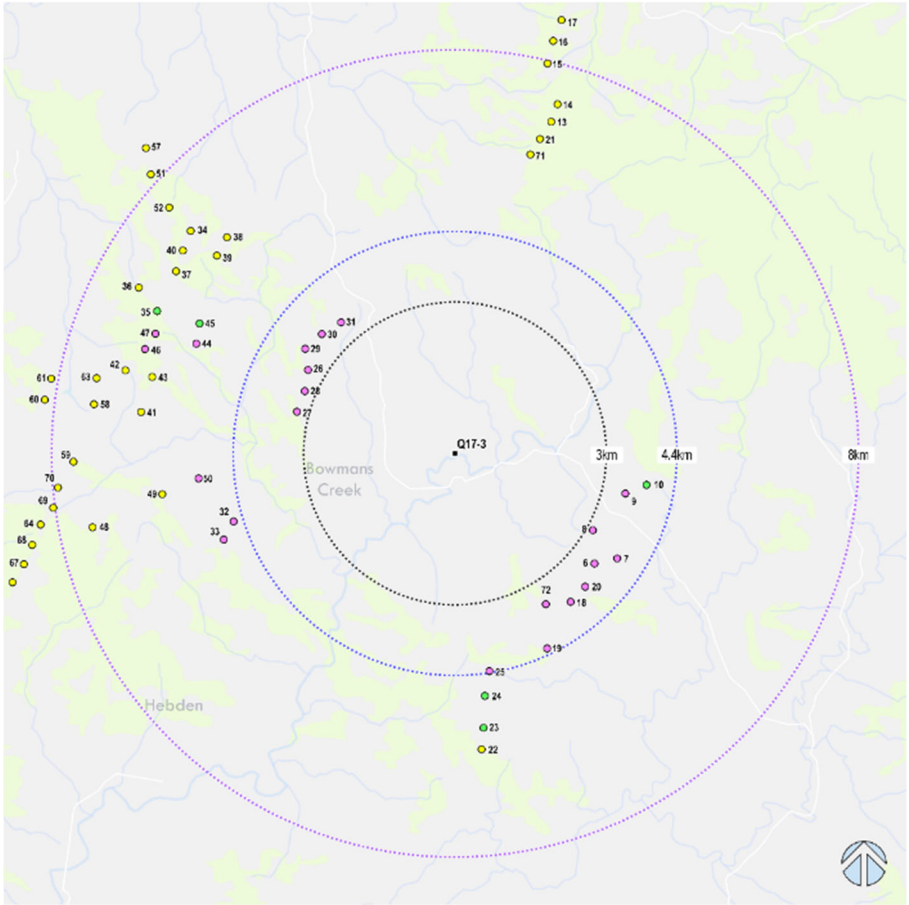
Dwelling Q17-3 (Q17-1 and Q17-2)

9.8.82 Viewpoint Q17-3 aerial photo

9.8.83 Viewpoint Q17-3 Visibility rose



9.8.84 Viewpoint Q17-3 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-28 Viewpoint Q17-3, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (8) is located 3.13km (Near Middleground) from dwelling Q17-3. The MWTT diagram illustrates that no wind turbines would be visible (discounting vegetative screening) below the black line. A total of 6 wind turbines are located between the black and the blue lines north west of the dwelling and 9 wind turbines between the black and blue line to the south east of the dwelling. A further 11 wind turbines extend beyond the blue line with views partially restricted by landform and vegetation to the south and north west of the dwellings. Curtilage areas include a small number of specimen mature trees which also extend alongside a creek meandering between the dwellings. Tree cover and a gently undulating landform to the south east of dwelling Q17-1 may provide some degree of filtering views toward some wind turbines. Wind turbines within four 60-degree sectors are not considered to dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective:	Overall wind turbine visibility will not cause any significant modification to the visual

Table 9-28 Viewpoint Q17-3, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points including views toward Well Mountain to the north east of the dwelling.
Multiple Wind Turbine Effects	Objective:	Wind turbines occur within four 60-degree sectors. Views toward wind turbines within

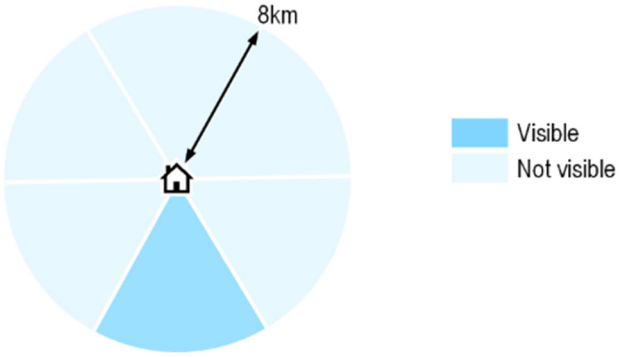
Table 9-28 Viewpoint Q17-3, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	the third and fourth 60-degree sectors are marginal and are not considered to significantly increase the modification of the visual catchment. One 60-degree sector to the south of the dwellings includes views toward 3 wind turbines (with 2 wind turbines visible to blades only beyond the blue line). A second 60-degree sector includes views toward 2 wind turbines beyond the blue line.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening will be offered to the landowner in accordance with the consent conditions.

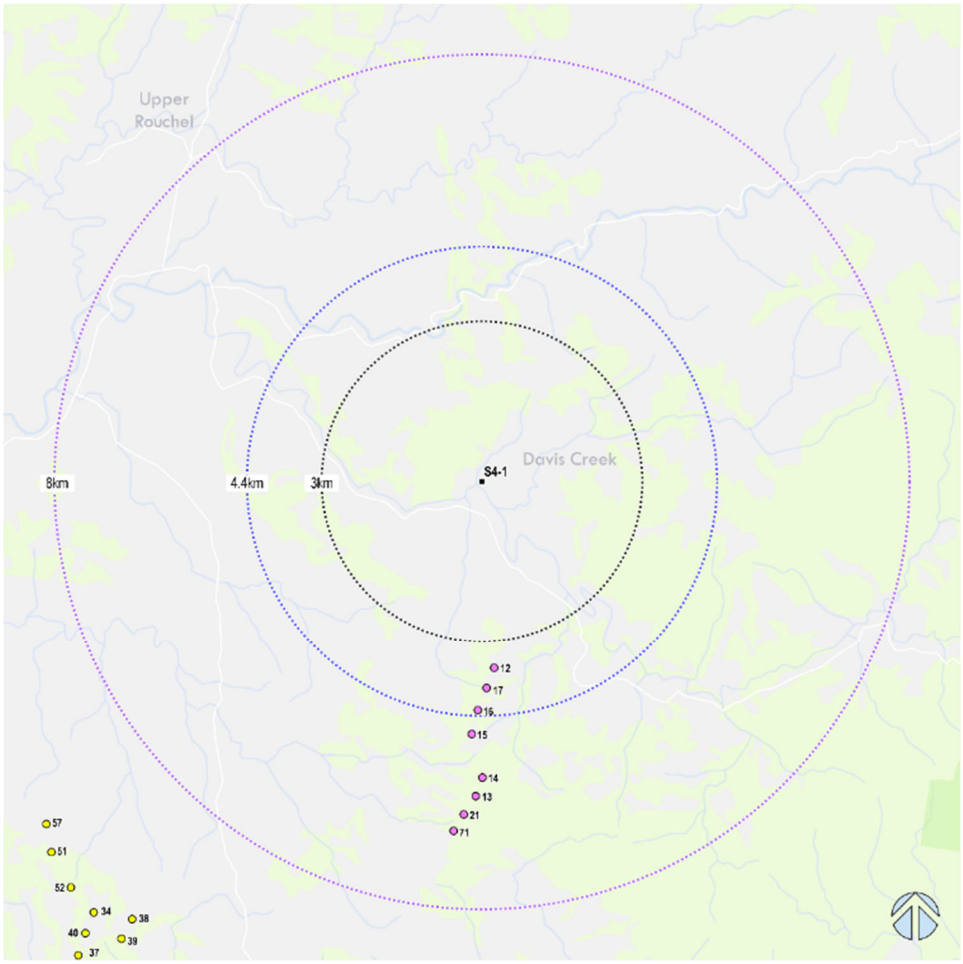
Dwelling S4-1

9.8.85 Viewpoint S4-1 aerial photo

9.8.86 Viewpoint S4-1 Visibility rose



9.8.87 Viewpoint S4-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-29 Viewpoint S4-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (12) is located 3.51km (Near Middleground) from dwelling S4-1. The MWTT diagram illustrates that no wind turbines would be visible below the black line. A total of 3 wind turbines are located between the black and the blue lines south of the dwelling. A further 5 wind turbines extend beyond the blue line with views partially restricted by landform and vegetation to the south of the dwelling. A small number of mature trees extend alongside a creek south of the dwelling. Wind turbines within one 60-degree sector are not considered to dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.

Table 9-29 Viewpoint S4-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points including views toward Well Mountain to the north east of the dwelling.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and

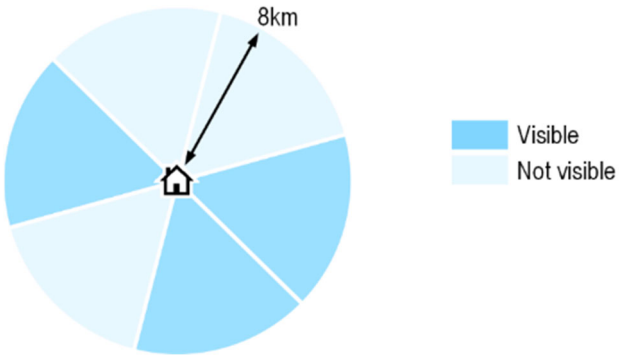
Table 9-29 Viewpoint S4-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
		330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening will be offered to the landowner in accordance with the consent conditions.

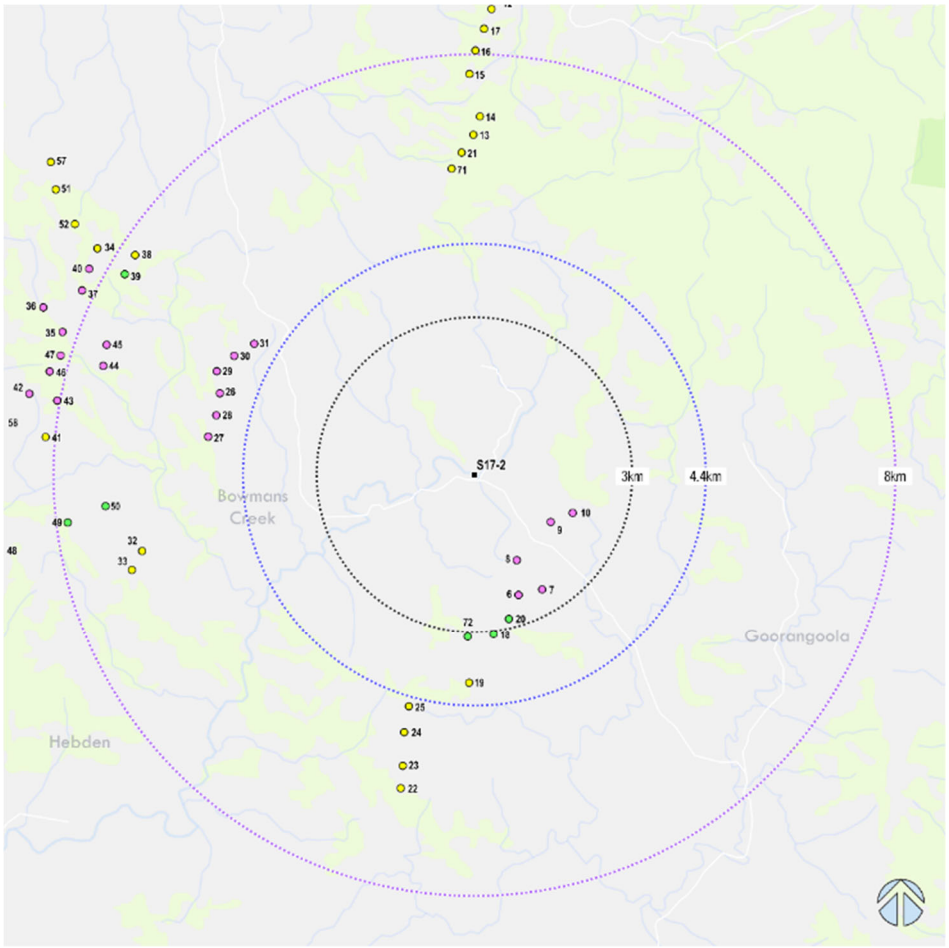
Dwelling S17-2

9.8.88 Viewpoint S17-2 aerial photo

9.8.89 Viewpoint S17-2 Visibility rose



9.8.90 Viewpoint S17-2 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple visible, green blade only visible

Table 9-30 Viewpoint S17-2, Rural dwelling VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 34)	Objective: Avoid turbines or provide detailed justification of turbines below the blue line.	Closest wind turbine (9) is located 1.71km (Far Foreground) from dwelling S17-2. The MWTT diagram illustrates 6 wind turbines would be visible (discounting vegetative screening) below the black line with an additional 2 wind turbines between the black and the blue line south of the dwelling. The MWTT diagram also illustrates visible wind turbines west north west of the dwelling beyond the blue line. Tree cover around and beyond the dwelling follows a creek line to the east, north and west of the dwelling/curtilage and provides some degree of screening and/or filtering of views toward wind turbines. The level of screening is variable within and beyond the curtilage; however, views toward wind turbines from the dwelling have some degree of screening. Wind turbines within three 60-degree sectors are not considered to dominate the available viewshed. Whilst the wind turbines do not impart a significant vertical dominance over the dwelling or surrounding curtilage. Whilst wind turbines may be visible the potential for visual impact is not significant and partially mitigated by existing tree cover. The Bulletin acknowledges that wind turbines

Table 9-30 Viewpoint S17-2, Rural dwelling VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
		are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause more than a low-level modification of the visual catchment. Turbines are seen as either very small and/ or faint, or as of a size and colour contrast (under clear, haze-free atmospheric conditions) that they would not compete with major elements of the existing visual catchment. In the moderate scenic quality class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Overall wind turbine visibility will not cause any significant modification to the visual catchment. The wind turbines will be visually apparent and become a major element in the landscape.
Key Feature Disruption	Objective: Avoid wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.

Table 9-30 Viewpoint S17-2, Rural dwelling VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
	that have visual prominence or are focal points.	
Multiple Wind Turbine Effects	Objective: Level 1 (high sensitivity) – wind turbines visible within the effective horizontal views of two or more 60° sectors	Wind turbines occur within three 60-degree sectors; however, the second 60-degree sector includes views toward 2 wind turbines at blade only beyond the black line. Wind turbines within the third 60-degree sector to the west and north west of the dwelling are located beyond the blue line and subject to significant tree screening from the dwelling and immediate curtilage (refer photomontage S17-2).
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		Proponent to offer neighbour agreement and screening (below the black line) to the landowner. Without a neighbour agreement consider removing wind turbines 9, 10 and relocating wind turbine 8.
Visual Magnitude Justification and photomontage analysis	Photomontages and photomontage overlays prepared from the S17-2 dwelling/ curtilage illustrate the influence of tree cover screening/filtering views toward some wind turbines below the black line, as well as wind turbines between the black and blue lines. Whilst wind turbines west of the dwelling are beyond the blue line they occur within a 3rd 60 degree sector within 8km of the dwelling. These wind turbines will be largely screened and/or filtered by tree cover with views generally extending toward a single wind turbine (28) within the 3rd degree sector (refer photomontage overlay S17-2). Views will extend toward wind turbines 8, 9 and 10 from various	

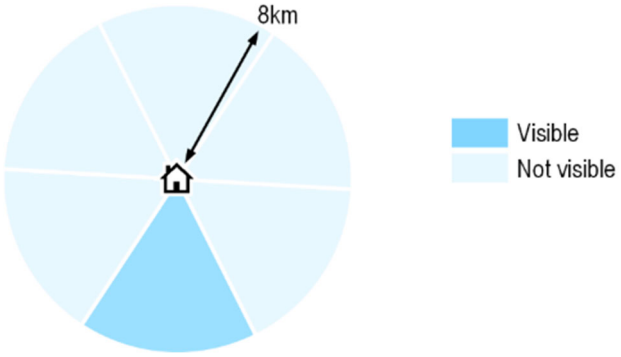
Table 9-30 Viewpoint S17-2, Rural dwelling VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
	locations within the curtilage to the south and east of the dwelling. These turbines occupy elevated locations relative to the dwelling but may be partially screened by trees beyond the dwelling. The property owner will be offered a neighbour agreement to address potential visual impacts. Without a neighbour agreement the removal of up to 2 wind turbines 9 and 10, and relocation of wind turbine 8 has the potential to mitigate visual impacts to an acceptable level (refer photomontage S17-2).	

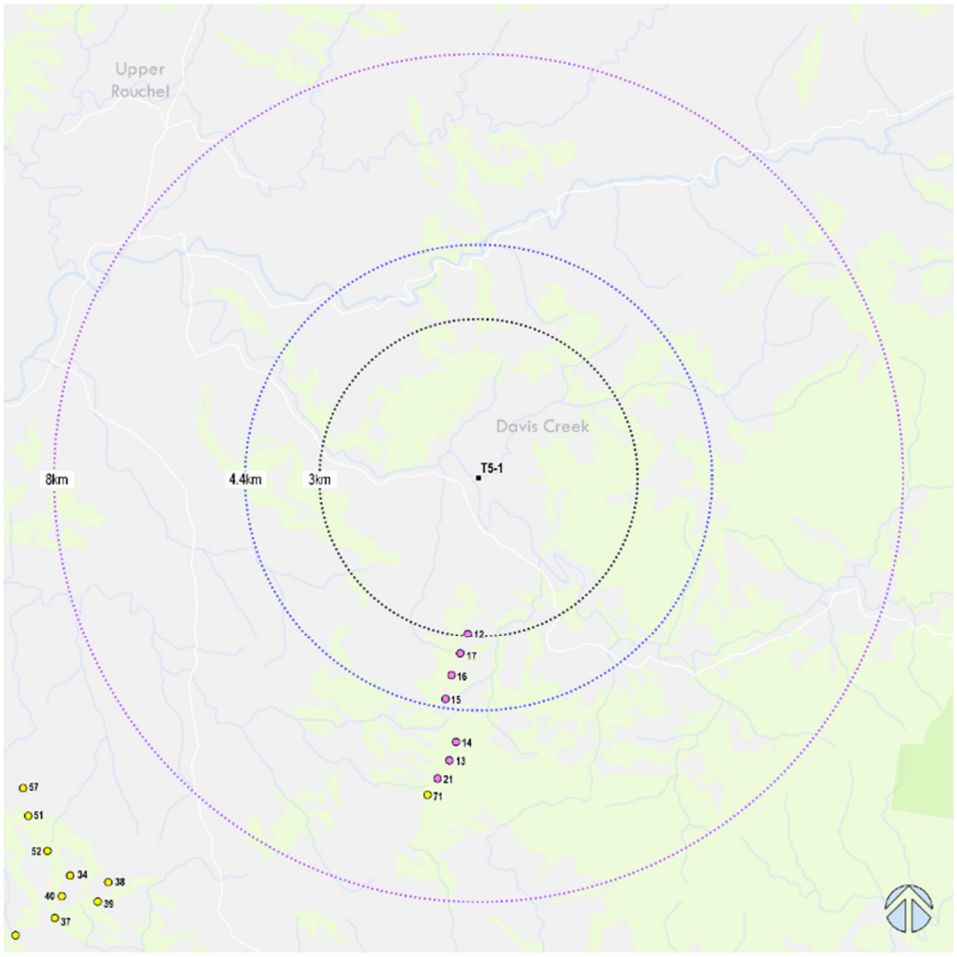
Dwelling T5-1

9.8.91 Viewpoint T5-1 aerial photo

9.8.92 Viewpoint T5-1 Visibility rose



9.8.93 Viewpoint T5-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple hub visible, green blade only visible

Table 9-31 Viewpoint T5-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 35)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (12) is located 2.95km (Near Middleground) from dwelling T5-1. The MWTT diagram illustrates that 1 wind turbine would be visible below the black line. A total of 3 wind turbines are located between the black and the blue lines south of the dwelling. A further 3 wind turbines extend beyond the blue line with views partially restricted by landform and vegetation to the south of the dwelling. A small number of mature trees extend alongside a creek south of the dwelling. Wind turbines within one 60-degree sector are not considered to dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Photomontage analysis: The photomontage illustrates visibility toward 5 wind turbines below the blue line with some partial screening/filtering of views toward 3 turbines through tree cover.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating

Table 9-31 Viewpoint T5-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points including views toward Well Mountain to the north east of the dwelling.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.

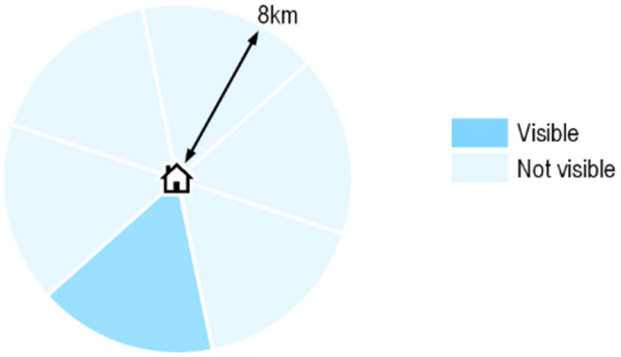
Table 9-31 Viewpoint T5-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	effective horizontal views in three or more 60° sectors.	
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening will be offered to the landowner in accordance with the consent conditions.

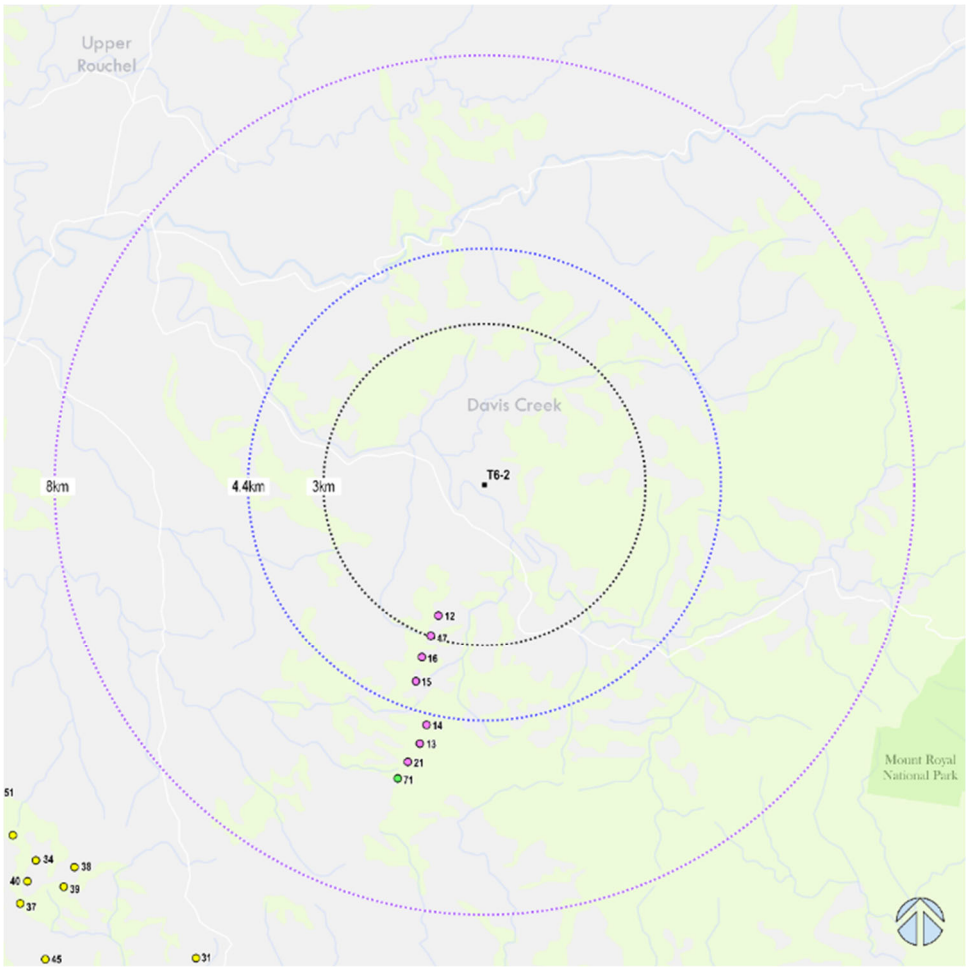
Dwelling T6-2

9.8.94 Viewpoint T6-2 aerial photo

9.8.95 Viewpoint T6-2 Visibility rose



9.8.96 Viewpoint T6-2 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-32 Viewpoint T6-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 36)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (12) is located 2.58km (Near Middleground) from dwelling T6-2. The MWTT diagram illustrates that 1 wind turbine would be visible below the black line. A total of 3 wind turbines are located between the black and the blue lines south south west of the dwelling. A further 4 wind turbines extend beyond the blue line with views partially restricted by landform and vegetation to the south south west of the dwelling. A small number of mature trees extend alongside a creek south of the dwelling. Wind turbines within one 60-degree sector are not considered to dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Photomontage analysis The photomontage illustrates the location of 4 wind turbines below the black line within a very narrow horizontal field of view. Foreground visual mitigation works would provide potential screening/filtering of views toward wind turbines.
Landscape Scenic Integrity	Objective:	Overall wind turbine visibility will not cause any significant modification to the visual

Table 9-32 Viewpoint T6-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.

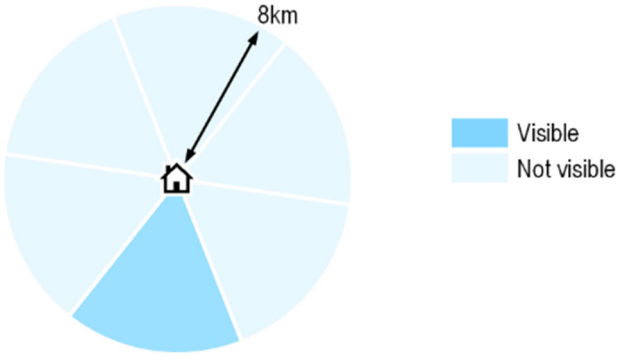
Table 9-32 Viewpoint T6-2, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening will be offered to the landowner in accordance with the consent conditions.

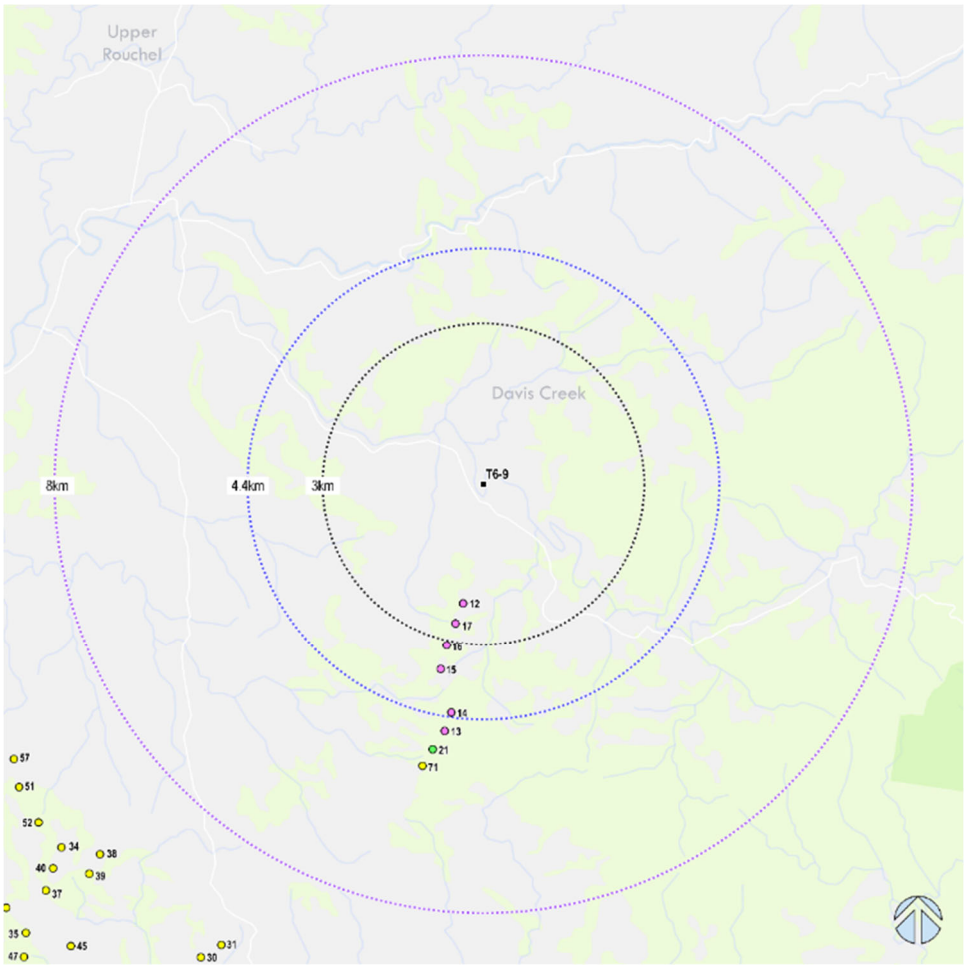
Dwelling T6-9

9.8.97 Viewpoint T6-9 aerial photo

9.8.98 Viewpoint T6-9 Visibility rose



9.8.99 Viewpoint T6-9 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-33 Viewpoint T6-9, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude (Refer photomontage Appendix B Figure 37)	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (12) is located 2.26km (Near Middleground) from dwelling T6-9. The MWTT diagram illustrates that 2 wind turbines would be visible below the black line. A total of 3 wind turbines are located between the black and the blue lines south south west of the dwelling. A further 2 wind turbines extend beyond the blue line with views partially restricted by landform and vegetation to the south south west of the dwelling. A small number of mature trees extend alongside a creek south of the dwelling but do not provide any significant degree of screening. Wind turbines within one 60-degree sector are not considered to dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape. Photomontage analysis: The photomontage illustrates views toward the 6 wind turbines south of the dwelling including 2 wind turbines below the black line. The foreground tree illustrates the potential for visual mitigation planting works to screen/filter views toward the wind turbines.

Table 9-33 Viewpoint T6-9, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.

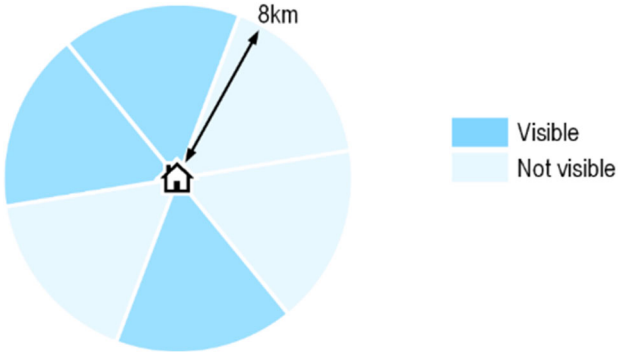
Table 9-33 Viewpoint T6-9, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Neighbour agreement Screening will be offered to the landowner in accordance with the consent conditions.

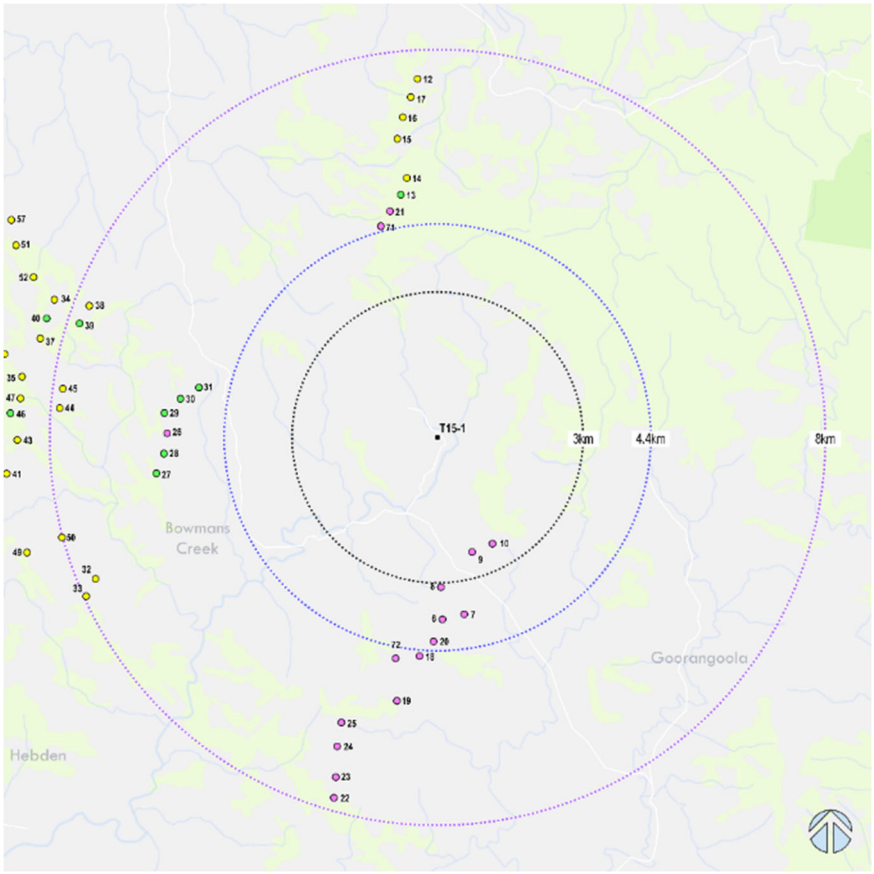
Dwelling T15-1

9.8.100 Viewpoint T15-1 aerial photo

9.8.101 Viewpoint T15-1 Visibility rose



9.8.102 Viewpoint T15-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-34 Viewpoint T15-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (10) is located 2.47km (Near Middleground) from dwelling T15-1. The MWTT diagram illustrates that 2 wind turbines would be visible below the black line. A total of 4 wind turbines are located between the black and the blue lines south of the dwelling. A further 2 wind turbines extend beyond the blue line with views partially restricted by landform and vegetation to the south south west of the dwelling. A small number of mature trees extend alongside a creek south of the dwelling but do not provide any significant degree of screening. Views toward wind turbines north and west of the dwelling are marginal and largely screened by landform. Therefore wind turbines within three 60-degree sector are not considered to dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view.

Table 9-34 Viewpoint T15-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the	Visible wind turbines within 8km of the view location extend to three 60-degree sectors however, wind turbine visibility within two 60

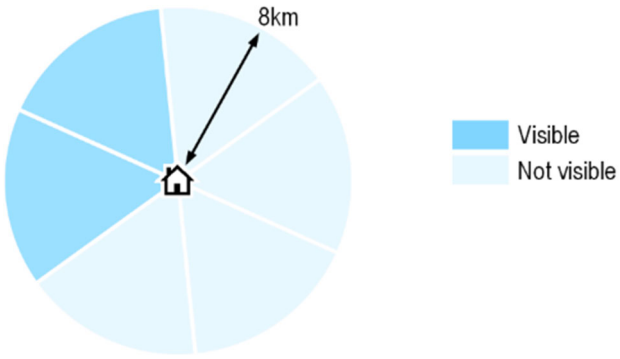
Table 9-34 Viewpoint T15-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	effective horizontal views in three or more 60° sectors.	degree sectors is largely screened by landform.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Proponent to offer neighbour agreement and screening (below the black line) to the landowner.

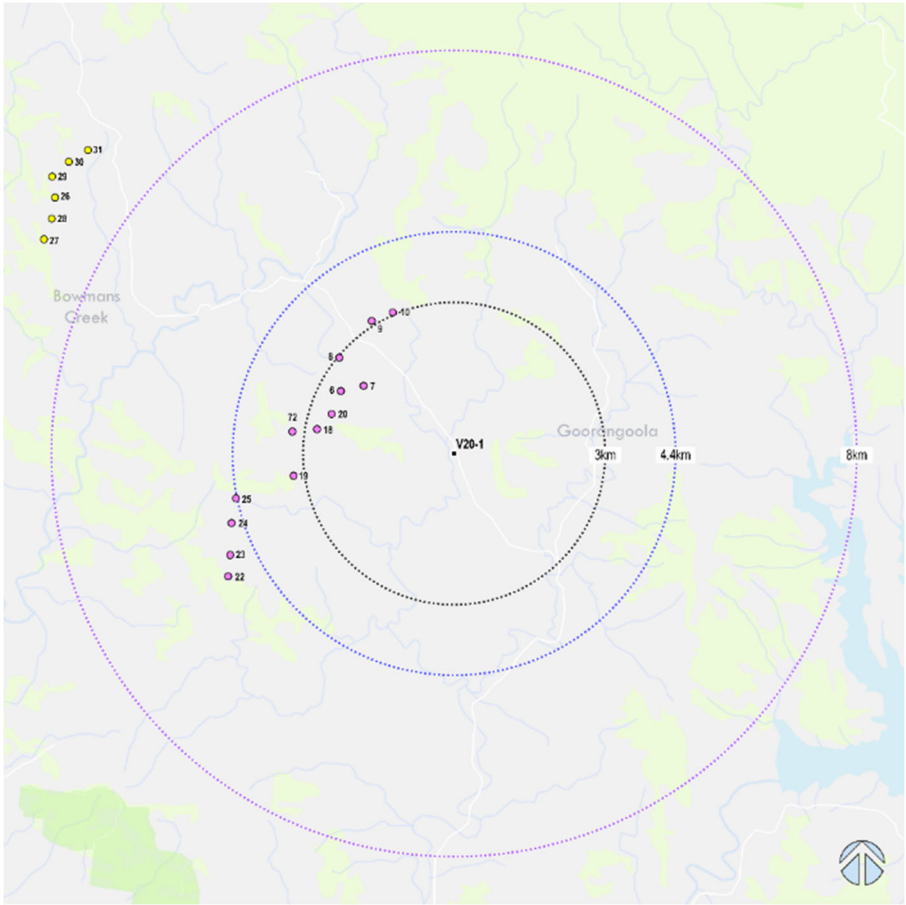
Dwelling V20-1

9.8.103 Viewpoint V20-1 aerial photo

9.8.104 Viewpoint V20-1 Visibility rose



9.8.105 Viewpoint V20-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-35 Viewpoint V20-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (7) is located 2.25km (Near Middleground) from dwelling V20-1. The MWTT diagram illustrates that 5 wind turbines would be visible below the black line. A total of 4 wind turbines are located between the black and the blue lines south of the dwelling. A further 4 wind turbines extend south to south west beyond the blue line. Views toward wind turbines from the dwelling and dwelling curtilage are partially screened by semi mature and mature tree planting within and beyond the dwelling curtilage. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.

Table 9-35 Viewpoint V20-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.

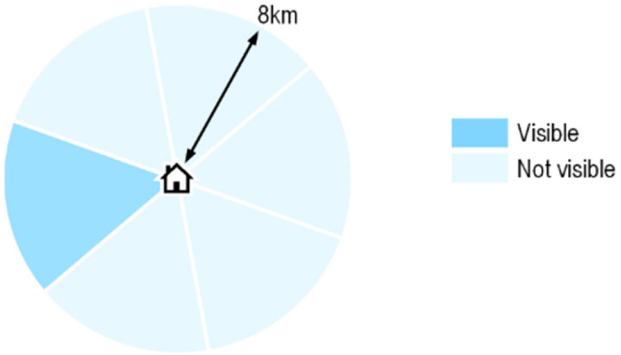
Table 9-35 Viewpoint V20-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Mitigation and management options		Proponent to offer neighbour agreement and screening (below the black line) to the landowner.

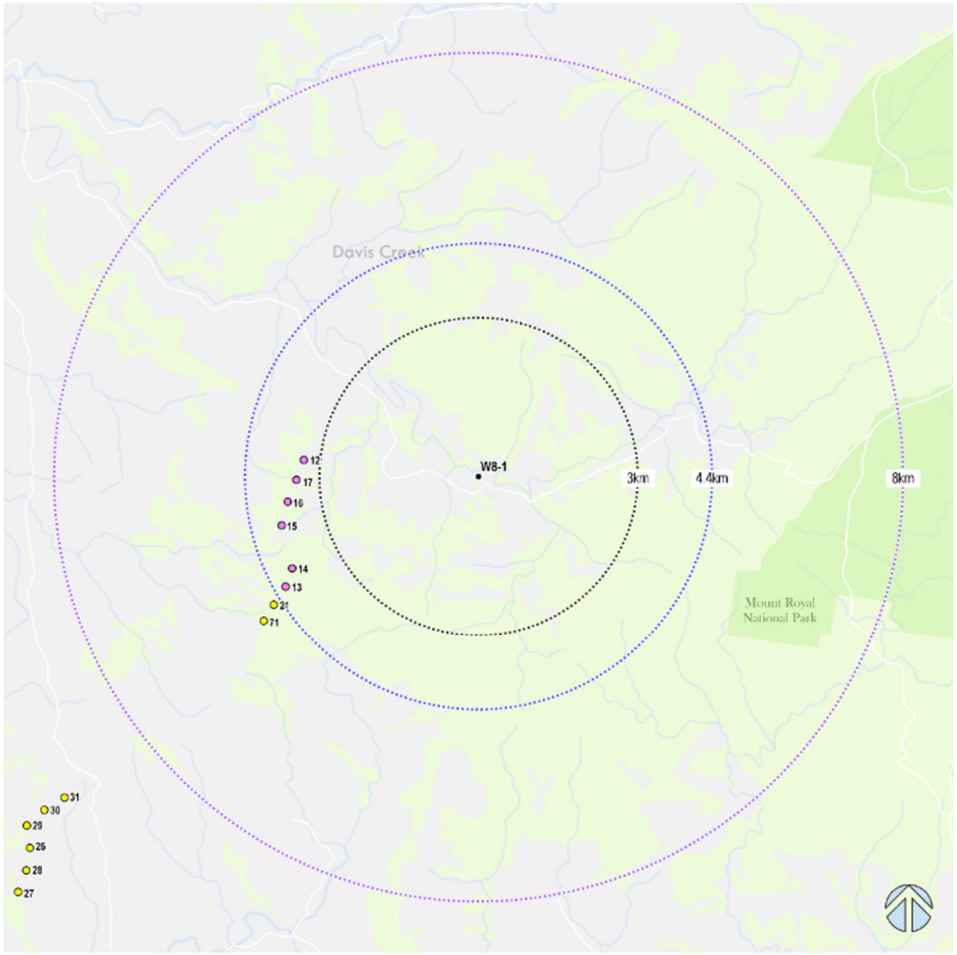
Dwelling W8-1

9.8.106 Viewpoint W8-1 aerial photo

9.8.107 Viewpoint W8-1 Visibility rose



9.8.108 Viewpoint W8-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-36 Viewpoint W8-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (12) is located 3.31km (Near Middleground) from dwelling W8-1. The MWTT diagram illustrates that no wind turbines would be visible below the black line. A total of 6 wind turbines are located between the black and the blue lines west to south west of the dwelling. Mature trees to the north through to south west of the dwellings are likely to provide screening from the dwelling and curtilage. Wind turbines within one 60-degree sector are not considered to dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class,	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.

Table 9-36 Viewpoint W8-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.

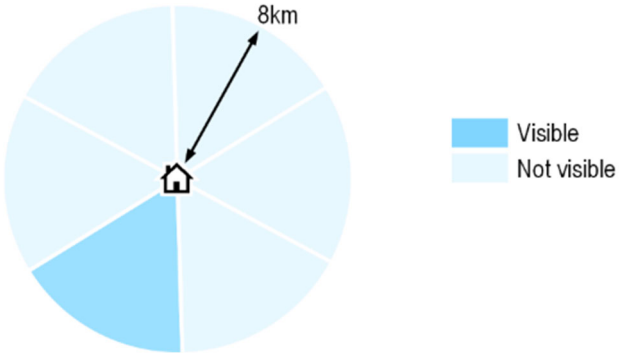
Table 9-36 Viewpoint W8-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Mitigation and management options		Screening will be offered to the landowner in accordance with the consent conditions.

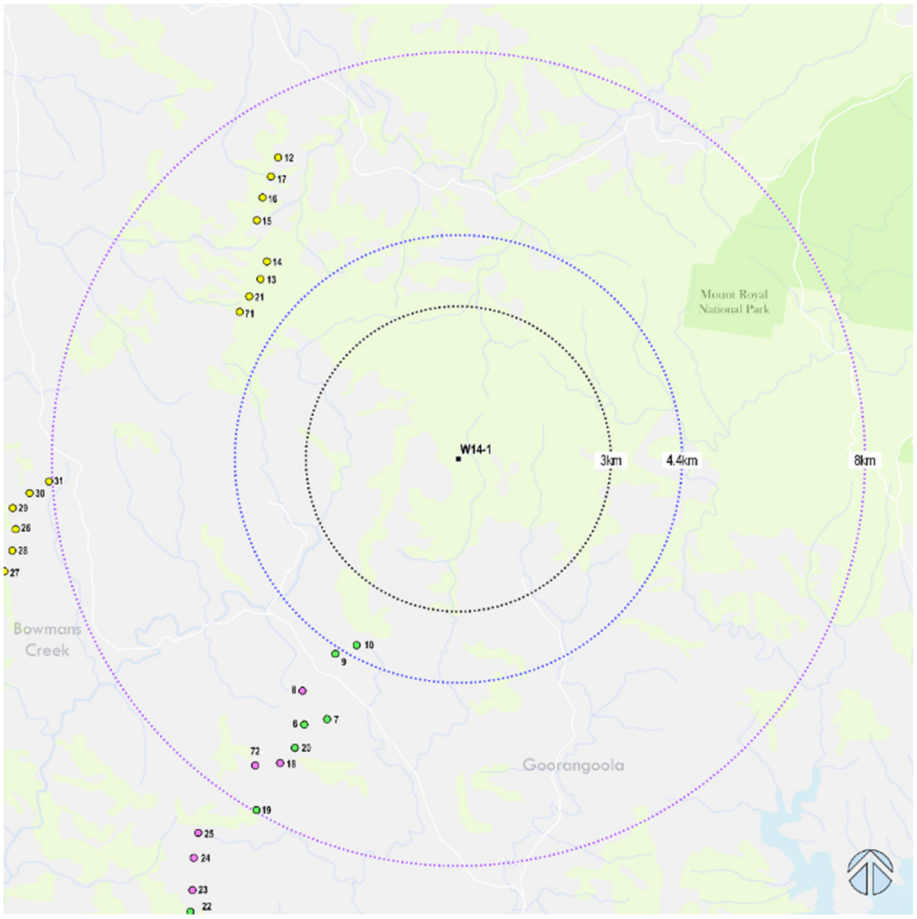
Dwelling W14-1

9.8.109 Viewpoint W14-1 aerial photo

9.8.110 Viewpoint W14-1 Visibility rose



9.8.111 Viewpoint W14-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-37 Viewpoint W14-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (10) is located 4.17km (Far Middleground) from dwelling W14-1. The MWTT diagram illustrates that no wind turbines would be visible below the black line. One wind turbine is located between the black and the blue lines south west of the dwelling. An additional 7 wind turbines extend south west beyond the blue line. Mature trees surrounding the dwelling and curtilage are likely to provide visual screening toward all wind turbines. Wind turbines within one 60-degree sector are not considered to dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.

Table 9-37 Viewpoint W14-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and

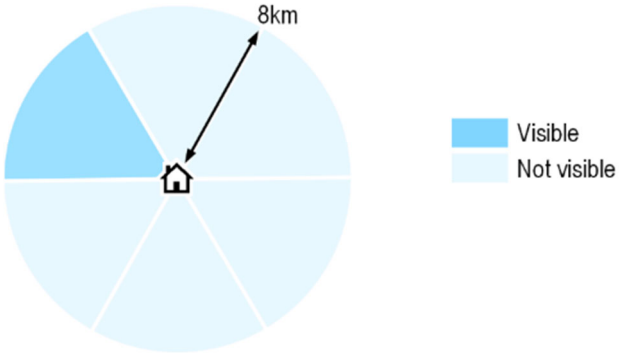
Table 9-37 Viewpoint W14-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
		330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening will be offered to the landowner in accordance with the consent conditions.

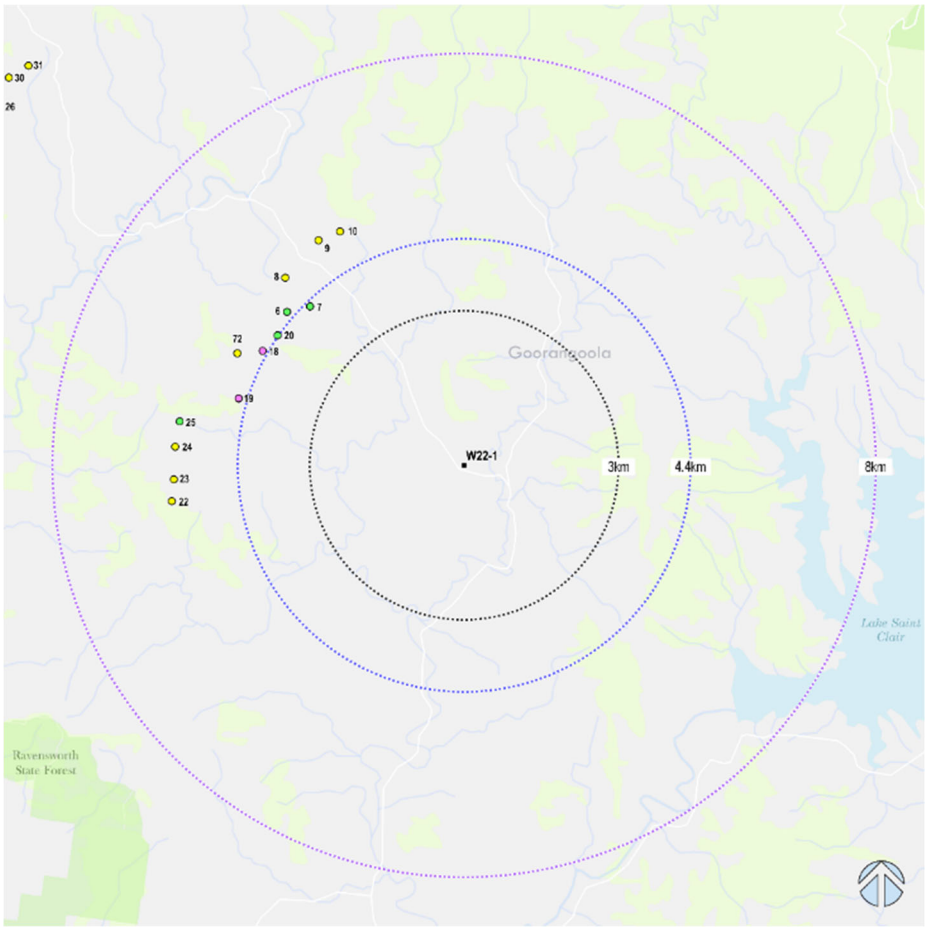
Dwelling W22-1

9.8.112 Viewpoint W22-1 aerial photo

9.8.113 Viewpoint W22-1 Visibility rose



9.8.114 Viewpoint W22-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-38 Viewpoint W22-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (7) is located 4.30km (Far Middleground) from dwelling W22-1. The MWTT diagram illustrates that no wind turbines would be visible below the black line. Two wind turbines would be visible (blade only) between the black and the blue lines north west of the dwelling. An additional 4 wind turbines extend west to north west beyond the blue line. There is no tree cover surrounding the dwelling or curtilage; however, views will be partially screened through topography rising to the north and north west of the dwelling. Wind turbines within one 60-degree sector are not considered to dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view.

Table 9-38 Viewpoint W22-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and

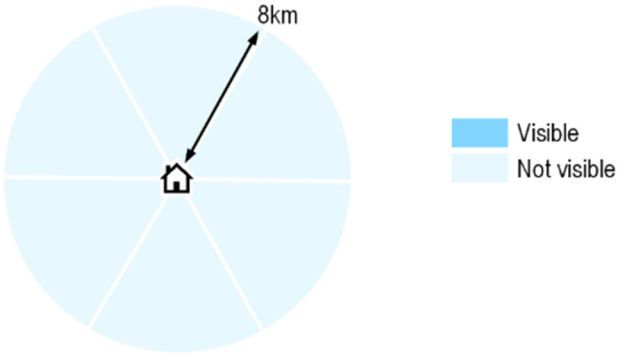
Table 9-38 Viewpoint W22-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
		330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening will be offered to the landowner in accordance with the consent conditions.

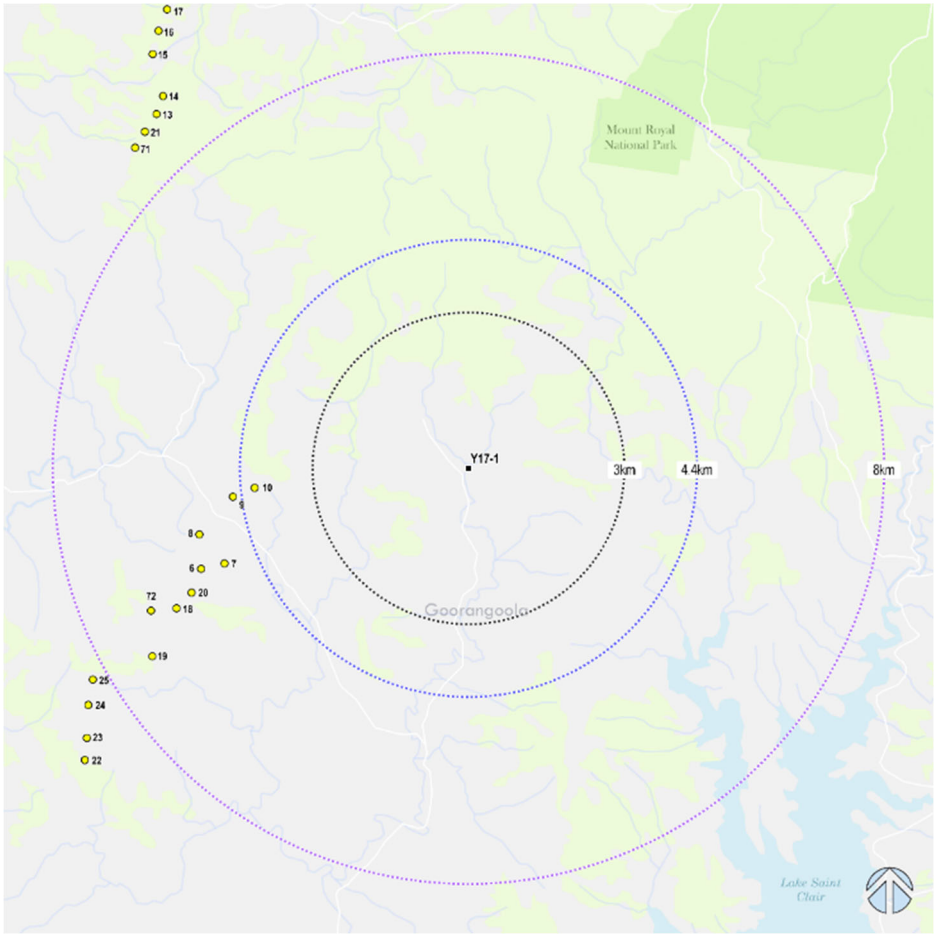
Dwelling Y17-1

9.8.115 Viewpoint Y17-1 aerial photo

9.8.116 Viewpoint Y17-1 Visibility rose



9.8.117 Viewpoint Y17-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-39 Viewpoint Y17-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (10) is located 4.13km (Far Middleground) from dwelling Y17-1. The MWTT diagram illustrates that no wind turbines will be visible from the dwelling or curtilage.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbine visibility will not cause any modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective:	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points

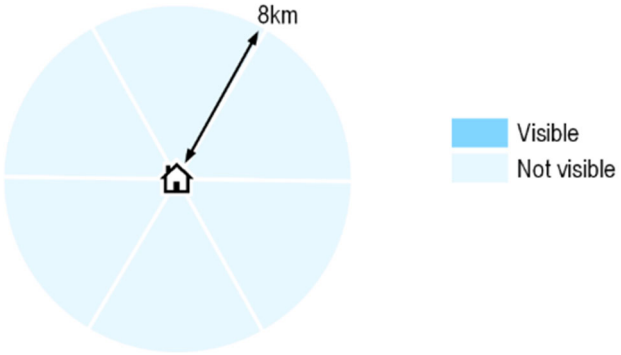
Table 9-39 Viewpoint Y17-1, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	including views toward Well Mountain to the north east of the dwelling.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	No visible wind turbines occur in any 60-degree sectors within 8km of the dwelling.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening will be offered to the landowner in accordance with the consent conditions.

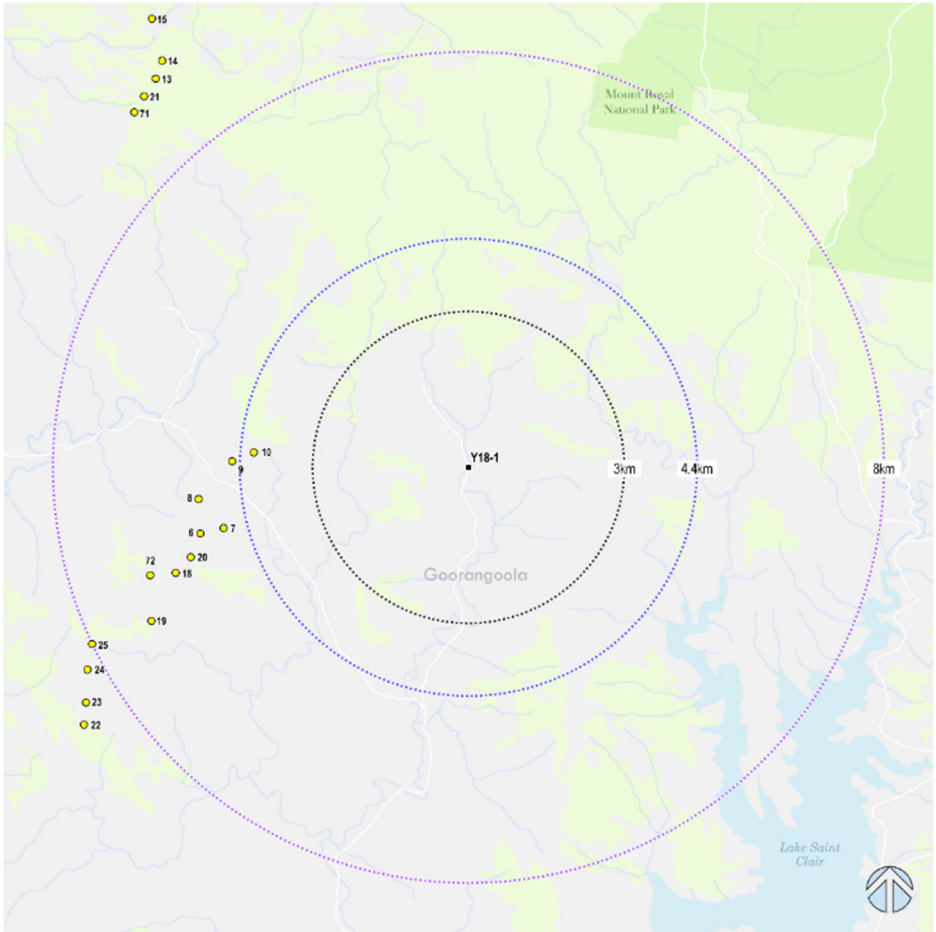
Dwelling Y18-1

9.8.118 Viewpoint Y18-1 aerial photo

9.8.119 Viewpoint Y18-1 Visibility rose



9.8.120 Viewpoint Y18-1 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple hub visible, green blade only visible

Table 9-40 Viewpoint Y18-1, Rural dwelling VIZ2

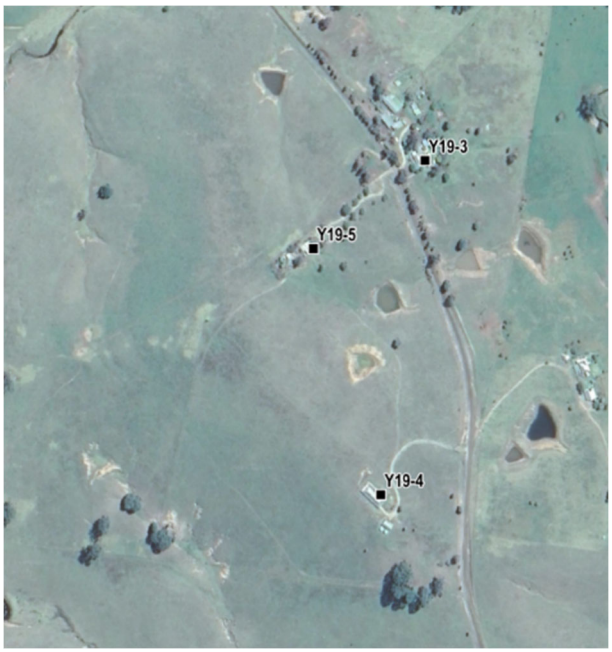
Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (10) is located 4.14km (Far Middleground) from dwelling Y18-1. The MWTT diagram illustrates that no wind turbines will be visible from the dwelling or curtilage.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbine visibility will not cause any modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective:	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points

Table 9-40 Viewpoint Y18-1, Rural dwelling VIZ2

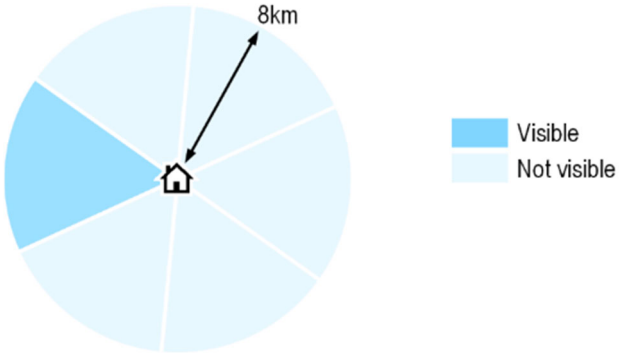
Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	including views toward Well Mountain to the north east of the dwelling.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	No visible wind turbines occur in any 60-degree sectors within 8km of the dwelling.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening will be offered to the landowner in accordance with the consent conditions.

Dwelling Y19-5

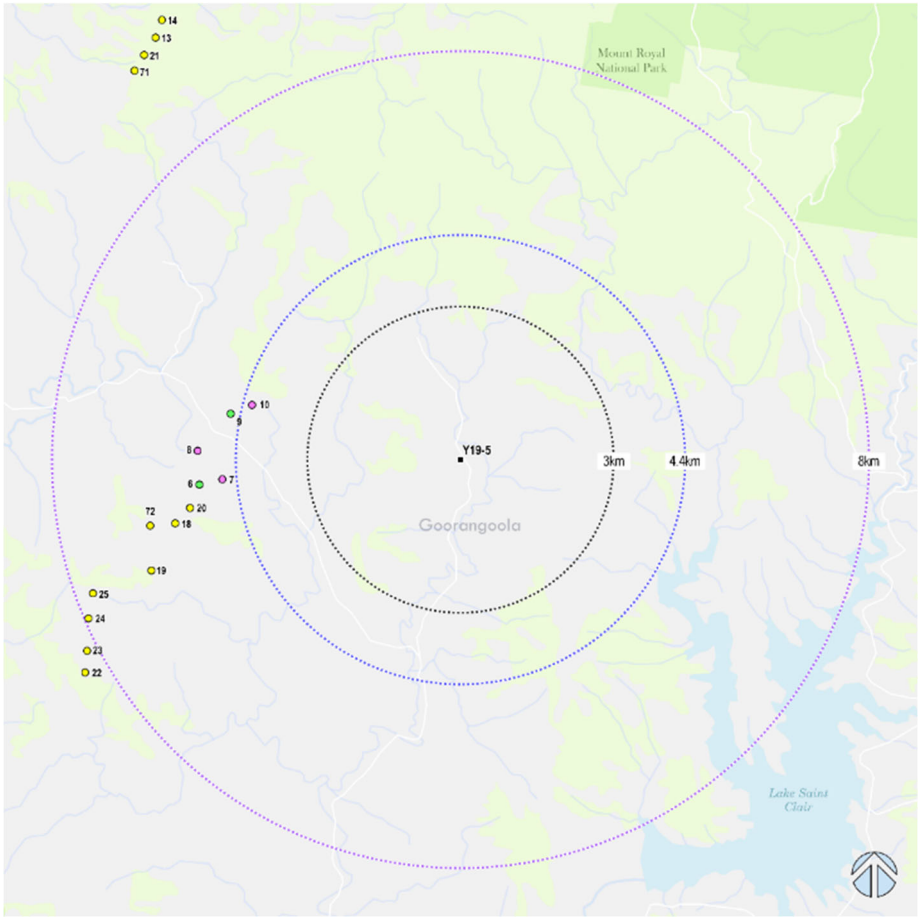
9.8.121 Viewpoint Y19-5 aerial photo



9.8.122 Viewpoint Y19-5 Visibility rose



9.8.123 Viewpoint Y19-5 Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-41 Viewpoint Y19-5, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (10) is located 4.22km (Far Middleground) from dwelling Y19-5. The MWTT diagram illustrates that no wind turbines would be visible below the black line. One wind turbine would be visible between the black and the blue lines north west of the dwelling. An additional 3 wind turbines extend west beyond the blue line. There is no significant tree cover surrounding the dwellings or curtilages; however, views will be partially screened through landform rising to the north and north west of the dwelling. Wind turbines within one 60-degree sector are not considered to dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view.

Table 9-41 Viewpoint Y19-5, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	The wind turbines will not become a major element in the landscape from this view location.
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Visible wind turbines within 8km of the view location are compliant with the Multiple Wind Turbine Effects performance objectives.

Table 9-41 Viewpoint Y19-5, Rural dwelling VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		Screening will be offered to the landowner in accordance with the consent conditions.

Table 9-42 presents a summary of the Bulletin performance objectives applicable to dwellings identified above and within 3km of a wind turbine. Table 9-43 presents a summary of the Bulletin performance objectives applicable to dwellings identified above between 3km and 4.4km of a wind turbine.

Table 9-42 Performance objectives summary (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
F16-1	2	2	2.50km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation. The two wind turbines below the black line (60 and 61) may be removed to minimise residual impacts subject to ongoing discussions with property owners.
F17-1	2	4	2.83km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation.
F18-1	2	6	2.58km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation.

Table 9-42 Performance objectives summary (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
F19-1	2	3	2.63km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation.
G15-3	1	5	1.96km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ1 view location. Tree screening beyond the dwelling will restrict views toward wind turbines.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation.
G17-1	2	9	2.04km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location. Tree screening beyond the dwelling will restrict views toward some wind turbines.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation.

Table 9-42 Performance objectives summary (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
H12-1	2	1	3.02km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation.
H12-3	2	2	2.57km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation.
P22-1	1	4	1.38km	N*	Y	Y	Y	The wind farm is considered compliant with the Bulletin given the location and extent of tree cover beyond the dwelling. Tree cover provides substantial screening to the west of the immediate dwelling curtilage, with tree cover also providing some partial	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation. The two wind turbines below the black line (9 and 10) may be removed and wind turbine 8 relocated to the south east to minimise residual impacts subject to ongoing discussions with property owners.

Table 9-42 Performance objectives summary (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
								filtering of views toward wind turbines south of the dwelling.	
S17-2	1	6	1.71km	N*	Y	Y	Y	The wind farm is considered compliant with the Bulletin given the location and extent of tree cover beyond the dwelling. Tree cover provides substantial screening to the west of the immediate dwelling curtilage, with tree cover also providing some partial filtering of views toward wind turbines south of the dwelling.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation. The two wind turbines below the black line (9 and 10) may be removed and wind turbine 8 relocated to the south east to minimise residual impacts subject to ongoing discussions with property owners.
T5-1	2	1	2.95km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation.

Table 9-42 Performance objectives summary (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
T6-2	2	2	2.58km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation.
T6-9	2	2	2.26km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation.
T15-1	2	2	2.47km	Y	Y	Y	Y	The wind farm is considered compliant with the Bulletin given the marginal visibility of wind turbines to the west of the dwelling occupying the third 60 degree sector.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation.

Table 9-42 Performance objectives summary (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
V20-1	2	5	2.25km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	A neighbour agreement will be offered to the property owner in addition to planting for visual mitigation.

Ma – Magnitude, L – Landscape Integrity, F – Key Feature Disruption, Mu – Multiple Wind Turbine

N* - compliance subject to neighbour agreement

Table 9-43 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
D18-3 (D18-2 and E18-1)	2	3	4.17km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
D21-2	2	1	4.31km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
E17-3 (E17-1, E17-2, and E17-5)	2	7	4.09km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

Table 9-43 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
E17-4	2	3	4.27km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
E17-6	2	1	4.33km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
E19-1	2	6	3.12km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

Table 9-43 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
F16-2	2	4	3.05km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Neighbour agreement and/or screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
G12-1 (G11-1)	2	0	4.08km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	The extent of wind turbine visibility is not considered to require mitigation or management option at this dwelling. This will be confirmed post construction.
H8-1 (H7-1)	2	1	4.03km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

Table 9-43 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
H11-2	2	6	3.26km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Neighbour agreement and/or screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
H12-1	2	14	3.02km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Neighbour agreement and/or screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
K23-1	2	0	4.35km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening will be offered to the landowner in accordance with the consent conditions.

Table 9-43 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
L23-1	2	1	4.07km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
M23-2 (M23-1)	2	1	4.15km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
N21-1	2	2	3.25km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

Table 9-43 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
N22-1	2	6	3.73km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
O22-1	2	6	3.12km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
P7-1	2	5	3.52km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

Table 9-43 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
Q5-1	2	0	4.11km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening will be offered to the landowner in accordance with the consent conditions.
Q17-3 (Q17-1 and Q17-2)	2	15	3.13km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
S4-1	2	3	3.51km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

Table 9-43 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
W8-1	2	6	3.31km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
W14-1	2	1	4.17km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.
W22-1	2	2	4.30km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening (between the blue line and the black line) will be offered to the landowner in accordance with the consent conditions.

Table 9-43 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Mitigation options and residual impacts
				Ma	L	F	Mu		
Y17-1 (Y17-2)	2	0	4.13km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening will be offered to the landowner in accordance with the consent conditions.
Y18-1	2	0	4.14km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening will be offered to the landowner in accordance with the consent conditions.
Y19-5 (Y19-3 and Y19-4)	2	1	4.22km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Screening will be offered to the landowner in accordance with the consent conditions.

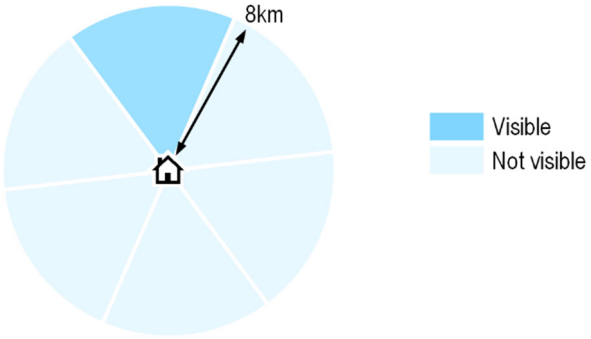
Ma – Magnitude, L – Landscape Integrity, F – Key Feature Disruption, Mu – Multiple Wind Turbine

9.9 Scenic lookouts and Key public viewpoints

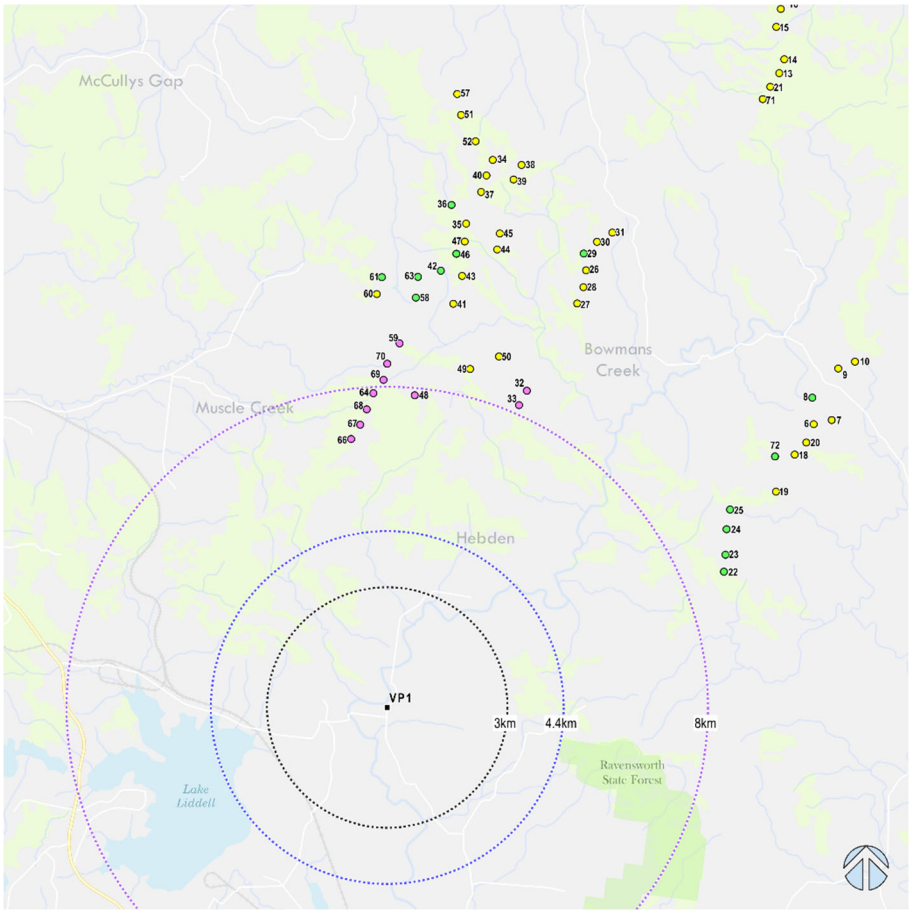
View location 1: Hebden/Scrumlo Road

9.9.1 Viewpoint Hebden/Scrumlo Road aerial photo

9.9.2 Viewpoint Hebden/Scrumlo Road Visibility rose



9.9.3 Viewpoint Hebden/Scrumlo Road Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-44 Viewpoint Hebden/Scrumlo Road VIZ3

Visual Performance Objectives	Visual Influence Zone 3	Evaluation
Visual Magnitude Refer photomontage	Objective: Consider screening below the black line.	Closest wind turbine (66) is located 6.75km (Far Middleground) from the view location. The MWTT diagram illustrates that no wind turbines would be visible below the blue line. The nearest wind turbines would be located toward the 8km line Wind turbines within one 60-degree sector do not dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: No Visual Performance objective applies	n/a
Key Feature Disruption	Objective: No Visual Performance objective applies	n/a
Multiple Wind Turbine Effects	Objective: No Visual Performance objective applies for Level 3 viewpoints	n/a
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and

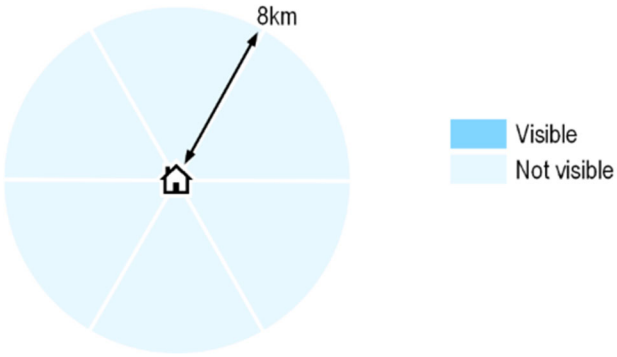
Table 9-44 Viewpoint Hebden/Scrumlo Road VIZ3

Visual Performance Objectives	Visual Influence Zone 3	Evaluation
		330kV transmission line will not be visible from the viewpoint.
Mitigation and management options	No performance objectives are noted in the Bulletin.	n/a

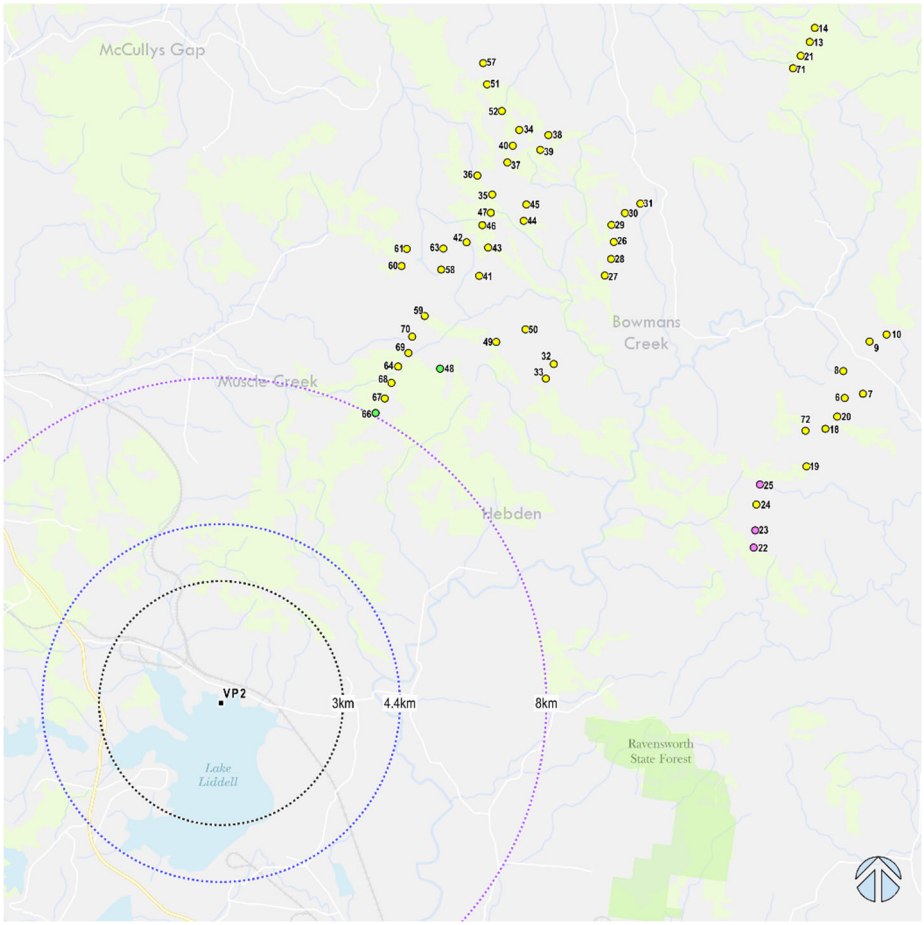
View location 2: Lake Liddell Recreation Park

9.9.4 Viewpoint Lake Liddell Recreation Park aerial photo

9.9.5 Viewpoint Lake Liddell Recreation Park Visibility rose



9.9.6 Viewpoint Lake Liddell Recreation Park Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-45 Viewpoint Lake Liddell Recreation Park VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Visual Magnitude	Objective: Avoid turbines or provide detailed justification of turbines below the blue line.	Closest wind turbine (66) is located 8.10km (Near Background) from the view location. The MWTT diagram illustrates that no wind turbines would be visible below the blue line and 8km lines. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause more than a low-level modification of the visual catchment. Turbines are seen as either very small and/ or faint, or as of a size and colour contrast (under clear, haze-free atmospheric conditions) that they would not compete with major elements of the existing visual catchment. In the moderate scenic quality class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbines will not be visible therefore cannot cause any significant modification to the visual catchment. The wind turbines will not become an element in the landscape or dominate the existing visual catchment due to distance and extent within existing view. The wind turbines will not become an element in the landscape from this view location.

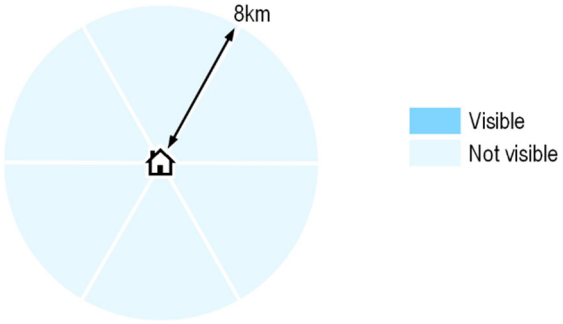
Table 9-45 Viewpoint Lake Liddell Recreation Park VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Key Feature Disruption	Objective: Avoid wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The wind turbine will not be visible and therefore not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 1 (high sensitivity) – wind turbines visible within the effective horizontal views of two or more 60° sectors	Wind turbines will be located beyond the 8km MWTT threshold line.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations and internal electrical reticulation will not be visible from the view location. Views toward the 330kV transmission line to the north of the recreation park (between Hebden Road and railway line) would be largely screened or filtered by tree planting within and beyond the recreation park.
Mitigation and management options		n/a

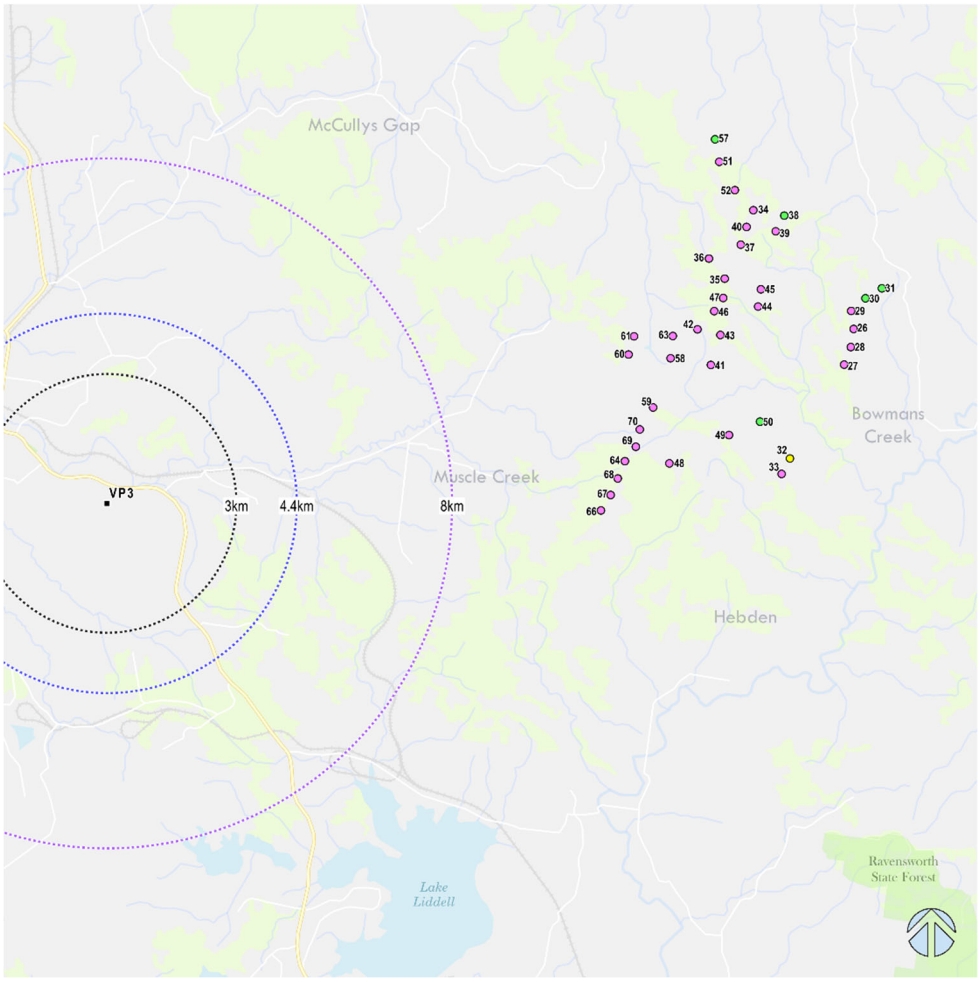
View location 3: South Muswellbrook

9.9.7 Viewpoint South Muswellbrook aerial photo

9.9.8 Viewpoint South Muswellbrook Visibility rose



9.9.9 Viewpoint South Muswellbrook Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-46 Viewpoint South Muswellbrook VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Visual Magnitude	Objective: Avoid turbines or provide detailed justification of turbines below the blue line.	Closest wind turbine (66) is located 11.45km (Near Background) from the view location. The MWTT diagram illustrates that no wind turbines would be visible between the blue line and the 8km threshold line. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause more than a low-level modification of the visual catchment. Turbines are seen as either very small and/ or faint, or as of a size and colour contrast (under clear, haze-free atmospheric conditions) that they would not compete with major elements of the existing visual catchment. In the moderate scenic quality class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbines will not cause any significant modification to the visual catchment. The wind turbines will not become a major element in the landscape or dominate the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a dominant element in the landscape from this view location.

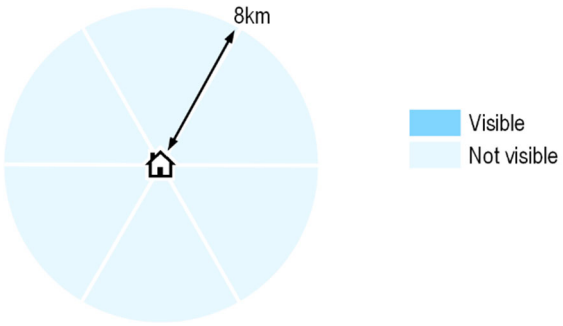
Table 9-46 Viewpoint South Muswellbrook VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Key Feature Disruption	Objective: Avoid wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The wind turbine will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 1 (high sensitivity) – wind turbines visible within the effective horizontal views of two or more 60° sectors	Wind turbines would be located beyond 8km from the viewpoint.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		n/a

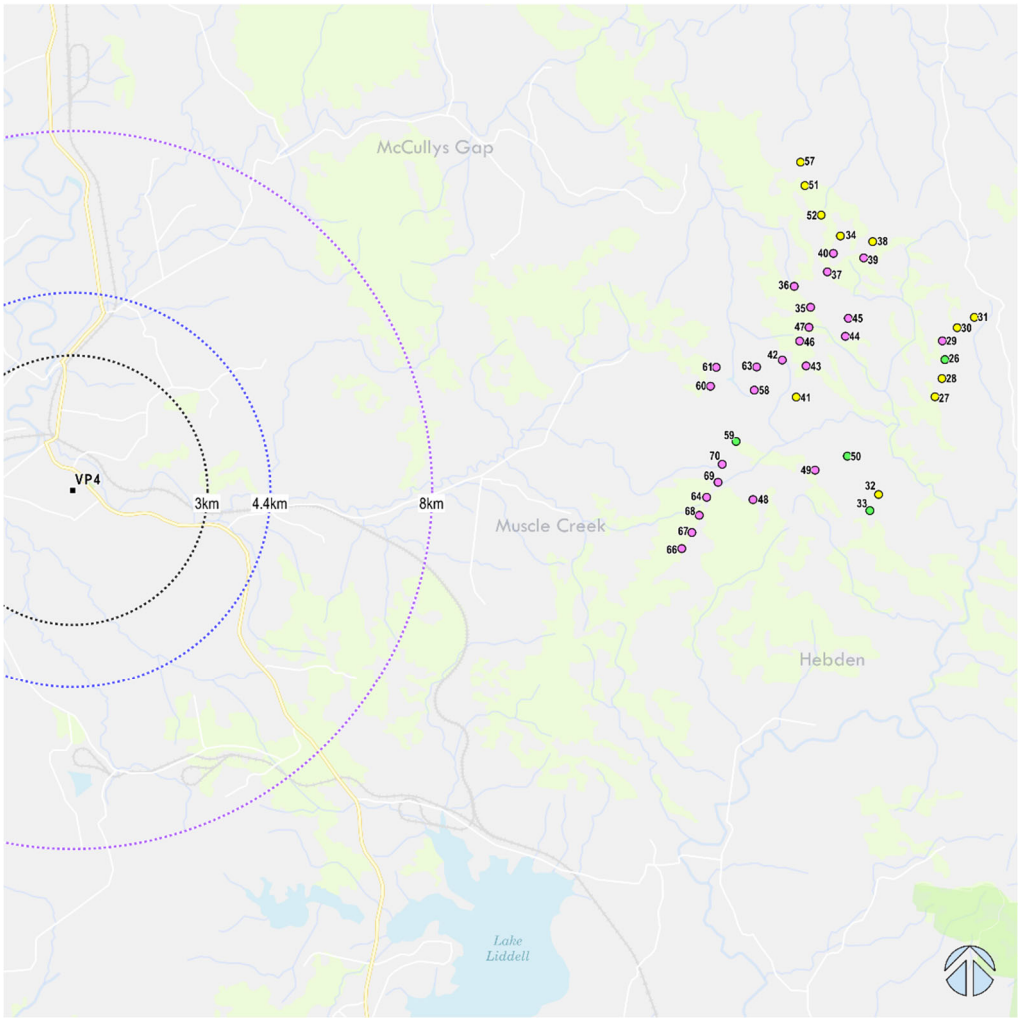
View location 4: Muswellbrook Ruth White Avenue

9.9.10 Viewpoint Ruth White Avenue aerial photo

9.9.11 Viewpoint Ruth White Avenue Visibility rose



9.9.12 Viewpoint Ruth White Avenue Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-47 Viewpoint Ruth White Avenue VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Visual Magnitude	Objective: Avoid turbines or provide detailed justification of turbines below the blue line.	Closest wind turbine (66) is located 13.62km (Mid Background) from the view location. The MWTT diagram illustrates that no wind turbines would be visible between the blue line and the 8km threshold line. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause more than a low-level modification of the visual catchment. Turbines are seen as either very small and/ or faint, or as of a size and colour contrast (under clear, haze-free atmospheric conditions) that they would not compete with major elements of the existing visual catchment. In the moderate scenic quality class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbines will not cause any significant modification to the visual catchment. The wind turbines will not become a major element in the landscape or dominate the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a dominant element in the landscape from this view location.

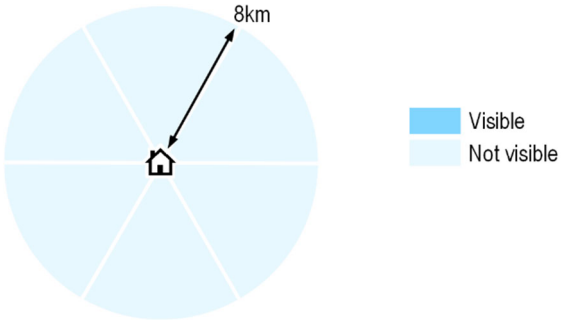
Table 9-47 Viewpoint Ruth White Avenue VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Key Feature Disruption	Objective: Avoid wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The wind turbine will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 1 (high sensitivity) – wind turbines visible within the effective horizontal views of two or more 60° sectors	Wind turbines would be located beyond 8km from the viewpoint.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwellings.
Mitigation and management options		n/a

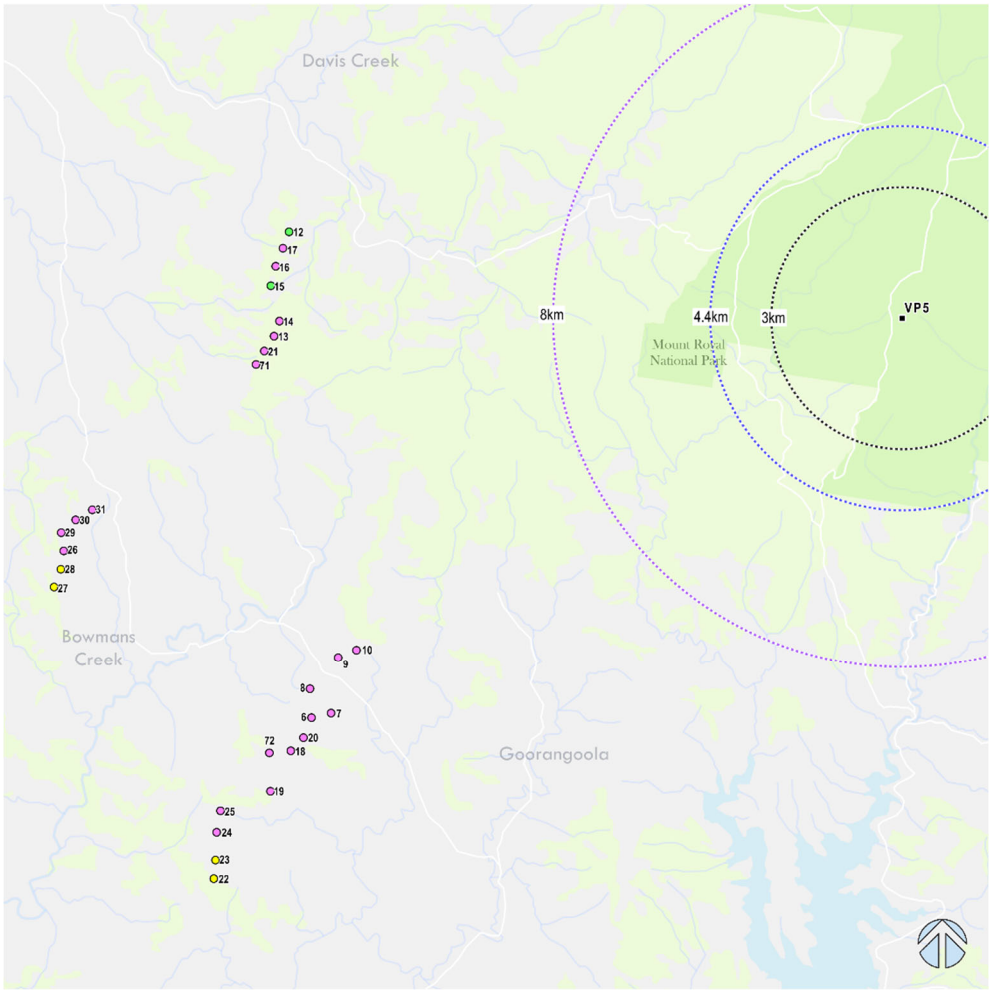
View location 5: Mount Royal National Park (Pieris Point Lookout)

9.9.13 Viewpoint Pieris Point Lookout aerial photo

9.9.14 Viewpoint Pieris Point Lookout Visibility rose



9.9.15 Viewpoint Pieris Point Lookout Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-48 Viewpoint Pieris Point Lookout VIZ1

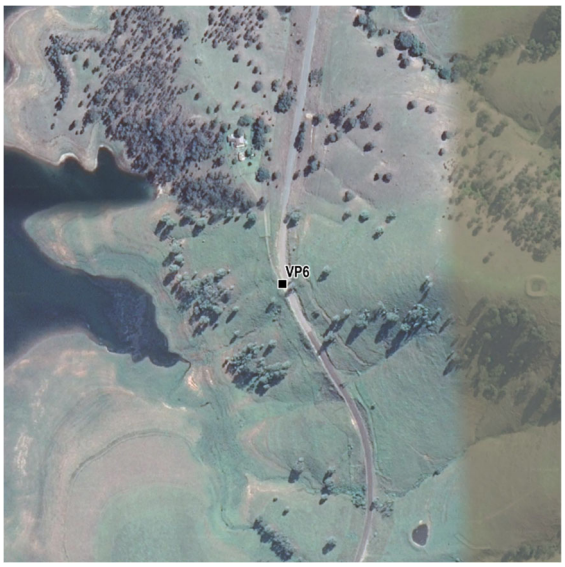
Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Visual Magnitude	Objective: Avoid turbines or provide detailed justification of turbines below the blue line.	Closest wind turbine (12) is located 14.20km (Mid Background) from the view location. The MWTT diagram illustrates that no wind turbines would be visible between the blue line and 8km threshold line. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause more than a low-level modification of the visual catchment. Turbines are seen as either very small and/ or faint, or as of a size and colour contrast (under clear, haze-free atmospheric conditions) that they would not compete with major elements of the existing visual catchment. In the moderate scenic quality class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbines will not cause any significant modification to the visual catchment. The wind turbines will not become a major element in the landscape or dominate the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a dominant element in the landscape from this view location.

Table 9-48 Viewpoint Pieris Point Lookout VIZ1

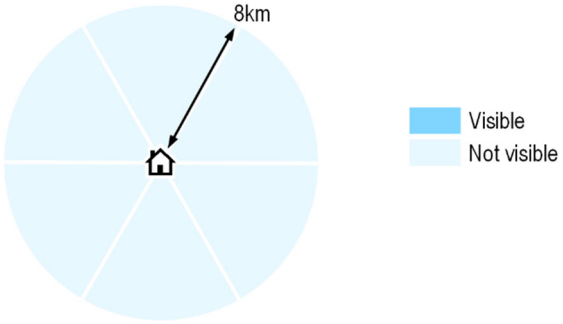
Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Key Feature Disruption	Objective: Avoid wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The wind turbine will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 1 (high sensitivity) – wind turbines visible within the effective horizontal views of two or more 60° sectors	Wind turbines would be located beyond 8km from the viewpoint.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		n/a

View location 6: Lake Saint Clair

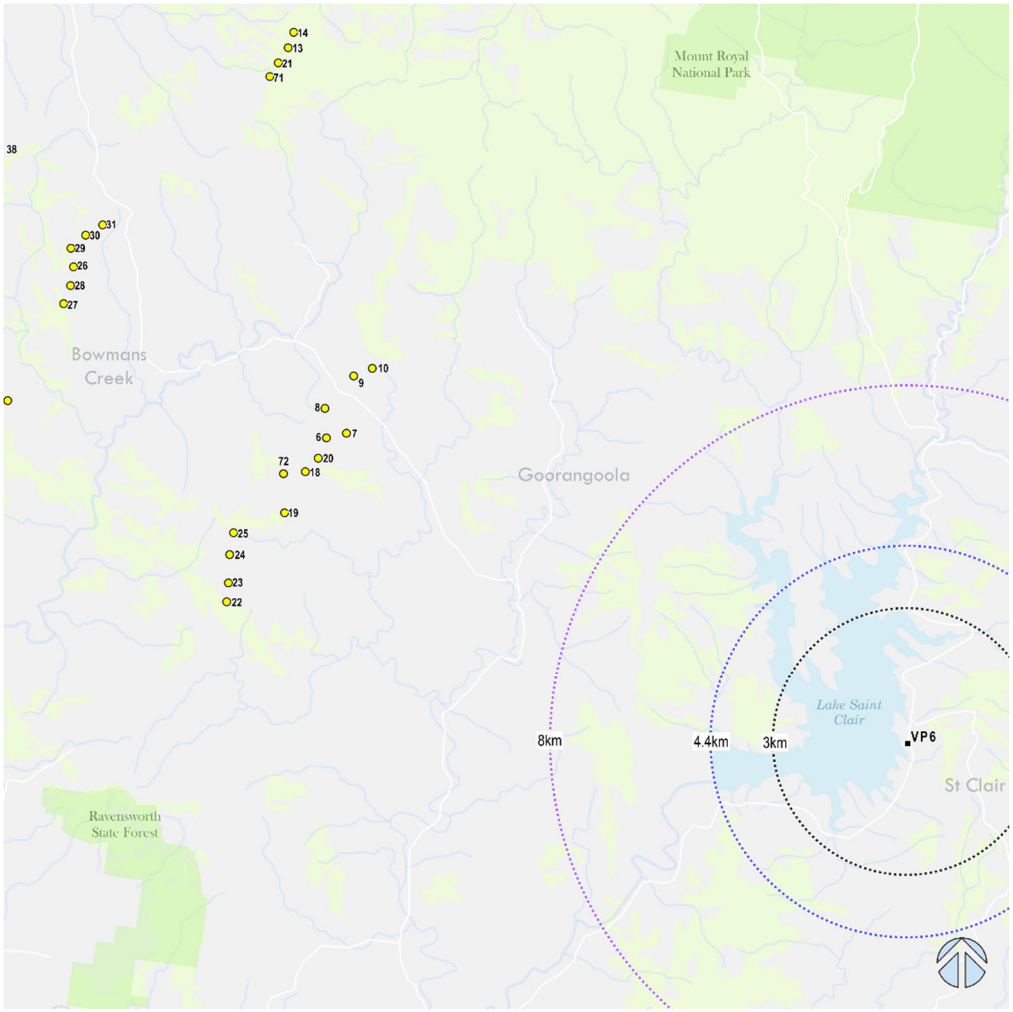
9.9.16 Viewpoint Lake Saint Clair aerial photo



9.9.17 Viewpoint Lake Saint Clair Visibility rose



9.9.18 Viewpoint Lake Saint Clair Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-49 Viewpoint Lake Saint Clair VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Visual Magnitude	Objective: Avoid turbines or provide detailed justification of turbines below the blue line.	Closest wind turbine (7) is located 14.40km (Mid Background) from the view location. The MWTT diagram illustrates that no wind turbines would be visible from the viewpoint. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause more than a low-level modification of the visual catchment. Turbines are seen as either very small and/ or faint, or as of a size and colour contrast (under clear, haze-free atmospheric conditions) that they would not compete with major elements of the existing visual catchment. In the moderate scenic quality class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbines will not be visible therefore cannot cause any significant modification to the visual catchment. The wind turbines will not become an element in the landscape or dominate the existing visual catchment due to distance and extent within existing view. The wind turbines will not become an element in the landscape from this view location.
Key Feature Disruption	Objective:	The wind turbine will not be visible and therefore not result in the removal or visual

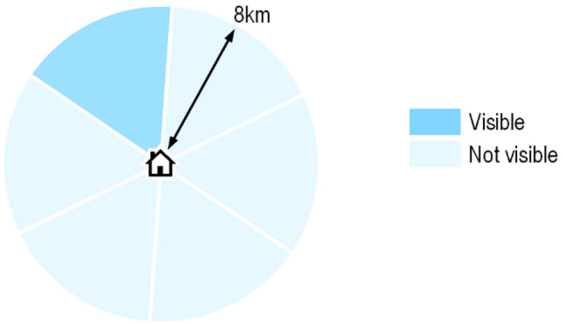
Table 9-49 Viewpoint Lake Saint Clair VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
	Avoid wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 1 (high sensitivity) – wind turbines visible within the effective horizontal views of two or more 60° sectors	Wind turbines would be located beyond 8km from the viewpoint.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and the 330kV transmission line will not be visible from the view location.
Mitigation and management options		n/a

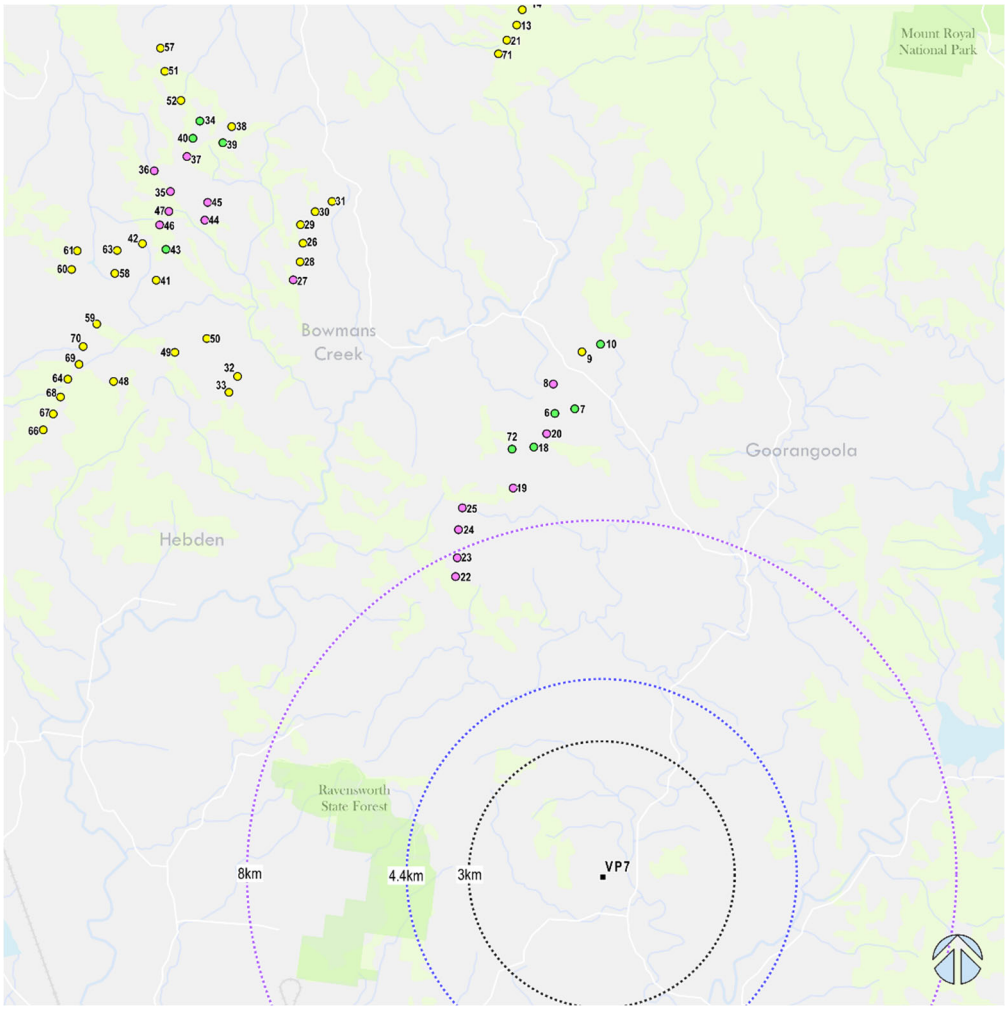
View location 7: Greenlands

9.9.19 Viewpoint Greenlands aerial photo

9.9.20 Viewpoint Greenlands Visibility rose



9.9.21 Viewpoint Greenlands Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-50 Viewpoint Greenlands VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (22) is located 7.5km (Far Middleground) from the view location. The MWTT diagram illustrates that no wind turbines would be visible below the blue line with 2 wind turbines below the 8km line. Wind turbines within one 60-degree sector would not dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Overall wind turbine visibility will not cause any significant modification to the visual catchment with wind turbines not becoming a major element in the landscape or dominating the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a major element in the landscape from this view location.

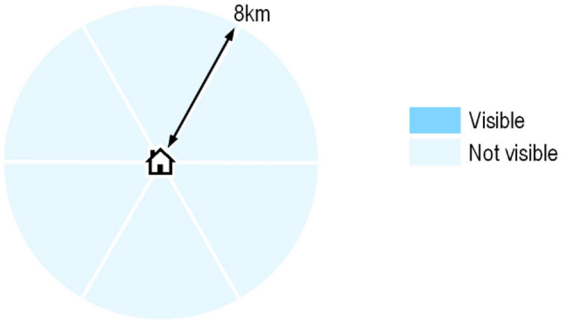
Table 9-50 Viewpoint Greenlands VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The visible wind turbines will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Wind turbines occur within one 60-degree sector and are compliant with the Visual Performance Objective for Multiple Wind Turbine Effects.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and the 330kV transmission line will not be visible from the view location.
Mitigation and management options		n/a

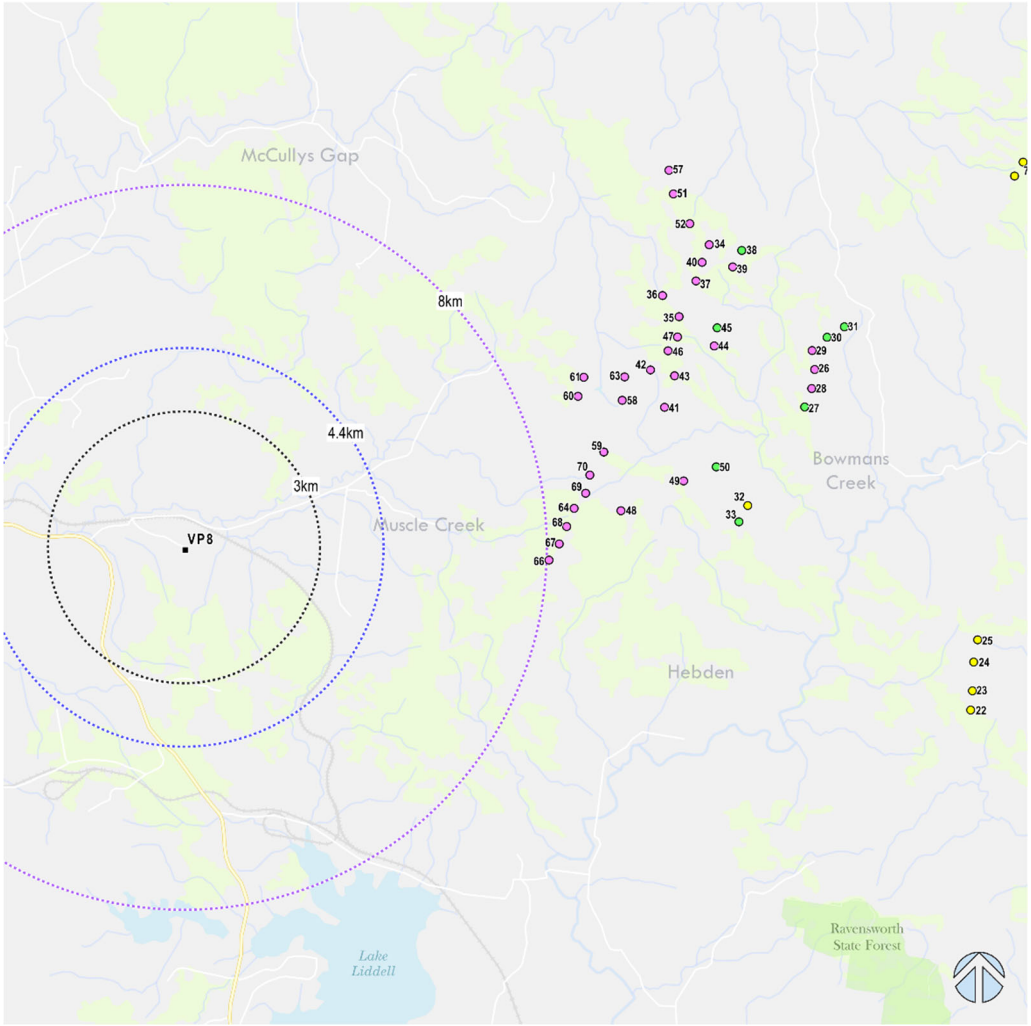
View location 8: Woodlands Ridge

9.9.22 Viewpoint Woodlands Ridge aerial photo

9.9.23 Viewpoint Woodlands Ridge Visibility rose



9.9.24 Viewpoint Woodlands Ridge Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-51 Viewpoint Woodlands Ridge VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Visual Magnitude	Objective: Avoid turbines or provide detailed justification of turbines below the blue line.	Closest wind turbine (66) is located 8.03km (Near Background) from the view location. The MWTT diagram illustrates that no wind turbines would be visible below the blue line or the 8km line. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause more than a low-level modification of the visual catchment. Turbines are seen as either very small and/ or faint, or as of a size and colour contrast (under clear, haze-free atmospheric conditions) that they would not compete with major elements of the existing visual catchment. In the moderate scenic quality class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbines will not cause any significant modification to the visual catchment. The wind turbines will not become a major element in the landscape or dominate the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a dominant element in the landscape from this view location.

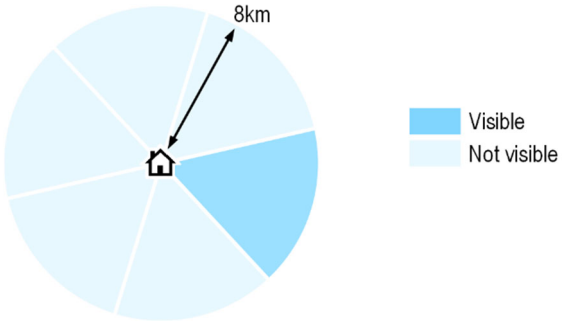
Table 9-51 Viewpoint Woodlands Ridge VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Key Feature Disruption	Objective: Avoid wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The wind turbine will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 1 (high sensitivity) – wind turbines visible within the effective horizontal views of two or more 60° sectors	Wind turbines would be located beyond 8km from the viewpoint.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		n/a

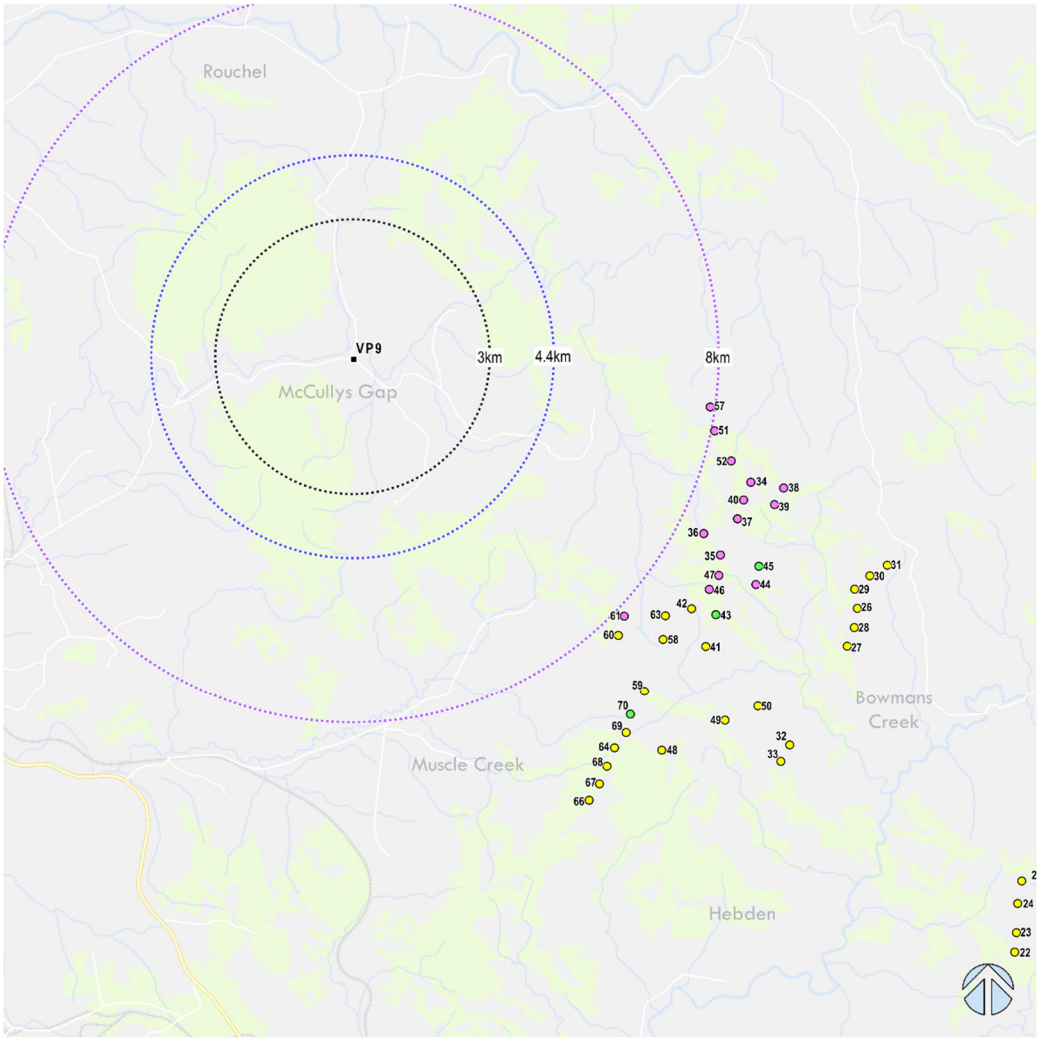
View location 9: McCullys Gap

9.9.25 Viewpoint McCullys Gap aerial photo

9.9.26 Viewpoint McCullys Gap Visibility rose



9.9.27 Viewpoint McCullys Gap Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-52 Viewpoint McCullys Gap VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (57) is located 7.86km (Far Middleground) from the view location. The MWTT diagram illustrates that 1 wind turbines would be visible below the 8km line. Wind turbines within one 60-degree sector would not dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbines will not cause any significant modification to the visual catchment. The wind turbines will not become a major element in the landscape or dominate the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a dominant element in the landscape from this view location.

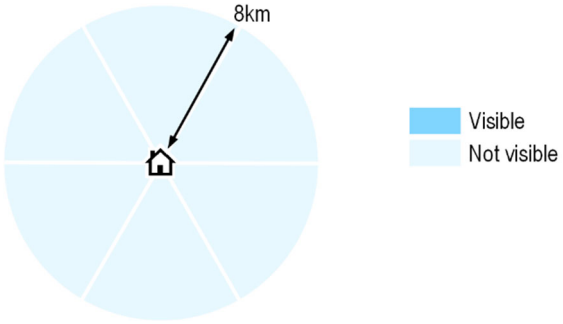
Table 9-52 Viewpoint McCullys Gap VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Key Feature Disruption	Objective: Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The wind turbine will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Wind turbines occur within one 60-degree sector and are compliant with the Visual Performance Objective for Multiple Wind Turbine Effects.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		n/a

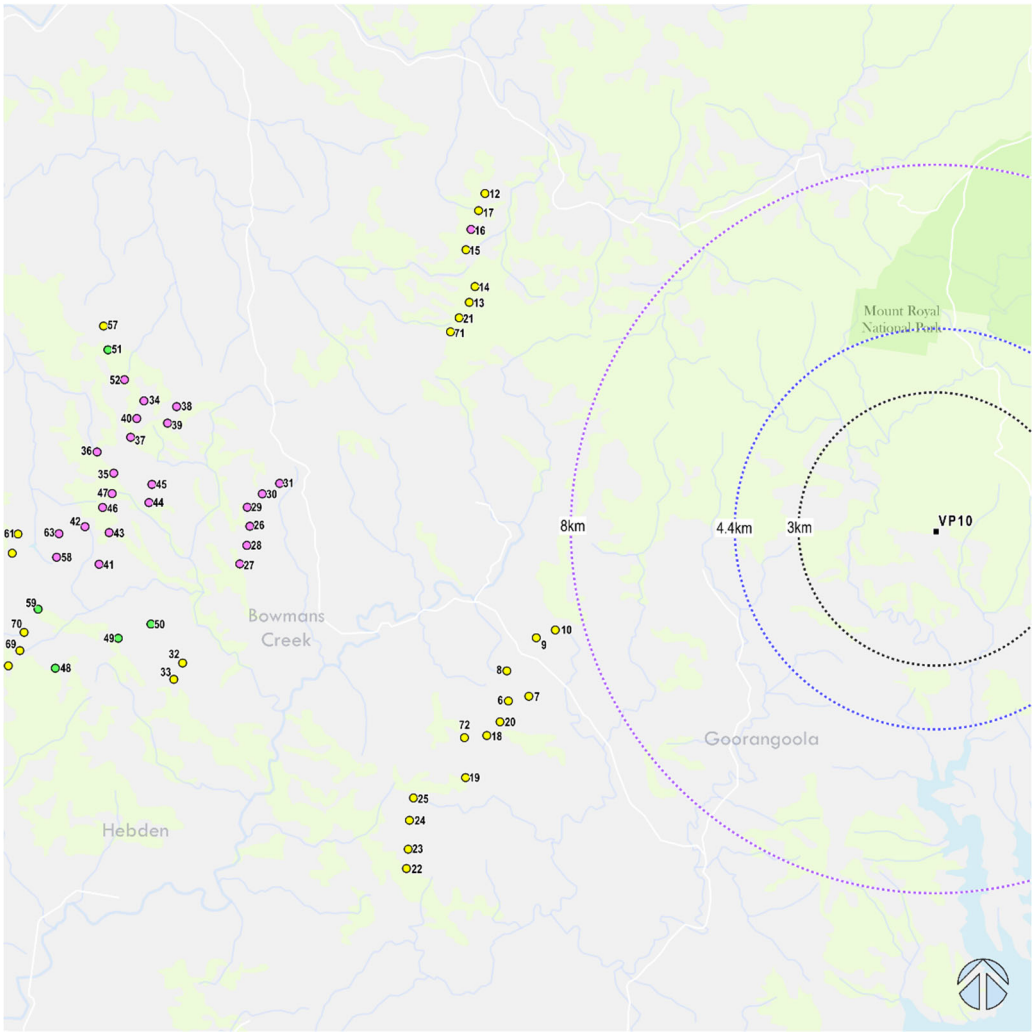
View location 10: Mount Royal South

9.9.28 Viewpoint Mount Royal South aerial photo

9.9.29 Viewpoint Mount Royal South Visibility rose



9.9.30 Viewpoint Mount Royal South Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

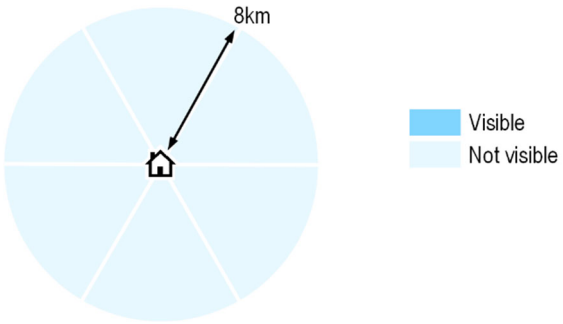
Table 9-53 Viewpoint Mount Royal South VIZ3

Visual Performance Objectives	Visual Influence Zone 3	Evaluation
Visual Magnitude	Objective: Consider screening below the black line.	Closest wind turbine (10) is located 8.65km (Mid Background) from the view location. The MWTT diagram illustrates that no wind turbines would be visible beyond the blue line or the 8km line. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: No Visual Performance objective applies	n/a
Key Feature Disruption	Objective: No Visual Performance objective applies	n/a
Multiple Wind Turbine Effects	Objective: No Visual Performance objective applies for Level 3 viewpoints	n/a
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options	No performance objectives are noted in the Bulletin.	n/a

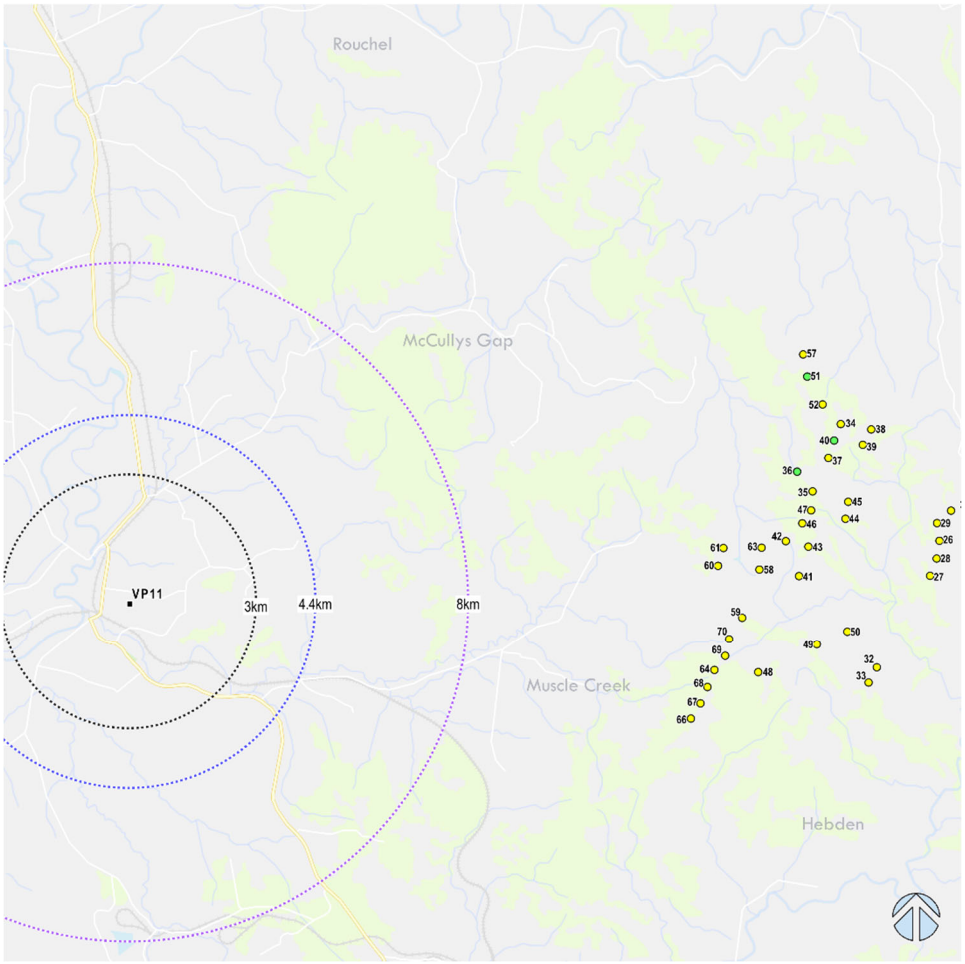
View location 11: Muswellbrook Brook Street

9.9.31 Viewpoint Muswellbrook Brook Street aerial photo

9.9.32 Viewpoint Muswellbrook Brook Street Visibility rose



9.9.33 Viewpoint Muswellbrook Brook Street Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-54 Viewpoint Muswellbrook Brook Street VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Visual Magnitude	Objective: Avoid turbines or provide detailed justification of turbines below the blue line.	Closest wind turbine (66) is located 13.50km (Mid Background) from the view location. The MWTT diagram illustrates that no wind turbines would be visible beyond the blue line or the 8km line. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause more than a low-level modification of the visual catchment. Turbines are seen as either very small and/ or faint, or as of a size and colour contrast (under clear, haze-free atmospheric conditions) that they would not compete with major elements of the existing visual catchment. In the moderate scenic quality class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbines will not cause any significant modification to the visual catchment. The wind turbines will not become a major element in the landscape or dominate the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a dominant element in the landscape from this view location.

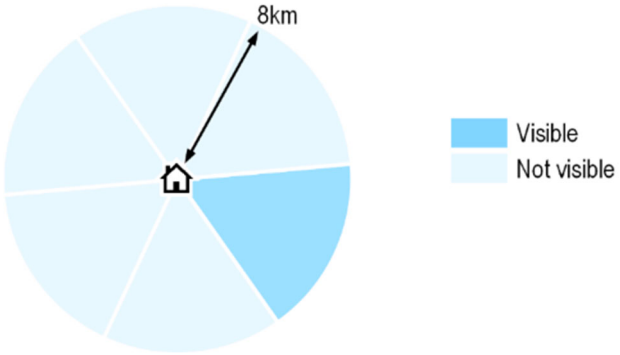
Table 9-54 Viewpoint Muswellbrook Brook Street VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Key Feature Disruption	Objective: Avoid wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	The wind turbine will not result in the removal or visual alteration of key landscape features, cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 1 (high sensitivity) – wind turbines visible within the effective horizontal views of two or more 60° sectors	Wind turbines would be located beyond 8km from the viewpoint.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		n/a

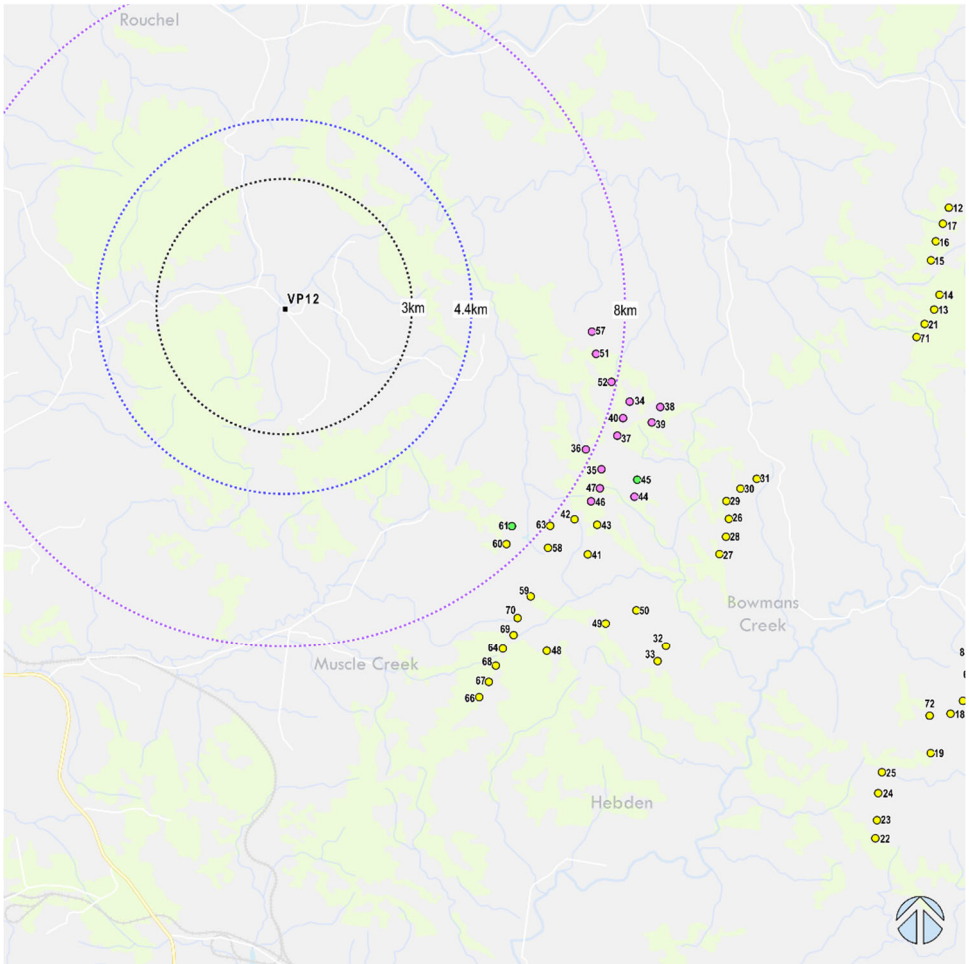
View location 12: McCullys Gap Road (Dolahentys Road)

9.9.34 Viewpoint McCullys Gap Road (Dolahentys Road) aerial photo

9.9.35 Viewpoint McCullys Gap Road (Dolahentys Road) Visibility rose



9.9.36 Viewpoint McCullys Gap Road (Dolahentys Road) Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-55 Viewpoint McCullys Gap Road (Dolahentys Road) VIZ3

Visual Performance Objectives	Visual Influence Zone 3	Evaluation
Visual Magnitude	Objective: Consider screening below the black line.	Closest wind turbine (57) is located 7.21km (Far Middleground) from the view location. The MWTT diagram illustrates that no wind turbines would be visible below the blue line. The nearest wind turbines would be located toward the 8km line. Wind turbines within one 60-degree sector do not dominate the available viewshed. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: No Visual Performance objective applies	n/a
Key Feature Disruption	Objective: No Visual Performance objective applies	n/a
Multiple Wind Turbine Effects	Objective: No Visual Performance objective applies for Level 3 viewpoints	n/a
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the viewpoint.

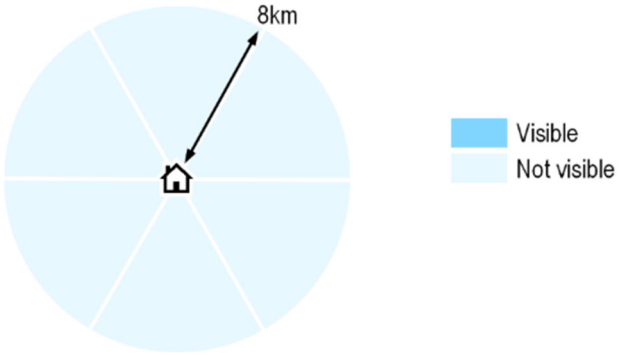
Table 9-55 Viewpoint McCullys Gap Road (Dolahentys Road) VIZ3

Visual Performance Objectives	Visual Influence Zone 3	Evaluation
Mitigation and management options	No performance objectives are noted in the Bulletin.	n/a

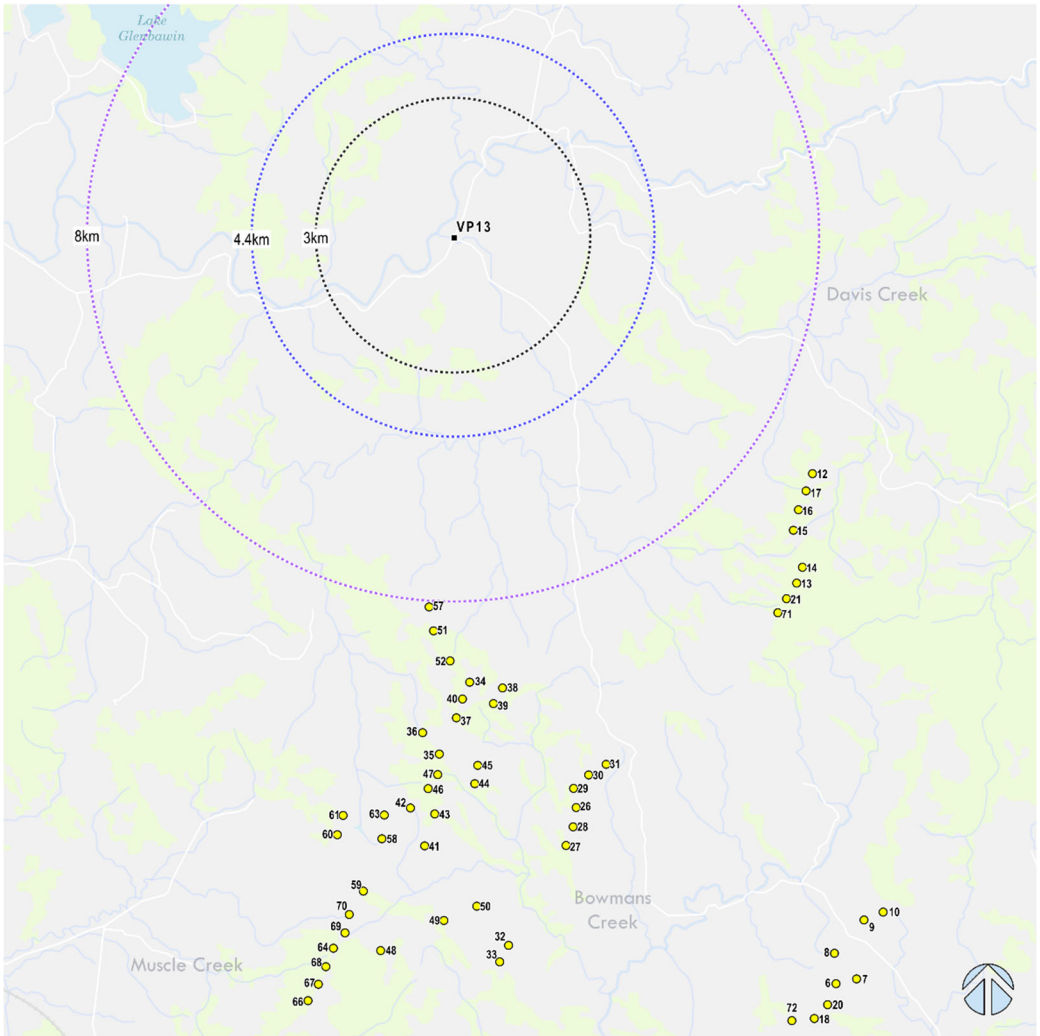
View location 13: Rouchel Brook

9.9.37 Viewpoint Rouchel Brook aerial photo

9.9.38 Viewpoint Rouchel Brook Visibility rose



9.9.39 Viewpoint Rouchel Brook Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-56 Viewpoint Rouchel Brook VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (57) is located 8.08km (Near Background) from the view location. The MWTT diagram illustrates that no wind turbines would be visible below the blue line or the 8km line. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	n/a
Key Feature Disruption	Objective:	n/a

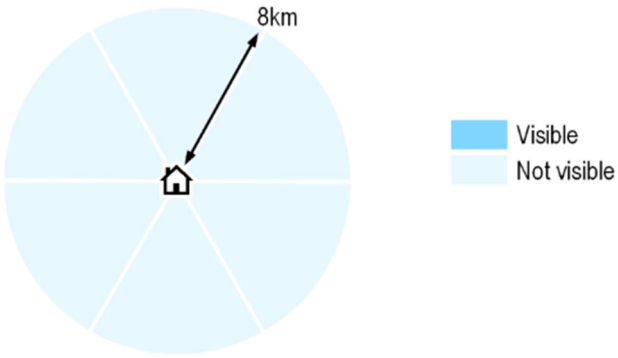
Table 9-56 Viewpoint Rouchel Brook VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	n/a
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the viewpoint.
Mitigation and management options		n/a

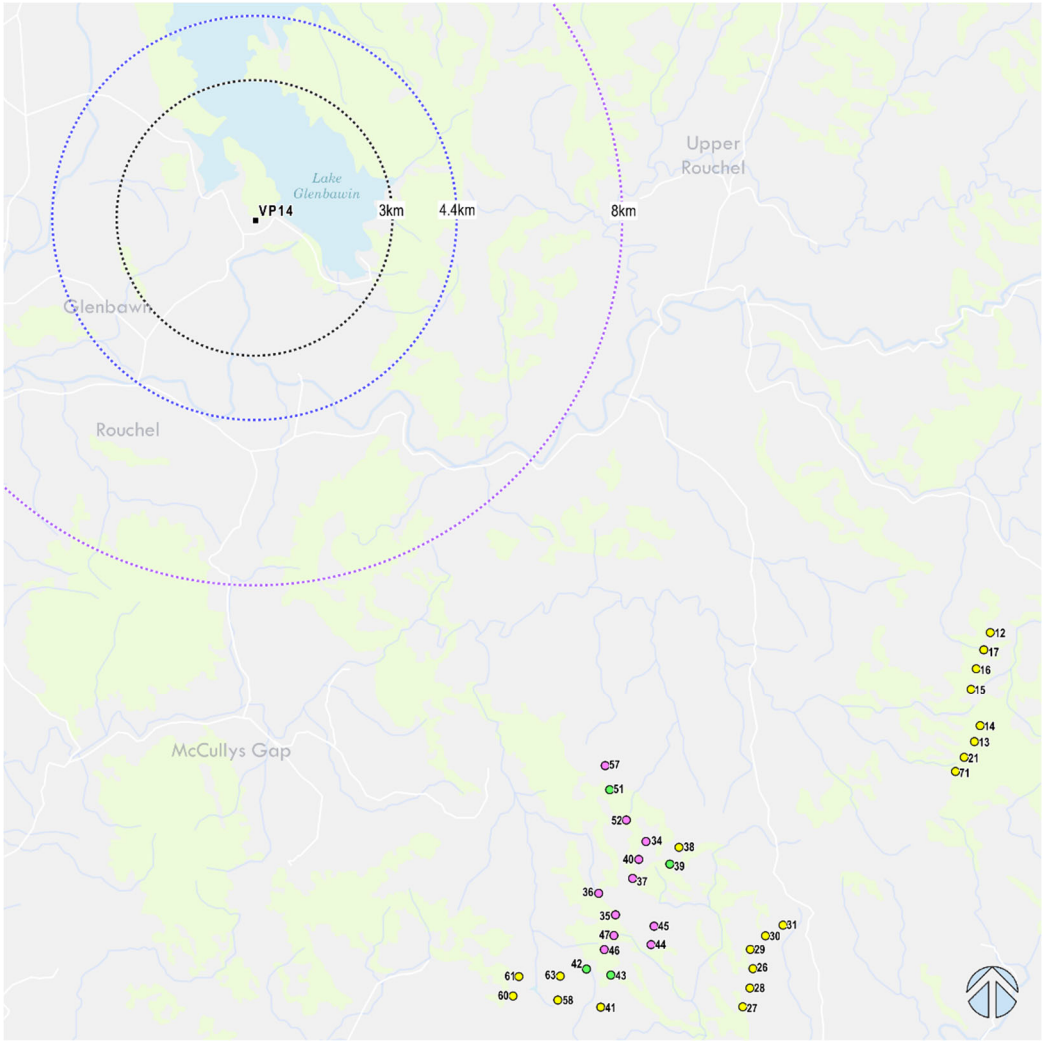
View location 14: Lake Glenbawn State Park

9.9.40 Viewpoint Glenbawn State Park aerial photo

9.9.41 Viewpoint Glenbawn State Park Visibility rose



9.9.42 Viewpoint Glenbawn State Park Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-57 Viewpoint Glenbawn State Park VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	Closest wind turbine (57) is located 13.80km (Mid Background) from the view location. The MWTT diagram illustrates that no wind turbines would be visible beyond the blue line and the 8km threshold line. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbines will not cause any significant modification to the visual catchment. The wind turbines will not become a major element in the landscape or dominate the existing visual catchment due to distance and extent within existing view. The wind turbines will not become a dominant element in the landscape from this view location.
Key Feature Disruption	Objective:	The wind turbine will not result in the removal or visual alteration of key landscape features,

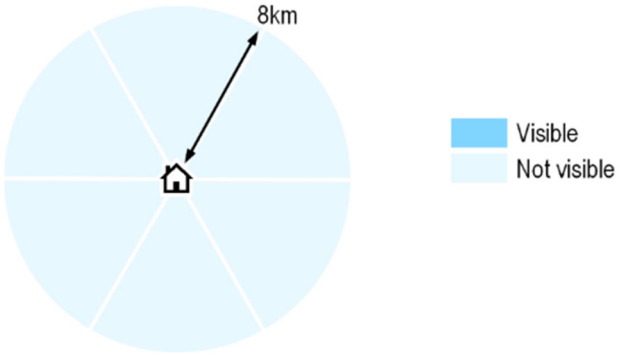
Table 9-57 Viewpoint Glenbawn State Park VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Wind turbines would be located beyond 8km from the viewpoint.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		n/a

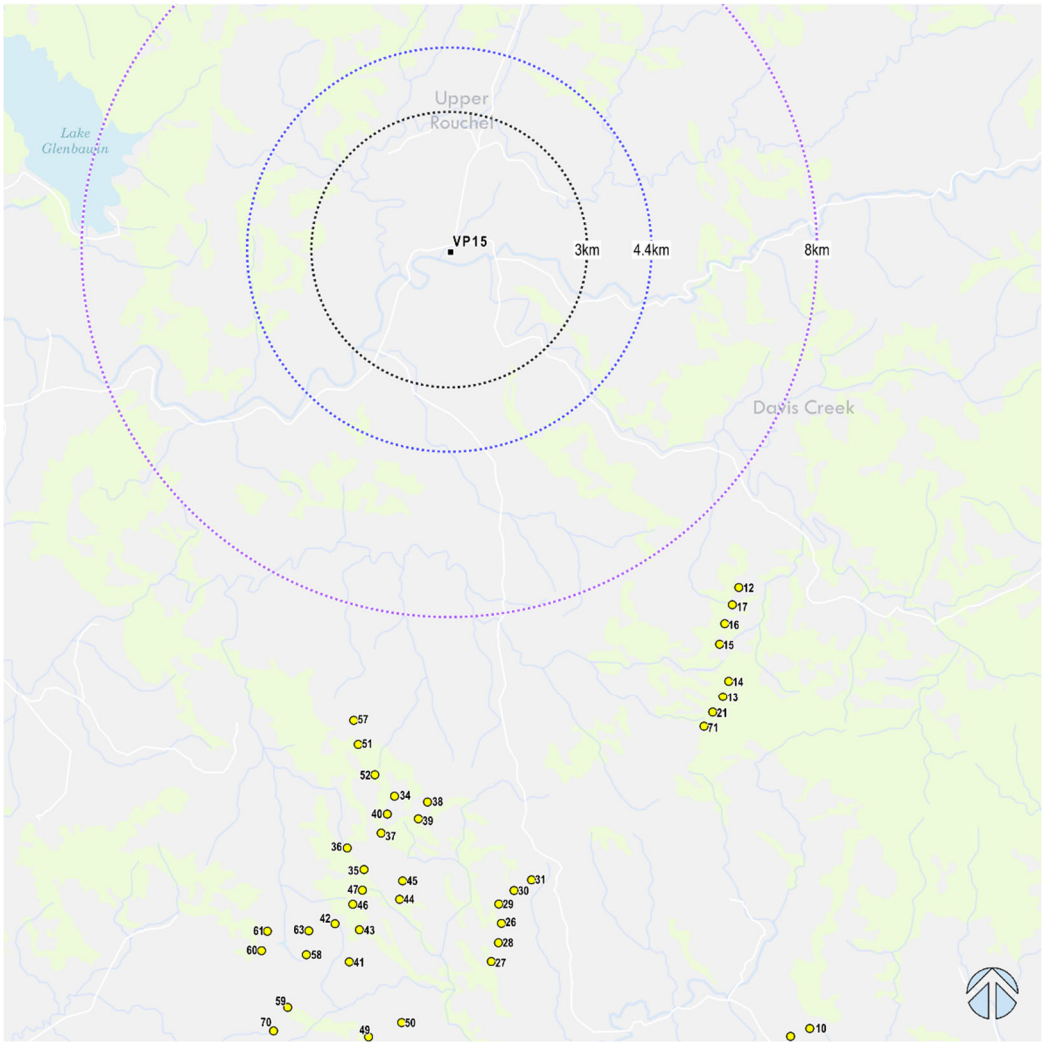
View location 15: Upper Rouchel

9.9.43 Viewpoint Upper Rouchel aerial photo

9.9.44 Viewpoint Upper Rouchel Visibility rose



9.9.45 Viewpoint Upper Rouchel Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-58 Viewpoint Upper Rouchel VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	The MWTT diagram illustrates that no wind turbines would be visible from the viewpoint. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbines will not cause any significant modification to the visual catchment. The wind turbines will not become a major or dominant element in the landscape.
Key Feature Disruption	Objective:	The wind turbine will not result in the removal or visual alteration of key landscape features,

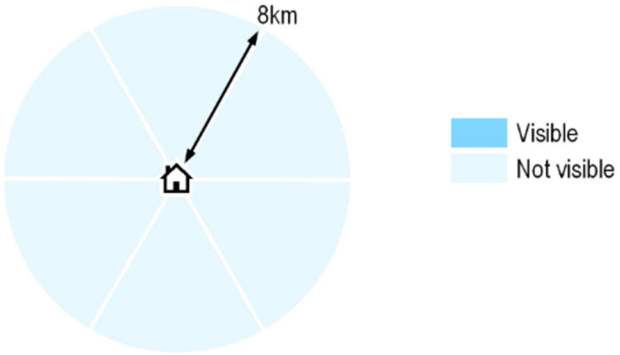
Table 9-58 Viewpoint Upper Rouchel VIZ2

Visual Performance Objectives	Visual Influence Zone 2	Evaluation
	Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Wind turbines would be located beyond 8km from the viewpoint.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		n/a

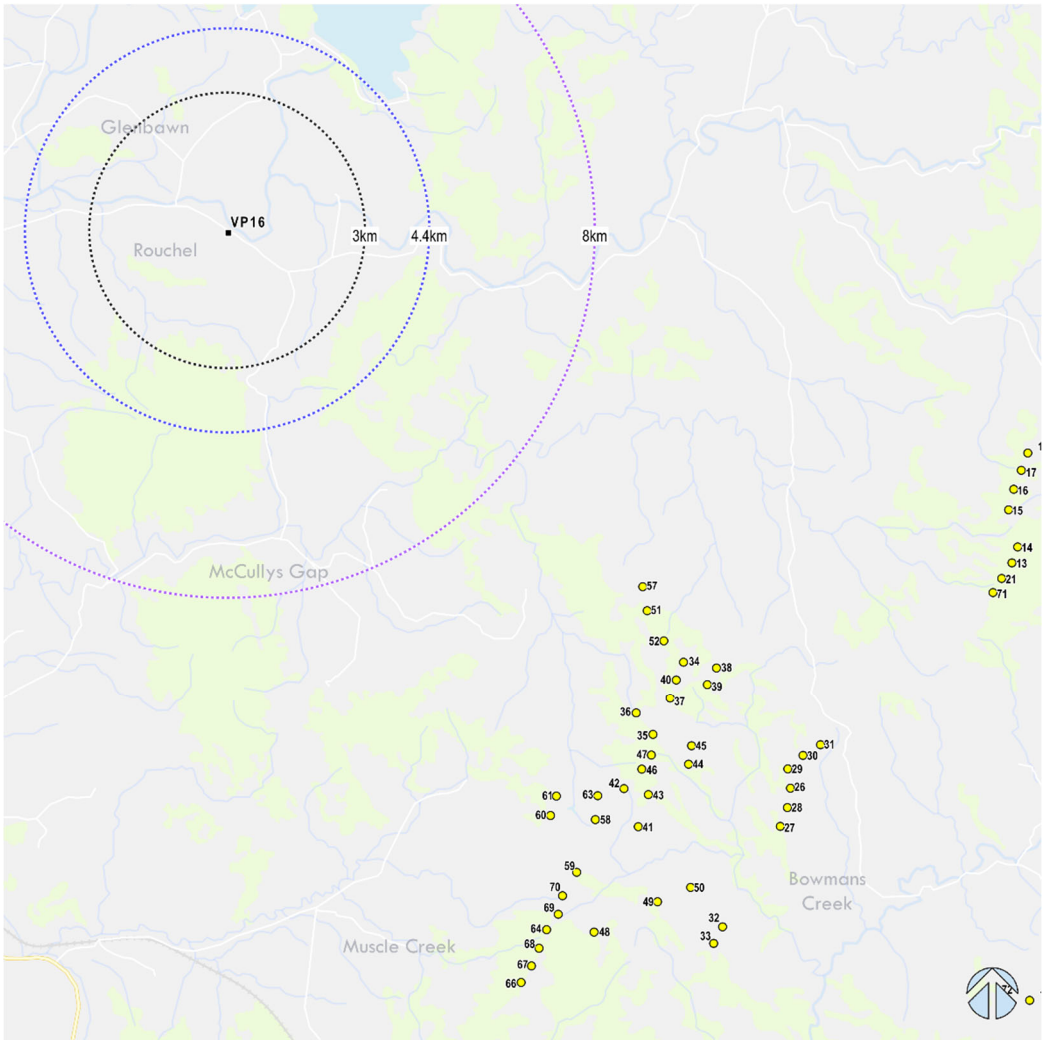
View location 16: Rouchel

9.9.46 Viewpoint Rouchel aerial photo

9.9.47 Viewpoint Rouchel Visibility rose



9.9.48 Viewpoint Rouchel Multiple Wind Turbine Tool diagram



Wind turbine legend – yellow not visible, purple turbine visible, green blade only visible

Table 9-59 Viewpoint Rouchel VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
Visual Magnitude	Objective: Manage impacts as far as practicable, justify residual impacts, and describe proposed mitigation measures below the black line. Consider screening between the blue line and the black line.	The MWTT diagram illustrates that no wind turbines would be visible from the viewpoint. The Bulletin acknowledges that wind turbines are very large structures that will be visible in the landscape.
Landscape Scenic Integrity	Objective: Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment. The Bulletin notes that in a Moderate Scenic Quality Class, wind energy projects should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major element in the landscape.	Wind turbines will not cause any significant modification to the visual catchment. The wind turbines will not become a major or dominant element in the landscape.
Key Feature Disruption	Objective:	The wind turbine will not result in the removal or visual alteration of key landscape features,

Table 9-59 Viewpoint Rouchel VIZ1

Visual Performance Objectives	Visual Influence Zone 1	Evaluation
	Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.	cultural features or focal points in the landscape.
Multiple Wind Turbine Effects	Objective: Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in three or more 60° sectors.	Wind turbines would be located beyond 8km from the viewpoint.
Ancillary electrical infrastructure	No performance objectives are noted in the Bulletin.	Ancillary electrical infrastructure including substations, internal electrical reticulation and 330kV transmission line will not be visible from the dwelling.
Mitigation and management options		n/a

Shadow Flicker and Blade Glint

Section 10

10.1 Introduction

Due to their height, wind turbines can cast shadows on the areas around them. Coupled with this, the moving blades create moving shadows. Viewed from a stationary position, when the turbine is between the viewer and the sun, the moving shadows appear as a flicker giving rise to the phenomenon of 'shadow flicker'. This is similar to the strobe effect often experienced when driving through scattered trees on a rural highway.

For a particular location, shadow flicker will only occur during periods when the sun's rays pass directly through the swept area of the turbine blades to the viewpoint. The extent of the shadow flicker is dependent on the time of day, geographical location, meteorological conditions of the site and local vegetation.

There are a number of factors influencing the effect and duration of shadow flicker including:

- position of the sun in relation to the turbine
- time of year (season) and time of day
- turbine height and rotor diameter
- viewer's distance from turbine
- topography of the area
- vegetation cover
- weather patterns, number of cloudy days per year and
- airborne particles, haze.

10.2 Assessment and Standard Requirements

The Visual Assessment Bulletin states that the proponent should minimise shadow flicker to not more than 30 hours per year and utilise available mitigation options to minimise shadow flicker at dwellings.

The Draft National Guidelines suggest a distance equivalent to 265 maximum blade chords as an appropriate limit, which corresponds to approximately 1000m to 1600m for modern wind turbines (which typically have maximum blade chord lengths of 4 to 6m). The Project has assessed the potential for Shadow Flicker impacts to a distance of 2km from proposed turbine locations.

Modelling of the potential for shadow flicker and blade glint to occur at nearby dwellings has been carried out using specialist industry software, assessing the largest turbine (maximum tip height) proposed for the Project to represent the worst-case impact scenario. The maximum number of annual hours at each of the nearby houses where shadow flicker may be experienced was calculated using this model.

The number of annual hours of shadow flicker at a given location can be calculated using simple geometrical models incorporating data such as the sun path, the topographic variation and wind turbine details such as

rotor diameter and hub height. In such models, the wind turbine rotor is modelled as a disc and assumed to be in the worst case (i.e. perpendicular) to sun-turbine vector. Furthermore, the sun is assumed to be a point light source.

10.3 Shadow Flicker results - dwellings

The modelling has calculated the number of annual hours at each of the nearby houses and the results are presented in **Table 10-1**. The second column represents the theoretical maximum hours of shadow flicker, as discussed above. This approach is based upon the assumption that the wind turbine is yawed to the worst-case position of facing into or away from the sun. The results show that there are no dwellings that would experience 30 hours or more of shadow flicker.

Table 10-1 Shadow flicker assessment results

Dwelling ID	Theoretical maximum shadow flicker hours per year (h:min)	Theoretical maximum shadow flicker days per year (days)	Theoretical maximum shadow flicker hours per day (h:min)
F19-1	0:00	0	0:00
H12-1	0:00	0	0:00
H12-2	0:00	0	0:00
H11-1	0:00	0	0:00
H12-3	0:00	0	0:00
G15-3	8:49	36	0:20
G15-2	0:00	0	0:00
T7-1	0:00	0	0:00
T6-9	0:00	0	0:00
T15-2	0:00	0	0:00
F17-1	0:00	0	0:00
F18-1	0:00	0	0:00
H10-3	0:00	0	0:00
F16-1	0:00	0	0:00
G17-2	0:00	0	0:00
P22-1	18:03	61	0:27
P22-3	12:15	40	0:24
X17-2	0:00	0	0:00
S17-2	14:59	52	0:20
T15-1	0:00	0	0:00
V20-1	0:00	0	0:00
W20-1	0:00	0	0:00
V20-2	0:00	0	0:00
H10-2	0:00	0	0:00
T5-1	0:00	0	0:00
T6-2	0:00	0	0:00

Table 10-1 Shadow flicker assessment results

Dwelling ID	Theoretical maximum shadow flicker hours per year (h:min)	Theoretical maximum shadow flicker days per year (days)	Theoretical maximum shadow flicker hours per day (h:min)
U6-1	0:00	0	0:00

10.4 Shadow Flicker Results - Roads

Motorists can experience shadow flicker sensations whilst driving as a result of shadows cast on the road from roadside or overhead objects such as trees, poles or buildings. Under certain conditions the sensation of shadow flicker may cause annoyance and may impact on a driver's ability to operate a motor vehicle safely.

There are no specific guidelines to address the potential impact of shadow flicker on motorists cast by wind turbines across roads, although there are lighting standards that can be applied to minimise the adverse effects of flicker caused by roadside or overhead objects. These standards include AS 1158:5:2007 (Lighting for roads and public spaces – Part 5: Tunnels and underpasses), section 3.3.8 and CIE 88:2004 (Guide for lighting of roads tunnels and underpasses, 2nd ed.), section 6.14. The standards suggest that the flicker effect will be noticeable and possibly cause annoyance between 2.5 and 15Hz (2.5 to 15 flickers per second), and that a flicker effect between 4 and 11Hz should be avoided for longer than 20 seconds.

As the potential flicker frequency for the wind turbines is likely to be around 1Hz, it is unlikely that the flicker effect will cause annoyance or impact on a driver's ability to operate a motor vehicle safely whilst travelling along local roads surrounding the wind farm.

10.5 Blade glint

Blade glint occurs when sunlight is reflected off turbine blades. The concern is that this may affect some motorists or cause annoyance at dwellings.

Turbine manufacturers have acknowledged the possibility of blade glint and use a low reflectivity gel finish to reduce any reflectivity. The turbines proposed for this Project would be finished in a non-reflective finish to ensure blade glint impacts are minimised where possible.

Aviation hazard lighting

11.1 Aviation Hazard Lighting

The Proponent commissioned an aviation assessment which was undertaken by Aviation Projects. The aviation assessment included a detailed consideration with regard to obstacle lighting needs and requirements for the installation and operation of obstacle lighting. The aviation assessment concluded that '***the Project will not require obstacle lighting to maintain an acceptable level of safety to aircraft'*** (Aviation Projects May 2020).

Whilst Civil Aviation Safety Authority (CASA) has not made a recommendation that the Bowmans Creek wind turbines, at an approximate 220 metre tip height be lit, the Proponent has advised they are unlikely to operate night time obstacle lighting unless required by CASA to do so. Accordingly, the Bowmans Creek Wind Farm LVIA has not undertaken an assessment of potential visual effects associated with obstacle lighting.

11.2 Visual Performance Objectives

The Performance Objectives (applicable to all visual influence zones) states that:

- Aviation hazard lighting (AHL) must meet the requirements of the Australian Standard AS 4282 – 1997 and any prescribed or notified requirement.
- Shield all AHL within 2km from any dwellings and
- Avoid strobe lighting.

The Bulletin notes that '*the CASA guidelines recommend that to minimise visual impacts "obstacle lights may be partially shielded, provided it does not compromise their operational effectiveness. Where obstacle lighting is provided, lights should operate at night, and at times of reduced visibility. All obstacle lights on a wind farm should be turned on simultaneously and off simultaneously." The lights should be fully shielded from the view of any dwelling within' (sic).*

GBD notes the Australian Standard AS 4282 – 1997 states that the Standard does not apply to lighting systems which are of a cyclic or flashing nature (AS 4282 – 1997 Section 1 Scope and General, 1.1 Scope (e).
GBD also notes that the Australian Standard AS4282 – 1997 has been revised and is now designated as AS/NZS 4282:2019. Having reviewed AS4282:2019 GBD notes that the revised Standard does not apply to the performance objectives which states *'Lighting for aviation safety does not fall within the scope of this Standard'* (AS4282:2019 page 5).

There are 4 dwellings within 2km of wind turbines. As a lighting plan has not been developed for the wind farm those dwellings within 2km of a wind turbine with AHL have not been identified. Further to any future lighting plan being developed the location of AHL will be considered with regard to dwelling locations within 2km of wind turbines. The Proponent will seek neighbour agreements for all dwellings within 2km of a wind turbines.

Where a neighbour agreement is not accepted, wind turbines within 2km of a dwelling will be removed or relocated to beyond 2km of the dwelling.

GBD understand that strobe lighting is not proposed to be installed on the wind turbines or within the project site.

Impact Mitigation Options

12.1 Introduction

A number of different impact mitigation options may be considered as potential methods of avoiding or minimising potential visual impacts. These include:

- *re-siting of turbines to locations where they will have less visual impact (or removal if necessary)*
- *re-sizing of turbines and other alterations (to reduce their visual magnitude)*
- *re-colouring (for example to reduce hue and tonal contrast) and*
- *vegetation screening (for example to screen the alterations from view).*

It is noted that mitigation measures may change or evolve over time. This section does not limit proponents from posing other mitigation measures, other than those listed, to be considered in the assessment process.

12.2 Wind Farm design (Re-siting / removing turbines)

Figure 10 illustrates the preliminary layout presented in the Scoping Document together with the Conceptual Project wind turbine layout. **Figure 2** shows the full Conceptual Project layout for which development consent is sought.

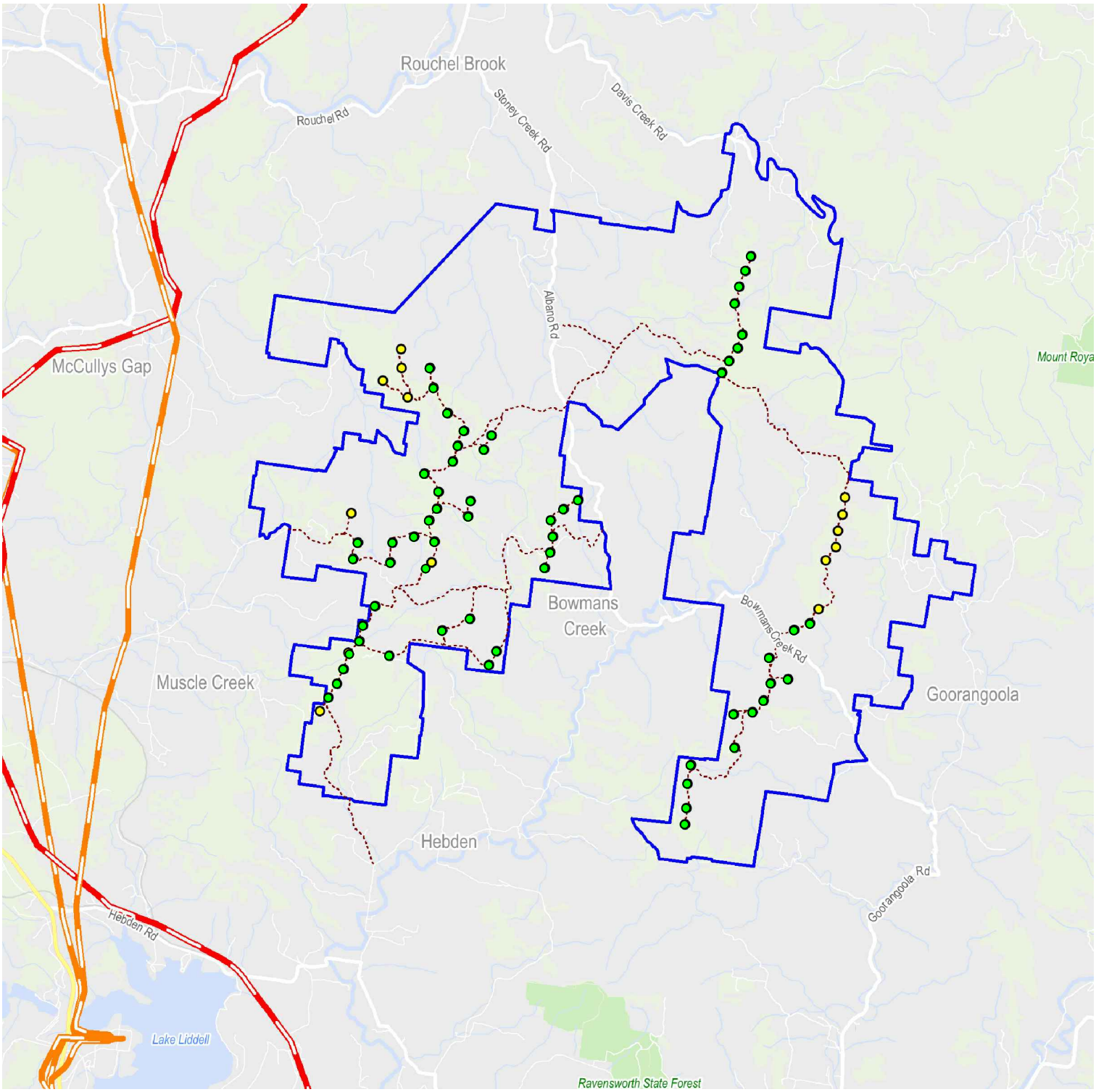
Table 12-1 provides a detailed summary of the changes made relevant to this LVIA between the preliminary layout and the Conceptual Project for which approval is sought and as assessed in this EIS.

The following visual requirements and constraints were considered when determining the Project including, but not limited to:

- Topography and local wind conditions
- Locations of non-associated dwellings in the vicinity
- Results of noise monitoring and modelling
- Identified ecological features (e.g. vegetation)
- Identified heritage items
- Potential visual impacts on dwellings
- Locations of communications links in the vicinity
- Aviation assessments and landing grounds in the vicinity and
- Accessibility for delivery of wind turbine components.

Table 12-1 Project changes

Infrastructure	Constraint/s	Outcome
Turbine (T) 1	Shadow flicker – exceeds Visual Bulletin criteria of 30 hours per year at W14-1 Visual – high impact on W14-1	Turbine removed access track connecting T1 to T71 removed
T2	Visual – high impact on W14-1	Turbine removed
T3	Isolated turbine due to constraints on T1, T2, T4 and T5	Turbine removed
T4	Visual - high impact on W14-1	Turbine removed
T5	Visual - high impact on W14-1	Turbine removed
T11	Constructability	Turbine removed
T53	Visual – high impact on H12-3, H11-1, and H12-2	Turbine and associated infrastructure removed
T54	Visual – high impact on H12-3, H11-1, and H12-2	Turbine and associated infrastructure removed
T55	Visual – high impact on H12-3, H11-1, and H12-2	Turbine and associated infrastructure removed
T56	Visual – high impact on H12-3, H11-1, and H12-2	Turbine and associated infrastructure removed
T62	Visual – moderate impact to dwellings	Turbine and associated infrastructure removed
T65	Visual – high impact dwellings	Turbine and associated infrastructure removed



Base image source: Epuron Projects Pty Ltd 2020

Legend

- Project boundary (Scoping Report stage)
- Preliminary wind turbine layout (Scoping Report)
  Wind turbine deleted from Conceptual Project layout
- Conceptual Project wind turbine layout
- Existing 132kV transmission line
- Existing 330kV transmission line

0km 2km

Figure 10
Changes between Scoping Report and Conceptual Design wind turbine layout

GREEN BEAN DESIGN
landscape architects

12.3 Re-sizing

The Bulletin notes that '*re-sizing of turbines and other associated wind energy development facilities (i.e., roads, buildings, electricity transmission terminals, and distribution electricity power lines and poles or underground cabling) can be considered in two ways:*

- *using wind turbines or other structures that are of a lesser height or size in order to reduce their relative visual magnitude within the distance that they are viewed from critical viewpoints and*
- *substituting larger wind turbines (that generate more electricity) or other structures for a significantly higher number of smaller wind turbines or other structures.*

The Proponent does not propose to re-size key infrastructure elements associated with the Project as these have been designed to address specific technical engineering requirements as well as site specific design and safety parameters.

GBD does not consider that replacing larger wind turbines with a *'significantly higher number of smaller wind turbines'* is a valid mitigation measure as it introduces the prospect of non-compliance with a number of performance objectives within the Bulletin including Key Features Disruption and Multiple Wind Turbine Effects. We also note general design considerations should avoid introducing wind turbines of varying heights or designs within a single project.

12.4 Re-colouring

The Bulletin notes that *'one of the key reasons that wind turbines and other alterations may be detected as alterations in the landscape is that they can be visually distinguished from their surrounding landscape due to their degree of colour contrast. If these alterations had no colour contrast at all with their surrounding landscape, they would be virtually undetectable'.*

The Bulletin also notes that *'white colours will always produce the most extreme colour contrast in every situation except when white clouds form the backdrop. Hence selecting turbine colours to achieve the greatest average contrast reduction under the various sky lighting conditions may provide a better solution when wind turbines are located on ridgetops'.*

Wind turbines are commonly installed in a white to off white colour across Australia as wall the most other countries around the world. This industry standardised colour has likely been adopted for a number of reasons. White is a neutral colour and whilst visible against blue sky backdrops it will tend to blend readily on cloudy or partly cloudy days. The white colour also assists with protecting wind turbine infrastructure by reflecting ultraviolet rays rather than absorbing them and helps to protect the generator from overheating. Wind turbines are also painted white to provide contrast between the wind turbine structures and the ground when viewed from aircraft flying above the wind farm.

The Bulletin references the National Airports Safeguarding Framework (NASF), Managing the Risk to Aviation Safety of Wind Turbine Installations (Wind Farms)/Wind Monitoring Towers, Guideline D. Guideline D provides guidance on the risks to civil aviation arising from wind farms and wind monitoring equipment. It notes '*the implementation of the guidelines will have the additional benefit of being applicable in areas away from airports to address the risk posed by wind farms to air navigation in those areas'.*

Guideline D notes that '*During the day, large wind turbines are sufficiently conspicuous due to their shape and size, provided the colour of the turbine is of a contrasting colour to the background. Rotor blades, nacelle and upper 2/3 of the supporting mast of wind turbines should be painted white, unless otherwise indicated by an aeronautical study. Other colours are also acceptable unless the colour of the turbine is likely to blend in with the background.*'

The advice provided in the Bulletin to *select 'turbine colours to achieve the greatest average contrast reduction'* appears to be at odds with the NASF Guideline D.

The following photographic plates 12 and 13 illustrate wind turbines with significant colouring differences and demonstrate the effect of cloud and partial cloud conditions on wind turbine colour. Plate 14 illustrates wind turbines at the Windy Hill Wind Farm in Far North Queensland. The wind turbines have been painted with concentric bands of green paint, from dark green at the base to light green approximately one third of the tower height. The success of painting the wind turbine tower is dependent on the viewpoint location, elevation and backdrop.

Plate 12 – Wind turbines at Crookwell 2 Wind Farm NSW (Image: ©GBD Pty Ltd 2018)

Plate 13 – Wind turbines Boco Rock Wind Farm NSW (Image: ©GBD Pty Ltd 2017)

Plate 14 – Wind turbines with coloured base Windy Hill Wind Farm QLD (Image: ©GBD Pty Ltd 2017)

12.5 Visual mitigation through vegetative screening

The potential visual impact of the Project from specific view locations can be mitigated by planting vegetation as on-site or off-site work. On-site landscape works within and around smaller items of project infrastructure such as sub stations and operation/maintenance buildings may assist in screening views. buildings dwelling curtilages. For instance, tree or large shrub planting within a dwelling curtilage can screen potential views to individual or clusters of turbines.

The location and design of screen planting used as a mitigation measure is site specific and requires detailed analysis of potential views and consultation with surrounding landowners. It is noted that screen planting cannot provide effective mitigation in all circumstances but can reduce the extent of existing and desirable views available from dwellings or other key view locations.

12.6 Detail design

Mitigation measures during the detail design process should consider:

- further refinement in the design and layout where possible, which may assist in the mitigation of bulk and height of proposed structures and
- a review of materials and colour finishes for selected components including the use of non-reflective finishes to structures where possible.

12.7 Construction

Mitigation measures during the construction period should consider actions to:

- minimise tree removal where possible
- avoid temporary light spill beyond the construction site where temporary lighting is required
- progressively rehabilitate disturbed areas and
- protect mature trees within the project site where possible.

12.8 Operation

Mitigation measures during the operational period should consider:

- ongoing maintenance and repair of constructed elements
- replacement of damaged or missing constructed elements and
- long term maintenance (and replacement as necessary) of vegetation within the project site to maintain visual filtering and screening of external views where appropriate.

Summary

The Bowmans Creek Wind Farm LIVA has been prepared in accordance with the Planning Secretary's Environmental Assessment Requirements (Date of Issue 23 July 2019).

The Proponent has undertaken significant community consultation activities which have identified key landscape features nominated by the community. This LVIA has considered the location of key landscape features within the consideration and application of the Key Features Disruption performance objective. The Project is not considered to result in an alteration or disruption of views toward significant landform, vegetation or cultural features.

A Visual Baseline Assessment has been prepared and incorporated community input to establish residential and public viewpoints and inform the LVIA of key landscape features and relative scenic quality. The LVIA has identified and described the relative scenic quality of the area within and surrounding the Project. The LVIA has identified landscape surrounding the project site within the NSW Sydney Basin and North Coast Bioregions (and Hunter Valley sub region) with examples of high and low scenic quality. Most of the area within and surrounding the project site is a moderate scenic quality landscape. The Bowmans Creek Wind Farm will not result in a significant impact upon landscape scenic values or quality.

A range of Visual Influence Zones have been identified including VIZ 1 at proximate viewpoints and/or those with a local heritage listing. Most viewpoints within the LVIA are VIZ 2 viewpoints and include rural residential dwellings beyond 2km from the wind turbines.

The LVIA identified no existing operational or approved wind energy projects within a local context and/or within 8km of the proposed Bowmans Creek Wind Farm wind turbines. The closest approved wind farm was identified as the Upper Hunter Energy Park located around 35km north west of the Bowmans Creek project site.

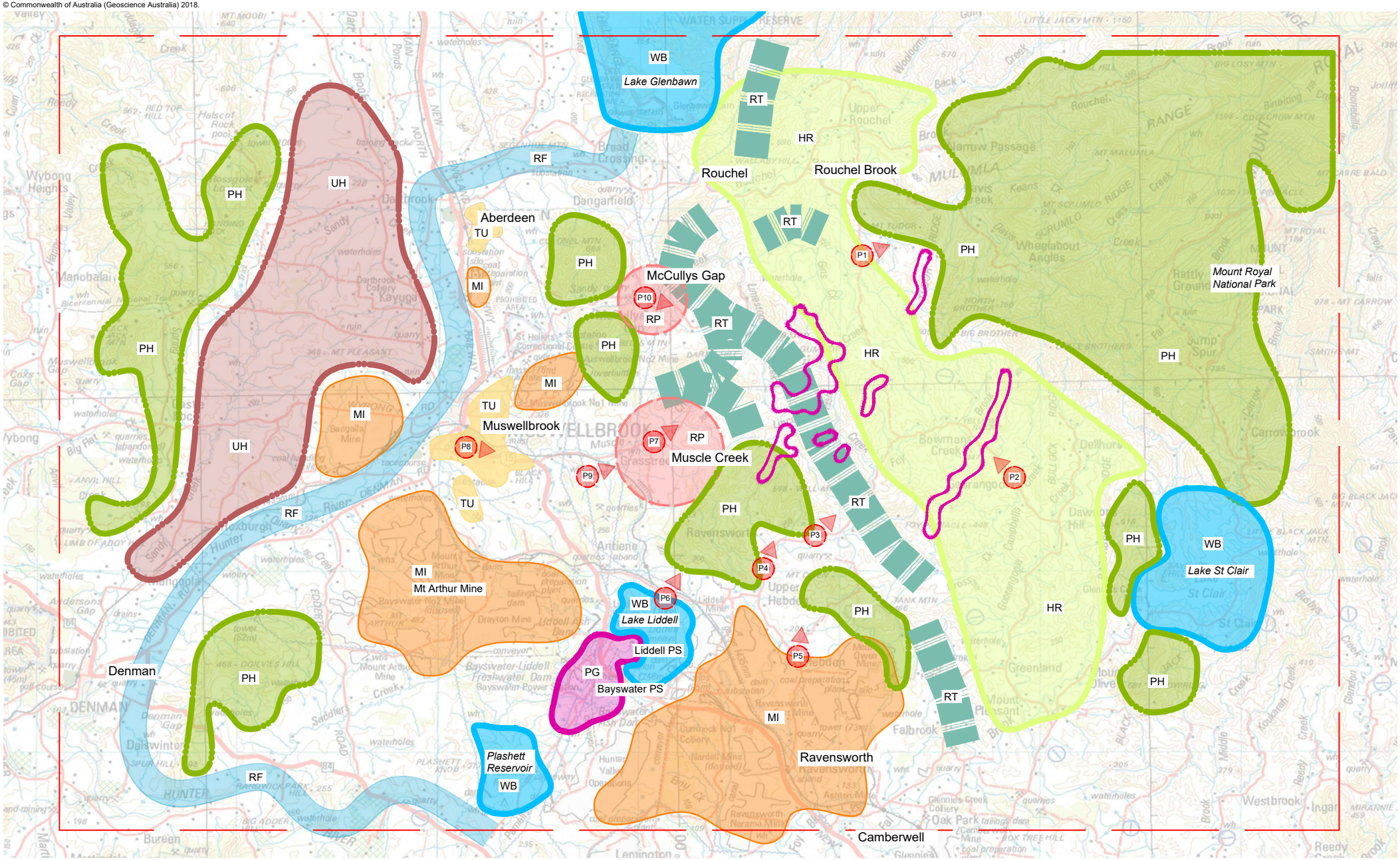
The LVIA has included a granular study incorporating all non-associated dwellings within 4.4km of the proposed wind turbine locations and a broader study incorporating dwellings, key public viewpoints, and scenic locations to beyond 12km from the proposed wind turbine locations.

Most dwellings within 4.4km of wind turbines are considered compliant with the Bulletin performance objectives including visual magnitude and multiple wind turbine effects. Where a dwelling is considered non-compliant (generally against multiple wind turbine effect or visual magnitude) the Proponent has committed to a range of mitigations measures including neighbour agreements, relocation and/or removal of wind turbines.

Most key public view locations, scenic areas or lookouts are located at distance from the wind turbines (and generally beyond the 8km threshold). Whilst wind turbines will be visible from key public view locations, their scale will not dominate the landscape and occur within a single 60-degree sector where within 8km of the wind turbines.

The Bowmans Creek Wind Farm is compliant with the Aviation hazard lighting performance objectives; however, AS 4282:1997 (and the updated AS4282:2019) as referenced in the Bulletin are not applicable to flashing aviation hazard lighting or lighting for aviation safety.

Appendix A Scenic Quality Class Map and existing site panorama photos



Legend

- Prominent hills and mountains timbered (PH)
- Low undulating hills (UH)
- River flood plain (RF)
- Mining activities (MI)
- Township-urban (TU)
- Rural properties (RP)
- Water body (WB)
- Power generation (PG)
- Ridgelines timbered (RT)
- Hills and ridges pasture (HR)
- Indicative wind turbine clusters (refer Figure 2 for turbine locations)
- Panorama photo location (refer Figs 12 to 16)

0 5km

Figure 11
Landscape Character Areas

GREEN BEAN DESIGN
landscape architects

Bowmans Creek Wind Farm LVIA

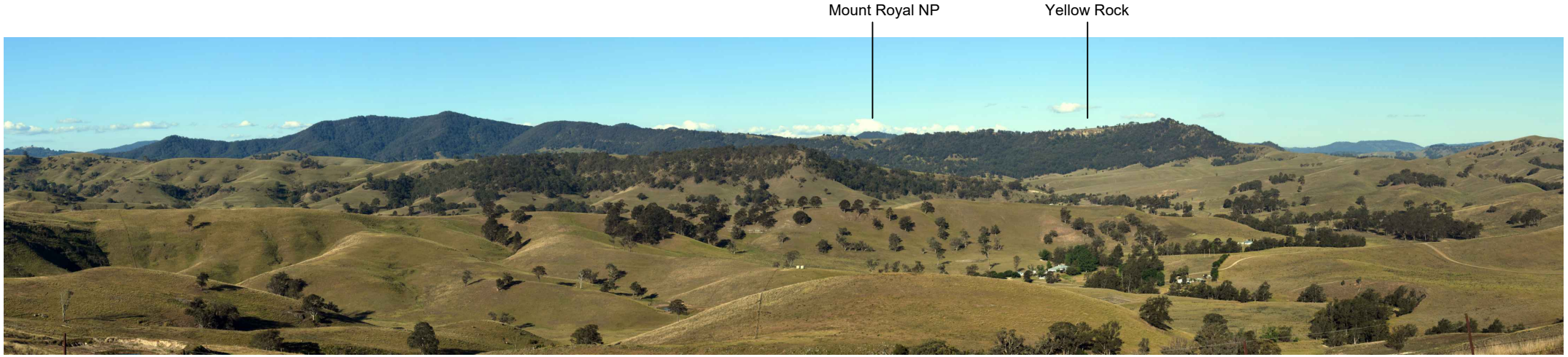


Photo panorama 1 - View north east to south east from Albano Road

Photo panorama 2 - View west from Bowmans Creek Road

Figure 12
Photo panorama 1
Photo panorama 2

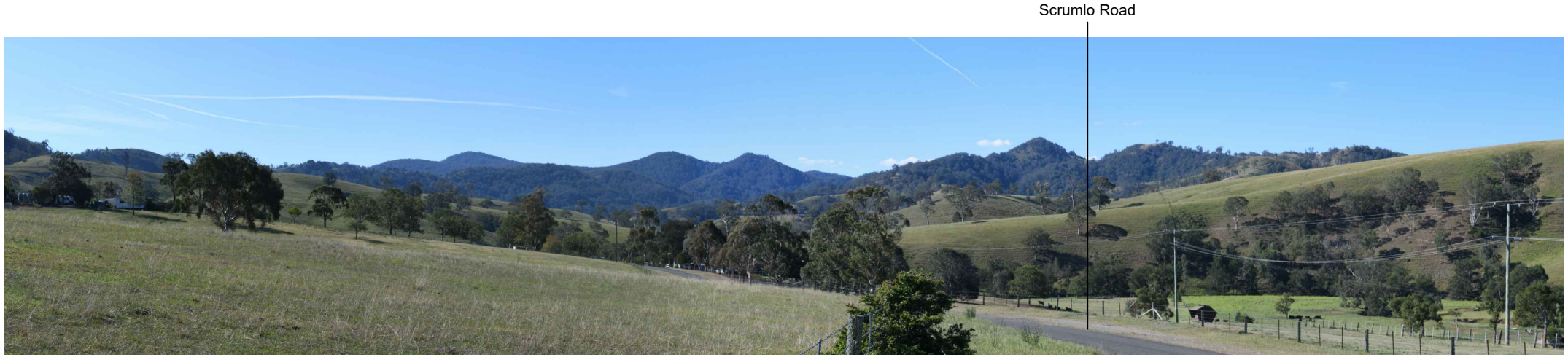


Photo panorama 3 - View north east from Scrumlo Road

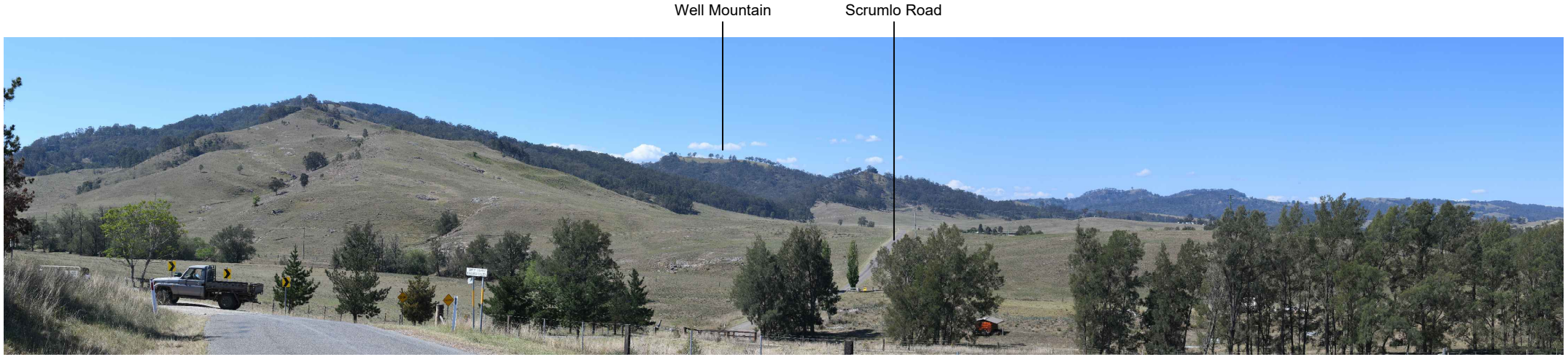


Photo panorama 4 - View north west from Scrumlo Road

Figure 13
Photo panorama 3
Photo panorama 4

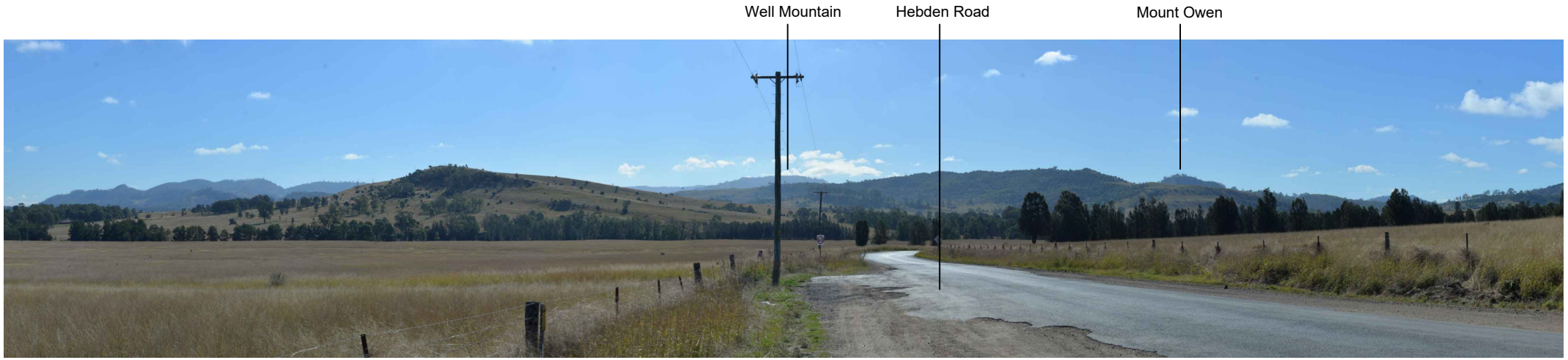


Photo panorama 5 - View north west from Hebden Road

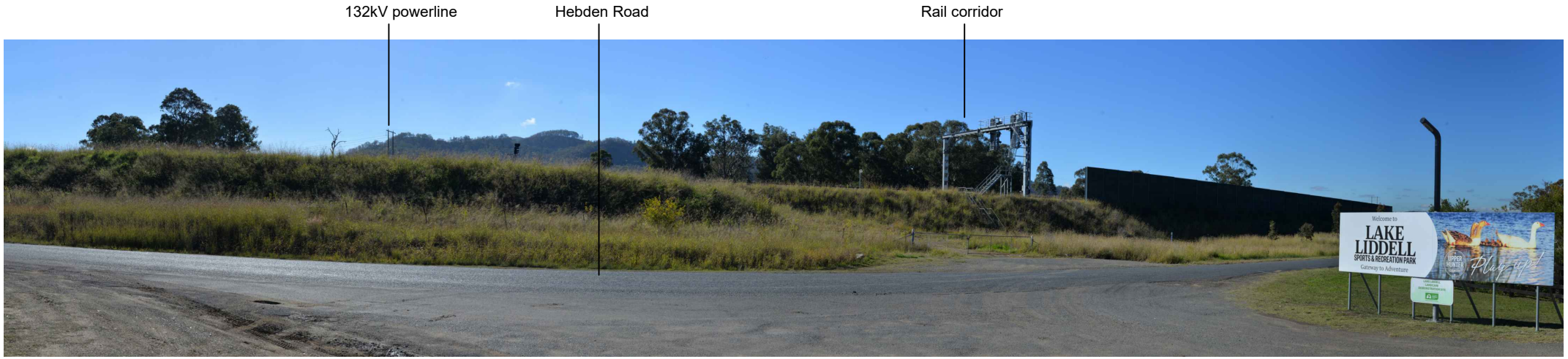


Photo panorama 6 - View north from Hebden Road at Lake Liddell Sports and Recreation Park entry

Figure 14
Photo panorama 5
Photo panorama 6

Photo panorama 7 - View east from Inglewood Road, Muscle Creek

Photo panorama 8 - View east from Ruth White Avenue, Muswellbrook

Figure 15
Photo panorama 7
Photo panorama 8

Photo panorama 9 - View north north west to north east from Top Knot Place, Woodland Ridge

Photo panorama 10 - north east to south east from McCullys Gap Road

Figure 16
Photo panorama 9
Photo panorama 10

Appendix B Photomontages and wireframes

B.1 Introduction

Photomontages have been prepared to illustrate the general appearance of the wind turbines following construction. A total of 29 photomontages and 2 wireframe locations were selected to illustrate the Project. The photomontages and wireframes have been located to illustrate views from non-associated dwellings and key public view locations.

The dwelling and key public photomontage locations are illustrated in **Figures 17** and **38** and dwelling photomontages presented in **Figures 18** to **37** and key public locations in Figures **39** to **48**. Wireframes (**Figures** 47 and **48**) have been created to illustrate views from the Royal National Park and Lake St Clair.

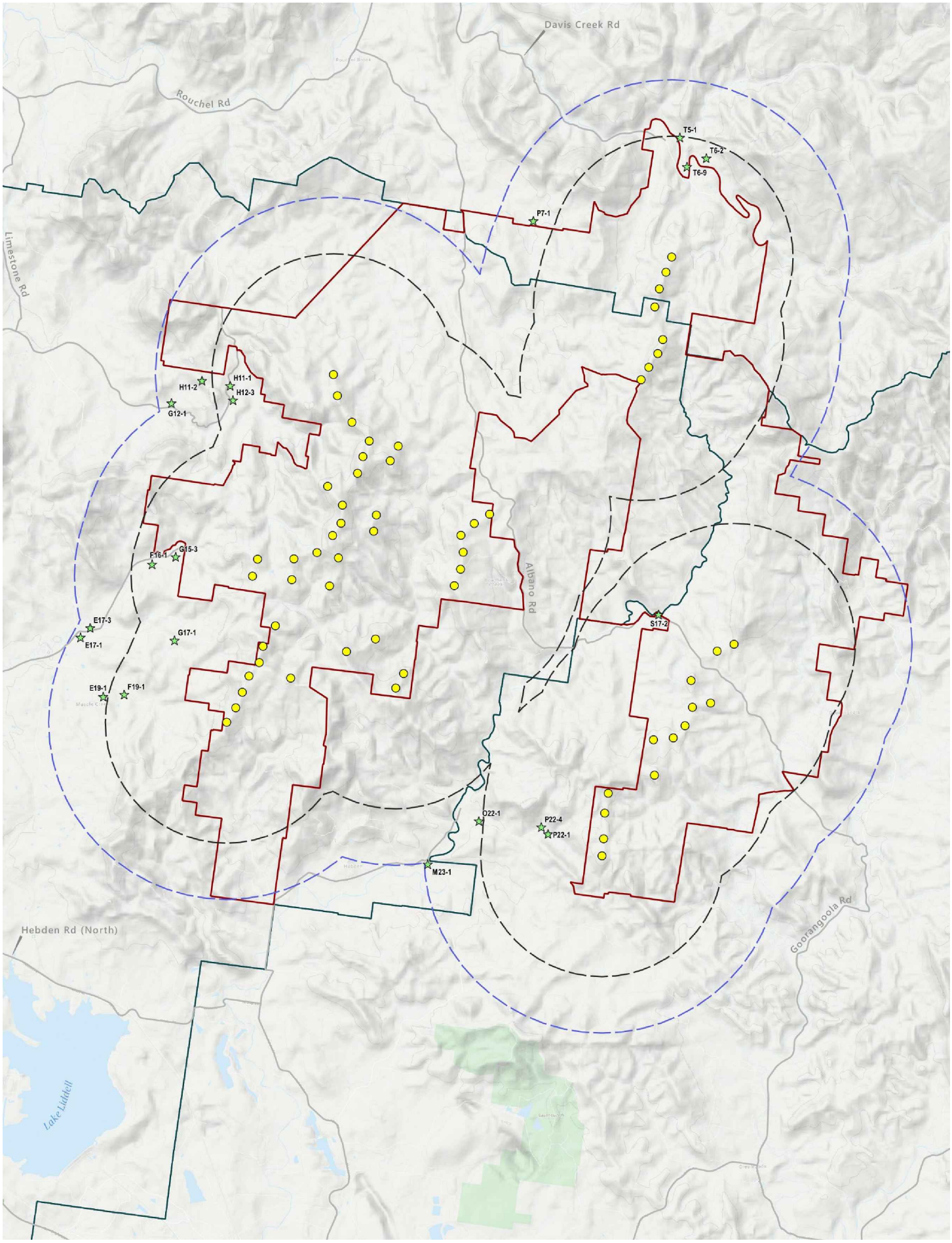
Each photomontage was generated through the following steps:

- A digital terrain model (DTM) of the Project site was created from a terrain model of the surrounding area using digital contours
- The site DTM was loaded in the modelling software package
- The layout of the wind farm and 3-dimensional representation of the wind turbine was configured in the modelling software
- The location of each viewpoint (photo location) was configured in the modelling software for sun position for each viewpoint by using the time and date of the photographs from that viewpoint
- The view from each photomontage location was then assessed in the modelling software package. This process requires accurate mapping of the terrain as modelled, with that as seen in the photographs. The photographs, taken from each photomontage location were loaded into the modelling software and the visible turbines superimposed on the photographs
- The photomontages were adjusted using Photoshop CS3 to compensate for fogging due to haze or distance, as well as screening by vegetation or obstacles and
- The final image was converted to JPG format and imported and annotated as the final figure.

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

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

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



Base image source: Epuron Projects Pty Ltd 2020

Legend

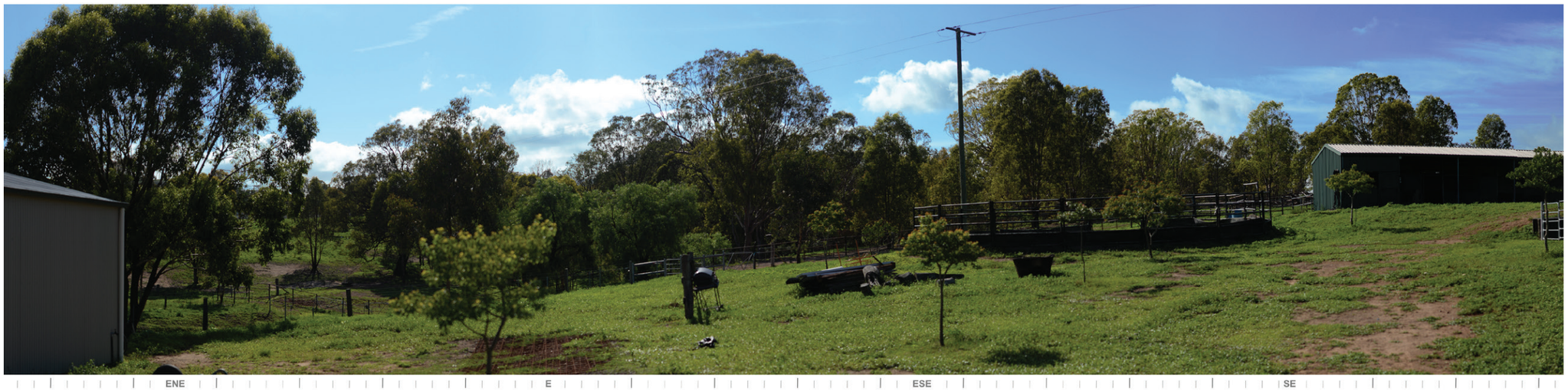
- Project Boundary
- LGA Boundary
- Existing road
- 3km to turbine
- 4.4km to turbine
- Wind turbine
- Private photomontage location

0km 2km

Figure 17
Dwelling photomontage locations

GREEN BEAN DESIGN
landscape architects

Figure 18 PM Dwelling E17-1



Closest visible wind turbine ID: 66
Bearing to closest visible turbine: 121°
Distance to closest visible turbine (m): 4,133
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:311518, N:6427630
Turbine dimensions: 150m hub, 220m tip

Figure 19 PM Dwelling E17-3

Closest visible wind turbine ID: 64
Bearing to closest visible turbine: 107°
Distance to closest visible turbine (m): 4,040
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:311740 N:6427884
Turbine dimensions: 150m hub, 220m tip

Figure 20 PM Dwelling E19-1

Closest visible wind turbine ID: 66
Bearing to closest visible turbine: 102.5°
Distance to closest visible turbine (m): 3,080
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:312081, N:6426177
Turbine dimensions: 150m hub, 220m tip

Figure 21 PM Dwelling F16-1

Closest visible wind turbine ID: 60
Bearing to closest visible turbine: 97°
Distance to closest visible turbine (m): 2490
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: 313264, 6429458
Turbine dimensions: 150m hub, 220m tip

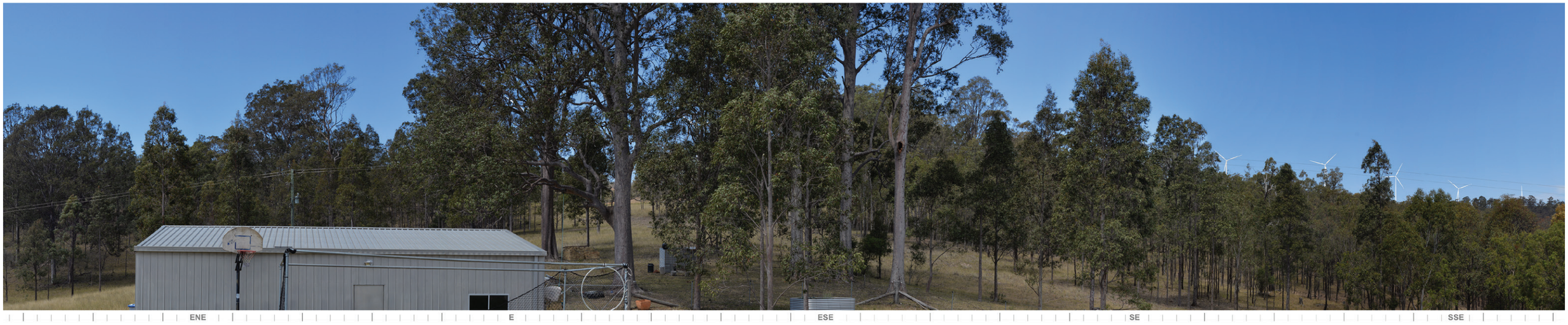
Figure 22 PM Dwelling F19-1

Closest visible wind turbine ID: 66
Bearing to closest visible turbine: 106°
Distance to closest visible turbine (m): 2,600
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: 312586, 6426237
Turbine dimensions: 150m hub, 220m tip

Figure 23 PM Dwelling G12-1

Closest visible wind turbine ID: 61
Bearing to closest visible turbine: 153°
Distance to closest visible turbine (m): 4,470
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:313807, N:6433562
Turbine dimensions: 150m hub, 220m tip

Figure 24 PM Dwelling G15-3



Closest visible wind turbine ID: 61
Bearing to closest visible turbine: 92°
Distance to closest visible turbine (m): 2,000
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: 313863, 6429643
Turbine dimensions: 150m hub, 220m tip

Figure 25 PM Dwelling G17-1

Closest visible wind turbine ID: 68
Bearing to closest visible turbine: 116°
Distance to closest visible turbine (m): 2,004
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: 313819, 6427578
Turbine dimensions: 150m hub, 220m tip

Figure 26 PM Dwelling H11-1

Closest wind turbine ID: 57
Bearing to closest turbine: 84°
Distance to closest turbine (m): 2,550
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:315209 N:6433880
Turbine dimensions: 150m hub, 220m tip

Figure 27 PM Dwelling H11-2

Closest visible wind turbine ID: 57
Bearing to closest visible turbine: 88°
Distance to closest visible turbine (m): 3,240
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:314509, N:6433996
Turbine dimensions: 150m hub, 220m tip

Figure 28 PM Dwelling H12-3

Closest visible wind turbine ID: 57
Bearing to closest visible turbine: 76°
Distance to closest visible turbine (m): 2,550
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: 315282, 6433511
Turbine dimensions: 150m hub, 220m tip

Figure 29 PM Dwelling M23-1

Closest visible wind turbine ID: 33
Bearing to closest visible turbine: 350°
Distance to closest visible turbine (m): 4,440
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:320084 N:6422057
Turbine dimensions: 150m hub, 220m tip

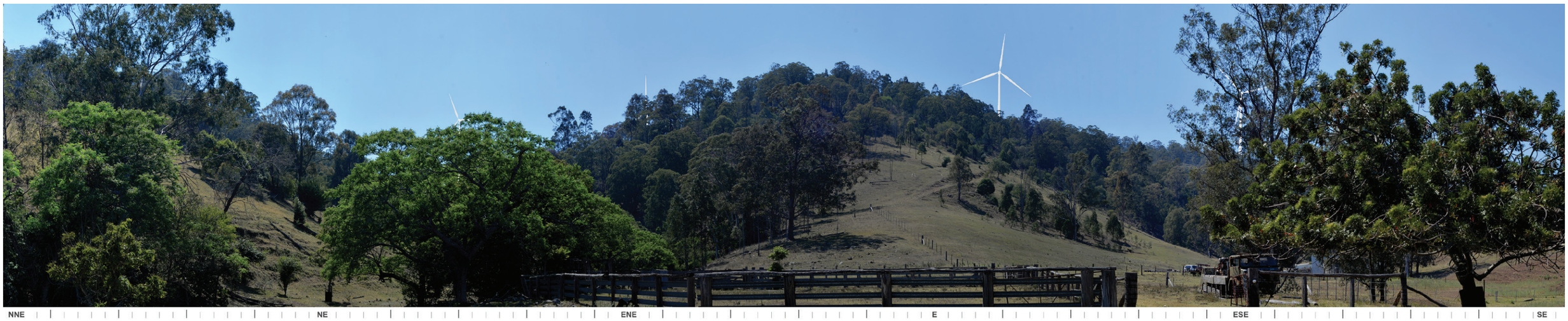
Figure 30 PM Dwelling O22-1

Closest visible wind turbine ID: 22
Bearing to closest visible turbine: 88°
Distance to closest visible turbine (m): 6,980
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:325377, N:6428320
Turbine dimensions: 150m hub, 220m tip

Figure 31 PM Dwelling P7-1

Closest visible wind turbine ID: 17
Bearing to closest visible turbine: 111°
Distance to closest visible turbine (m): 3490
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:322718, N:6437940
Turbine dimensions: 150m hub, 220m tip

Figure 32 PM Dwelling P22-1



Closest visible wind turbine ID: 23
Bearing to closest visible turbine: 95°
Distance to closest visible turbine (m): 1340
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:323098, N:6422784
Turbine dimensions: 150m hub, 220m tip

Figure 33 PM Dwelling P22-4

Closest visible wind turbine ID: 23
Bearing to closest visible turbine: 101°
Distance to closest visible turbine (m): 1,541
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:322921, N:6422956
Turbine dimensions: 150m hub, 220m tip

Figure 34 PM Dwelling S17-2

PART A

Closest visible wind turbine ID: 8
Bearing to closest visible turbine: 154°
Distance to closest visible turbine (m): 1810
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:325795, N:6428216
Turbine dimensions: 150m hub, 220m tip

PART B

Closest visible wind turbine ID: 28
Bearing to closest visible turbine: 284°
Distance to closest visible turbine (m): 5,020
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: 325795, 6428216
Turbine dimensions: 150m hub, 220m tip

Figure 35 PM Dwelling T5-1

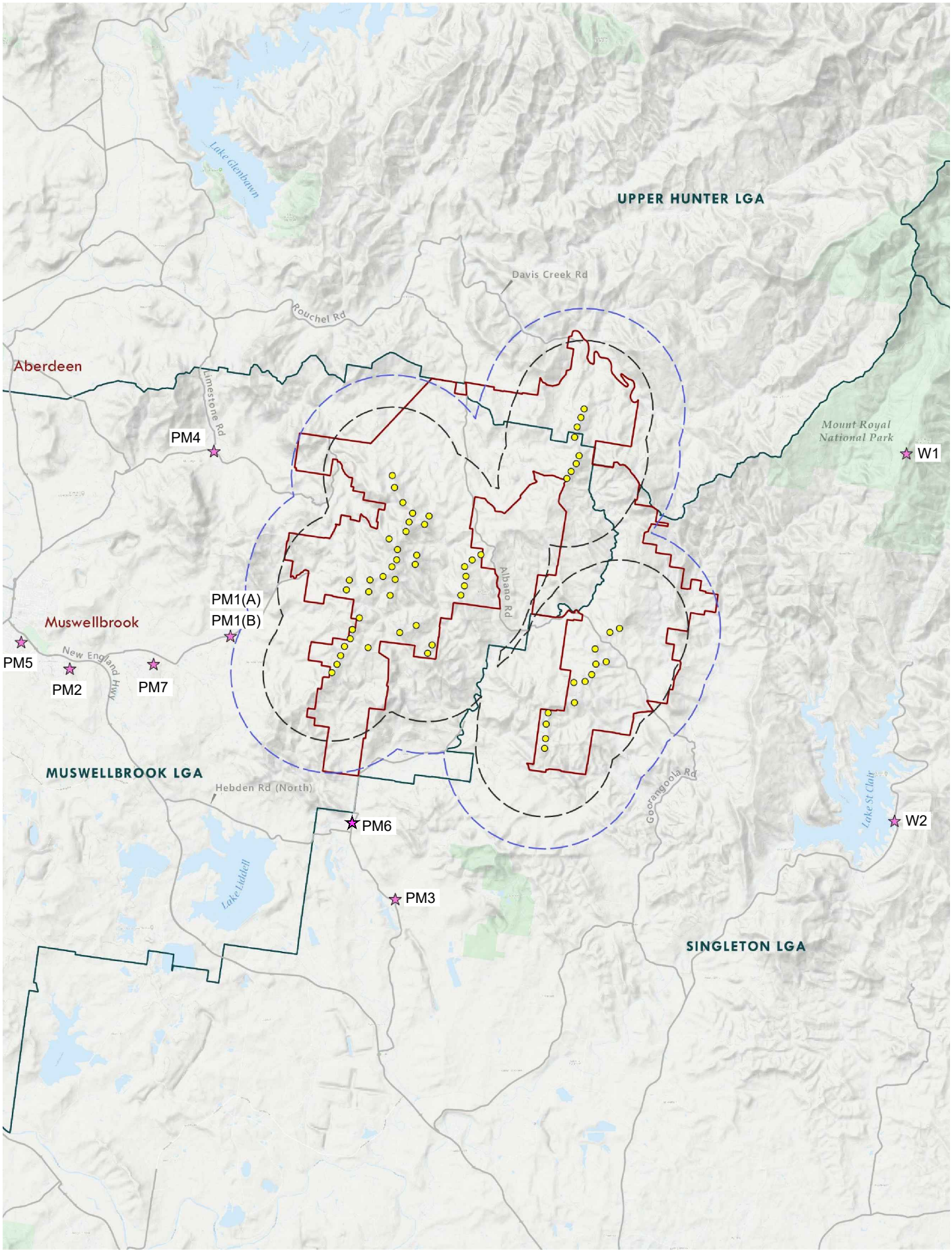
Closest visible wind turbine ID: 12
Bearing to closest visible turbine: 185°
Distance to closest visible turbine (m): 2940
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:326359, N:6440007
Turbine dimensions: 150m hub, 220m tip

Figure 36 PM Dwelling T6-2

Closest visible wind turbine ID: 12
Bearing to closest visible turbine: 200°
Distance to closest visible turbine (m): 2575
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: 326973, 6439512
Turbine dimensions: 150m hub, 220m tip

Figure 37 PM Dwelling T6-9

Closest visible wind turbine ID: 12
Bearing to closest visible turbine: 190°
Distance to closest visible turbine (m): 2240
Projection: MGA Zone 56 (GDA 94)
Photo Coordinates: E:326359 N:66440007
Turbine dimensions: 150m hub, 220m tip



Base image source: Epuron Projects Pty Ltd 2020

Legend

- Project Boundary
- LGA Boundary
- Existing road
- 3km to turbine
- 4.4km to turbine
- Wind turbine
- Public PM Viewpoint

0km 4km

Figure 38
Photomontage/wireframe from public view locations

GREEN BEAN DESIGN
landscape architects

Bowmans Creek Wind Farm LVIA

Figure 39 Photomontage PM1(A) from Inglewood Road, Muscle Creek

Photomontage PM1(A) Inglewood Road, Muscle Creek – October 2020 Conceptual Project Layout

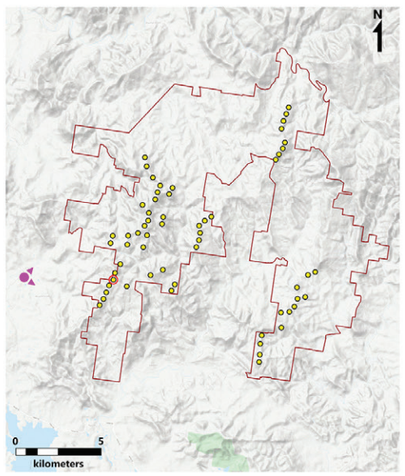
Approximate distance to closest visible wind turbine is 5,226metres (turbine 69)

Legend

Approximate photo location and indicative view direction toward Bowmans Creek Wind Farm turbines

0m 100m

Aerial location plan



Site layout plan

80° panorama

General Notes

Photos taken at 1.12pm on 21st October 2019.

Coordinates: Easting 310675, Northing 6427142

Elevation: 202m AHD

Camera: Nikon 850 with 50mm prime lens

Original Format - A0 Landscape

220m tip height, 150m hub height and 140m rotor.

This viewpoint has a horizontal view angle of around 55 degrees.

This is a preliminary layout only and is subject to change as detailed planning proceeds.

Closest visible turbine indicated by red line.

Photomontage limitations

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

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

Figure 40 Photomontage PM1(B) from Inglewood Road, Muscle Creek

Photomontage PM1(B) Inglewood Road, Muscle Creek – October 2020 Conceptual Project Layout

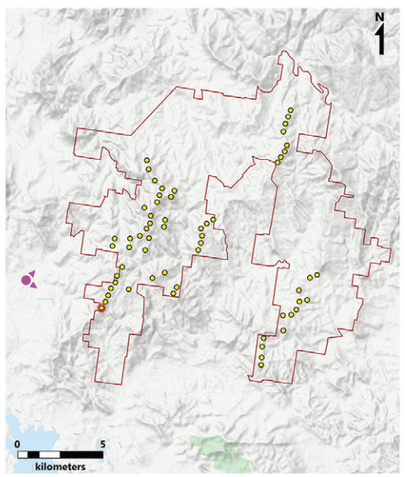
Approximate distance to closest visible wind turbine is 4,690 metres (turbine 66)

Legend

Approximate photo location and indicative view direction toward Bowmans Creek Wind Farm turbines

0m 100m

Aerial location plan



Site layout plan

80° panorama

General Notes

Photos taken at 1.12pm on 21st October 2019.

Coordinates: Easting 310675, Northing 6427142

Elevation: 202m AHD

Camera: Nikon 850 with 50mm prime lens

Original Format - A0 Landscape

220m tip height, 150m hub height and 140m rotor.

This viewpoint has a horizontal view angle of around 55 degrees.

This is a preliminary layout only and is subject to change as detailed planning proceeds.

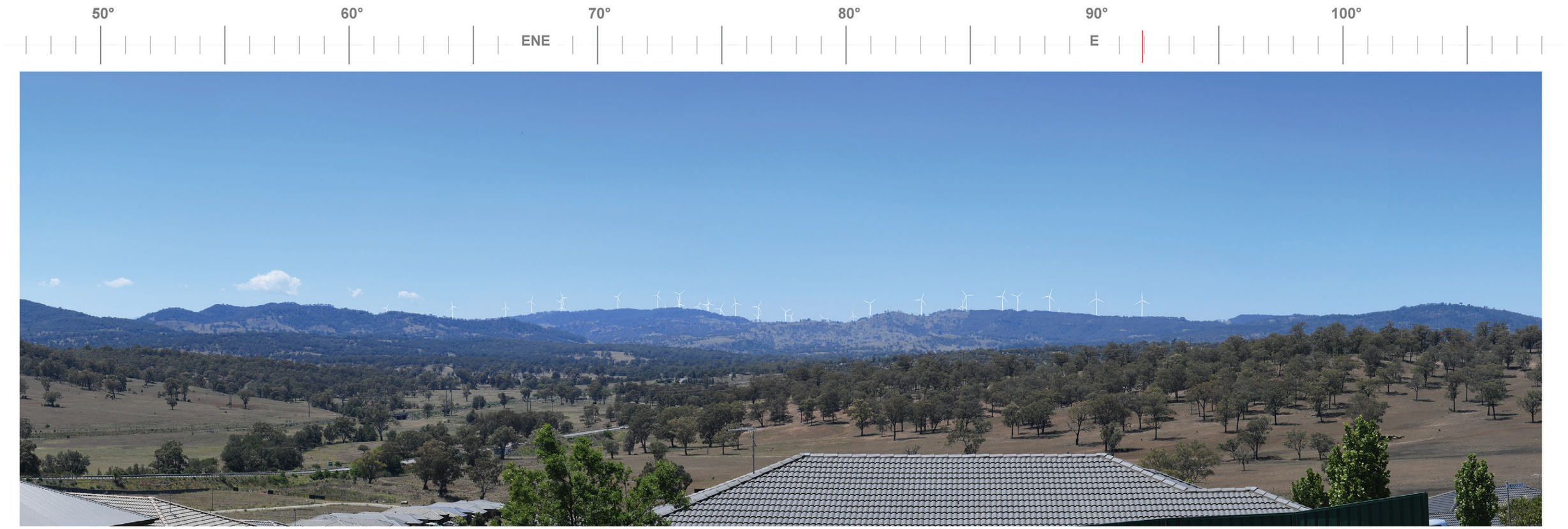
Closest visible turbine indicated by red line.

Photomontage limitations

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

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

Figure 41 Photomontage PM2 from Eastbrook Links, Muswellbrook



Photomontage PM2 Lynch Street, Eastbrook Links Muswellbrook – October 2020 Conceptual Project Layout

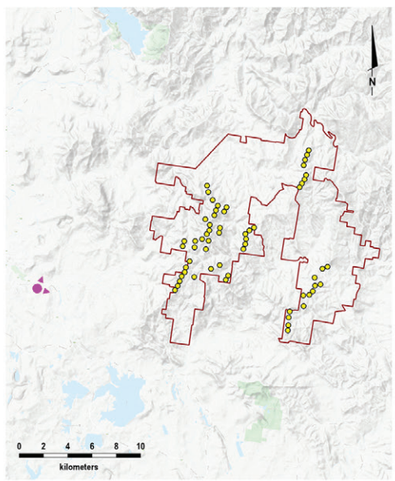
Approximate distance to closest visible wind turbine is 11,420 metres (turbine 66)

Legend

Approximate photo location and indicative view direction toward Bowmans Creek Wind Farm turbines

0m 100m

Aerial location plan



Site layout plan

150° panorama

General Notes

Photos taken at 12.30pm on 22nd October 2019

Coordinates: Easting 303659, Northing 6425715

Elevation: 220m AHD

Camera: Nikon 850 with 50mm prime lens

Original Format - A0 Landscape

220m tip height, 150m hub height and 140m rotor.

This viewpoint has a horizontal view angle of around 61 degrees.

This is a preliminary layout only and is subject to change as detailed planning proceeds.

Closest visible turbine indicated by red line.

Photomontage limitations

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

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

Figure 42 Photomontage PM3 from Picton Lane, Hebden

Photomontage PM3 Picton Lane, Hebden – October 2020 Conceptual Project Layout

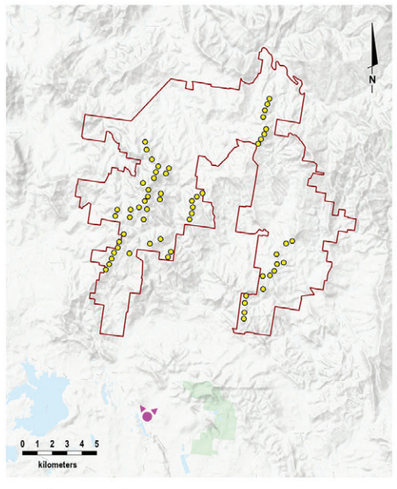
Approximate distance to closest visible wind turbine is 9,290 metres (turbine 22)

Legend

Approximate photo location and indicative view direction toward Bowmans Creek Wind Farm turbines

0m 100m

Aerial location plan



Site layout plan

180° panorama

General Notes

Photos taken at 1pm on 19th June 2020

Coordinates: Easting 317876, Northing 6415654

Elevation: 127m AHD

Camera: Nikon 850 with 50mm prime lens

Original Format - A0 Landscape

220m tip height, 150m hub height and 140m rotor.

This viewpoint has a horizontal view angle of around 82 degrees.

This is a preliminary layout only and is subject to change as detailed planning proceeds.

Closest visible turbine indicated by red line.

Photomontage limitations

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

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

Figure 43 Photomontage PM4 from McCullys Gap Road

Photomontage PM4 McCullys Gap Road, McCullys Gap – October 2020 Conceptual Project Layout

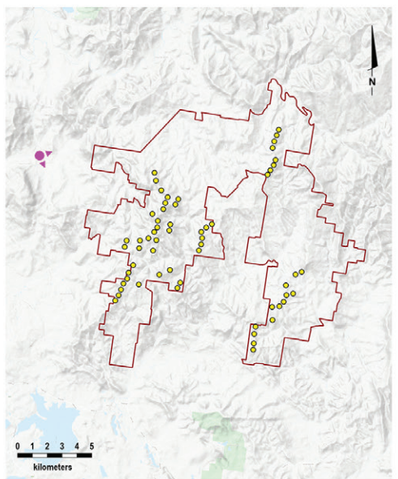
Approximate distance to closest visible wind turbine is 7,840 metres (turbine 57)

Legend

Approximate photo location and indicative view direction toward Bowmans Creek Wind Farm turbines

0m 100m

Aerial location plan



Site layout plan

147° panorama

General Notes

Photos taken at 2.20pm on 19th June 2020

Coordinates: Easting 309958, Northing 6435214

Elevation: 202m AHD

Camera: Nikon 850 with 50mm prime lens

Original Format - A0 Landscape

220m tip height, 150m hub height and 140m rotor.

This viewpoint has a horizontal view angle of around 86 degrees.

This is a preliminary layout only and is subject to change as detailed planning proceeds.

Closest visible turbine indicated by red line.

Photomontage limitations

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

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

Figure 44 Photomontage PM5 from Ruth White Drive, Muswellbrook

Photomontage PM5 Ruth White Avenue, Muswellbrook – October 2020 Conceptual Project Layout

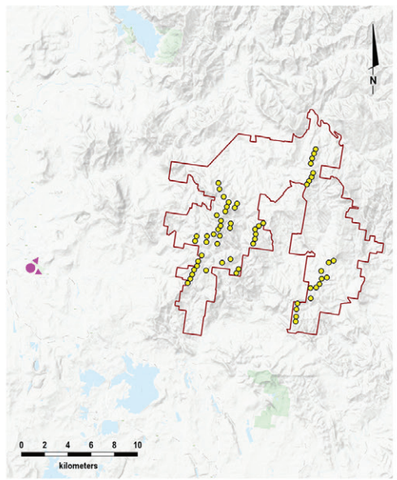
Approximate distance to closest visible wind turbine is 13,600 metres (turbine 66)

Legend

Approximate photo location and indicative view direction toward Bowmans Creek Wind Farm turbines

0m 100m

Aerial location plan



Site layout plan

145° panorama

General Notes

Photos taken at 3.00pm on 19th June 2020

Coordinates: Easting 301536, Northing 6426879

Elevation: 167m AHD

Camera: Nikon 850 with 50mm prime lens

Original Format - A0 Landscape

220m tip height, 150m hub height and 140m rotor.

This viewpoint has a horizontal view angle of around 79 degrees.

This is a preliminary layout only and is subject to change as detailed planning proceeds.

Closest visible turbine indicated by red line.

Photomontage limitations

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

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

Figure 45 PM6 from Scrumlo Road

Photomontage PM6 Scrumlo Road - October 2020 Conceptual Project Layout

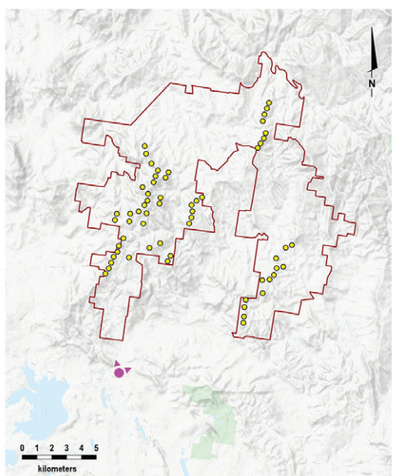
Approximate distance to closest visible wind turbine is 6,780 metres (turbine 66)

Legend

Approximate photo location and indicative view direction toward Bowmans Creek Wind Farm turbines

0m 100m

Aerial location plan



Site layout plan

205° panorama

General Notes

Photos taken at 12.40pm on 19th June 2020

Coordinates: Easting 316005, Northing 6418871

Elevation: 134m AHD

Camera: Nikon 850 with 50mm prime lens

Original Format - A0 Landscape

220m tip height, 150m hub height and 140m rotor.

This viewpoint has a horizontal view angle of around 82 degrees.

This is a preliminary layout only and is subject to change as detailed planning proceeds.

Closest visible turbine indicated by red line.

Photomontage limitations

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

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

Figure 46 PM7 from Top Knot Place, Woodland Ridge

Photomontage PM7 Top Knot Place, Woodland Ridge – October 2020 Conceptual Project Layout

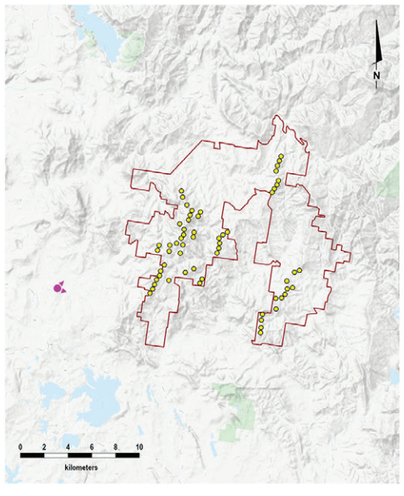
Approximate distance to closest visible wind turbine is 8,168 metres (turbine 68)

Legend

Approximate photo location and indicative view direction toward Bowmans Creek Wind Farm turbines

0m 100m

Aerial location plan



Site layout plan

155° panorama

General Notes

Photos taken at 10am on 21st of February 2020

Coordinates: Easting 307317, Northing 6425919

Elevation: 215m AHD

Camera: Nikon 850 with 50mm prime lens

Original Format - A0 Landscape

220m tip height, 150m hub height and 140m rotor.

This viewpoint has a horizontal view angle of around 89 degrees.

This is a preliminary layout only and is subject to change as detailed planning proceeds.

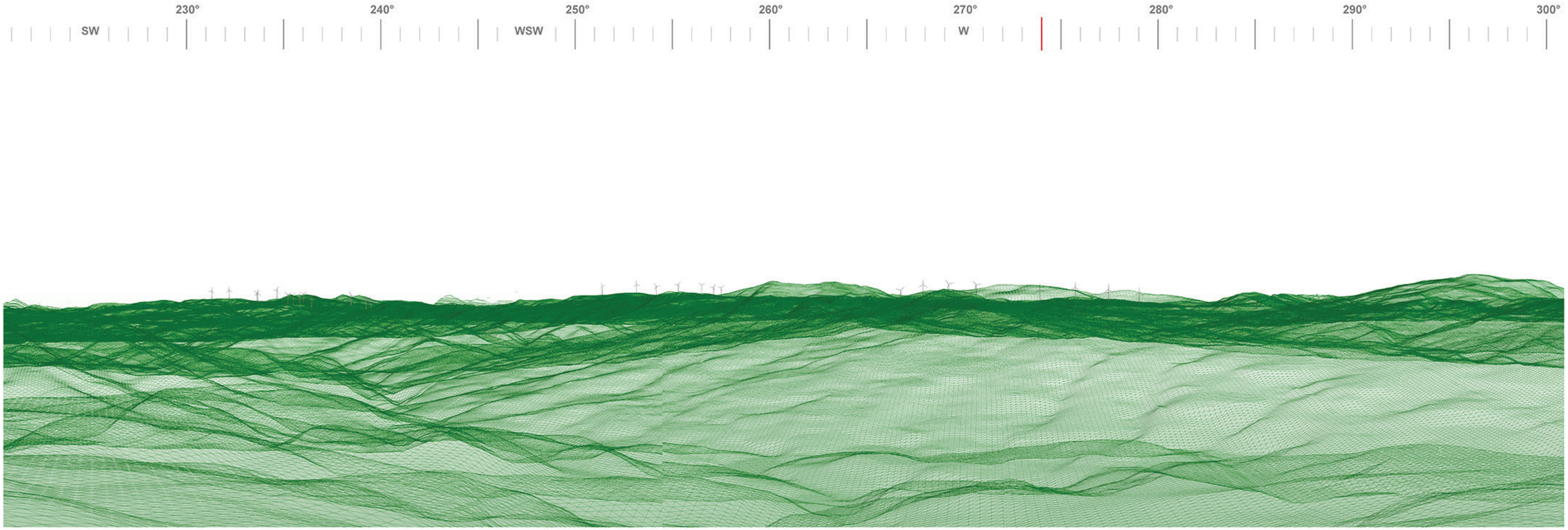
Closest visible turbine indicated by red line.

Photomontage limitations

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

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

Figure 47 Pieries Point Lookout (wireframe)



Wireframe view from public viewpoint Pieries Peak Lookout - July 2020 Indicative Turbine Layout

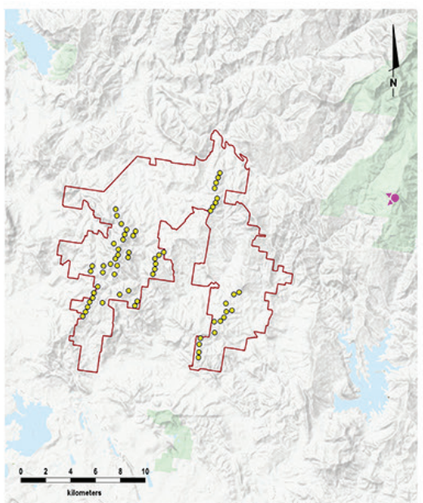
Approximate distance to closest visible wind turbine is 14,190metres (turbine 12)

Legend

Approximate photo location and indicative view direction toward Bowmans Creek Wind Farm turbines

0m 1km

Aerial location plan



Site layout plan

General Notes

Coordinates: Easting 340205 Northing 6435117

Elevation: 935m AHD

Original Format - A0 Landscape

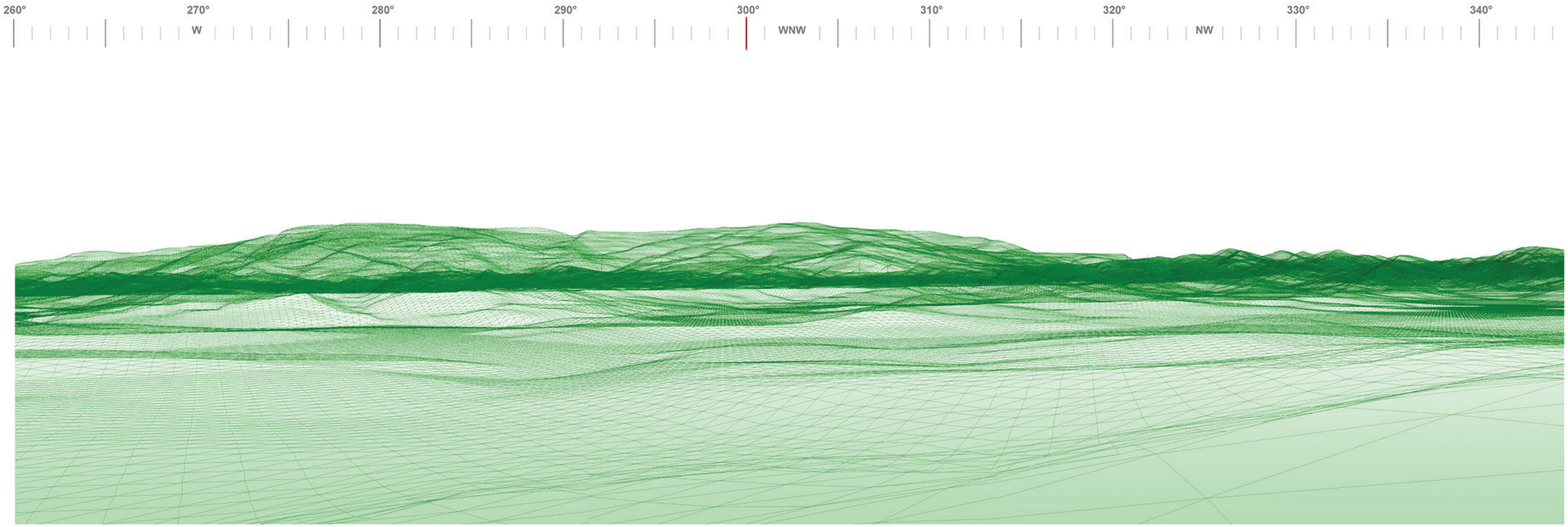
220m tip height, 150m hub height and 140m rotor.

This viewpoint has a horizontal view angle of around 79 degrees.

This is a preliminary layout only and is subject to change as detailed planning proceeds.

Closest visible turbine indicated by red line.

Figure 48 Lake St Clair (wireframe)



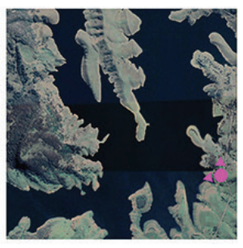
Wireframe view from public viewpoint Lake Saint Clair - July 2020 Indicative Turbine Layout

Approximate distance to closest visible wind turbine is 14,390 metres (turbine 7)

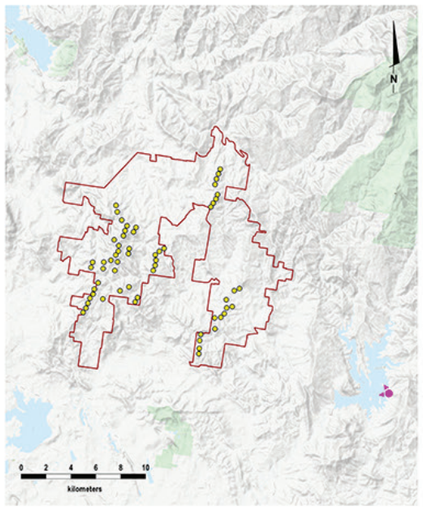
Legend

Approximate photo location and indicative view direction toward Bowmans Creek Wind Farm turbines

0m 1km



Aerial location plan



Site layout plan

General Notes

Coordinates: Easting 339685, Northing 6419068

Elevation: 21m AHD

Original Format - A0 Landscape

220m tip height, 150m hub height and 140m rotor.

This viewpoint has a horizontal view angle of around 84 degrees.

This is a preliminary layout only and is subject to change as detailed planning proceeds.

Closest visible turbine indicated by red line.

Limitations

This LVIA has been prepared in accordance with the usual care and thoroughness of the consulting profession for the use of Epuron Projects Pty Ltd. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the GBD Proposal July 2019.

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

This report was completed between October 2019 and March 2021 and is based on the conditions encountered and information reviewed at the time of preparation. GBD disclaims responsibility for any changes that may have occurred after this time.

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