

Landscape Character Areas and Sensitivity Assessment

SECTION 6

6.1 Landscape Character Areas

A fundamental part of the LVIA is to understand and describe the nature and sensitivity of different components of the landscape, and to assess the landscape character in a clear and consistent process. For the purpose of this LVIA, landscape character is defined as *'the distinct and recognisable pattern of elements that occur consistently in a particular type of landscape'* (The Countryside Agency and Scottish Natural Heritage 2002).

This LVIA has identified 5 Landscape Character Areas (LCA's), which occur within the landscape surrounding the White Rock wind farm site. The LCA's represent areas that are relatively consistent and recognisable in terms of their key visual elements and physical attributes; which include a combination of topography/landform, vegetation/landcover, land use and built structures (including settlements and local road corridors).

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

- LCA 1 – Gently undulating to flat cultivated/pastoral farmland;
- LCA 2 – Steep sided valleys;
- LCA 3 – Drainage lines;
- LCA 4 – Forested hills and ridgelines; and
- LCA 5 – Rural dwellings.

6.2 Landscape Sensitivity Assessment

The British Landscape Institute describes landscape sensitivity as *'the degree to which a particular LCA can accommodate change arising from a particular development, without detrimental effects on its character'*.

The assessment of landscape sensitivity is based upon an evaluation of the physical attributes identified within each LCA, both singularly and as a combination that gives rise to the landscape's overall robustness and the extent to which it could accommodate the wind farm development. The criteria used to determine landscape sensitivity are outlined in **Table 3** and based on current good practice employed in the assessment of wind farm developments. This LVIA draws on the Land Use Consultants report on landscape sensitivity for wind farm developments on the Shetland Islands (March 2009). Landscape sensitivity is a relative term, and the intrinsic landscape values of the

surrounding landscape could be considered of a higher or lower sensitivity than other areas in the New England Tablelands region.

Whilst the assessment of landscape sensitivity is largely based on a systematic description and analysis of landscape characteristics, this LVIA acknowledges that some individuals and other members of the local community would place higher values on the local landscape. These values could transcend preferences (likes and dislikes) and include personal, cultural as well as other parameters.

Table 3 – Criteria for the assessment of Landscape Sensitivity

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

The criteria set out in **Table 3** have been used to evaluate each of the LCA's using a gradated score between 1 and 5 to represent levels of sensitivity from low to high. The sensitivity grades are illustrated in **Tables 4 to 8** using shading against each of the criteria set out in **Table 3**.

The sensitivity of overall grades of high, medium or low sensitivity have been determined with reference to the following definitions:

High (Overall rating of 19 to 30) – Key characteristics of the LCA could be adversely impacted by the wind farm development and result in major alterations to perceived characteristics of the landscape. The degree to which the landscape could accommodate the wind farm development would potentially result in a number of perceived uncharacteristic and significant changes.

Medium (Overall rating of 12 to 18) – Some characteristics of the LCA could be altered by the wind farm development, although the landscape would have the capability to absorb some change. The degree to which the landscape could accommodate the wind farm development would potentially result in the introduction of prominent elements but be accommodated to some degree.

Lower Rating (Overall rating of 11 or less) – The characteristics of the LCA are generally robust and less affected by the wind farm development. The degree to which the landscape could accommodate the wind farm development would not significantly alter existing landscape character.

6.3 Analysis of Landscape Sensitivity

The following section of this LVIA provides an analysis of landscape sensitivity within the viewshed of the wind farm development and considers each of the five LCA's.

6.3.1 LCA 1 Gently undulating to flat cultivated/pastoral farmland



Plate 2 – Typical view across undulating to flat cultivated land

Table 4 – LCA 1, Landscape Sensitivity

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Sensitivity Rating	1	2	3	4	5
Landform and Scale					
	Landform varies between large to moderate scale and is relatively simple in structure. Topography is generally level to gently sloping land through cultivated farmland areas within broad valleys.				
Landcover					
	Landcover through this LCA is simple and regular being largely determined by cultivated crop and pastoral livestock production.				
Settlement and human influence					
	Settlement is dispersed with some evidence of contemporary structures including utility infrastructure and agricultural industrial elements.				
Movement					
	There is limited evidence of movement within the LCA with occasional traffic along roads and machinery working in surrounding fields.				
Rarity					
	The main elements within this LCA are common and well represented within the New England Tablelands regional context.				
Intervisibility					
	Views into some portions of this LCA limited and restricted by surrounding landform which contains opportunities for long distant views.				
Overall Sensitivity Rating	Medium (Score 17 out of 30)				

6.3.2 LCA 2 Steep sided valleys



Plate 3 – Typical view across steep sided valleys

Table 5 – LCA 2, Landscape Sensitivity

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Sensitivity Rating	1	2	3	4	5
Landform and Scale					
	Landform and topography is distinctive but with limited features.				
Landcover					
	Landcover through this LCA is simple and regular comprising cleared pasture and forested hillside and ridgeline areas.				
Settlement and human influence					
	Settlement is dispersed with some evidence of utility infrastructure and agricultural elements.				
Movement					
	There is limited evidence of movement within the LCA with occasional traffic along roads and machinery working in surrounding fields.				
Rarity					
	The main elements within this LCA are reasonably common and well represented within the New England Tablelands regional context.				
Intervisibility					
	Views into and out of this LCA limited and restricted by surrounding landform which contains opportunities for long distant views.				
Overall Sensitivity Rating	Medium (Score 18 out of 30)				

6.3.3 LCA 3 Drainage lines



Plate 4 – Typical view across drainage lines

Table 6 – LCA 3, Landscape Sensitivity

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Sensitivity Rating	1	2	3	4	5
Landform and Scale					
	Landform is generally simple alongside the majority of drainage lines through large scale pastoral landscape. Drainage lines are largely featureless and have been largely cleared, with tree cover limited to occasional or small groups of trees.				
Landcover					
	Landcover through this LCA is simple and regular comprising cultivated ground or improved pasture.				
Settlement and human influence					
	Settlement is dispersed with some evidence of utility infrastructure and agricultural elements.				
Movement					
	There is limited evidence of movement within the LCA with occasional traffic along roads and machinery working in surrounding fields.				
Rarity					
	The main elements within this LCA are reasonably common and well represented within the New England Tablelands regional context.				
Intervisibility					
	Views into and out of this LCA limited and restricted by surrounding landform which contains opportunities for long distant views.				
Overall Sensitivity Rating	Medium (Score 17 out of 30)				

6.3.4 LCA 4 Forested hills and ridgelines



Plate 5 – Typical views across forested hills and ridgelines

Table 7 – LCA 4, Landscape Sensitivity

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Sensitivity Rating	1	2	3	4	5
Landform and Scale					
	Landform is large scale and simple with some topographical variation across low hill and ridgeline areas.				
Landcover					
	Landcover through this LCA is simple and regular comprising scattered and denser stands of tree cover.				
Settlement and human influence					
	Settlement is dispersed with some evidence of utility infrastructure and agricultural elements.				
Movement					
	There is limited evidence of movement within the LCA.				
Rarity					
	The main elements within this LCA are common and well represented within the New England Tablelands regional context.				
Intervisibility					
	Backdrops to this LCA are visually limited and restricted by undulating landform and surrounding ridgelines restricting distant views.				
Overall Sensitivity Rating	Medium (Score 17 out of 30)				

6.3.5 LCA 5 Rural dwellings



Plate 6 – Typical views across

Table 8 – LCA 5, Landscape Sensitivity

	Lower Sensitivity		↔	Higher Sensitivity	
	Low	Low to Med	Medium	Med to High	High
Sensitivity Rating	1	2	3	4	5
Landform and Scale					
	Landform is large scale and simple with some topographical variation surrounding the majority of rural residential dwellings.				
Landcover					
	Landcover through the broader LCA is simple and regular . Cultural planting around residential dwellings incorporates ornamental plantings as well as tree planting demarcating property boundaries and shelter belt planting.				
Settlement and human influence					
	Settlement is dispersed with some evidence of utility infrastructure and agricultural elements.				
Movement					
	There is limited evidence of movement within the LCA associated with activities around residences.				
Rarity					
	The main elements within this LCA are common and well represented within the New England Tablelands regional context.				
Intervisibility					
	Backdrops to this LCA are visually limited and restricted by landform blocking views.				
Overall Sensitivity Rating	Medium (Score 17 out of 30)				

6.4 Summary

In terms of overall landscape sensitivity, this LVIA has determined that the landscape within the viewshed of the proposed White Rock wind farm has a medium sensitivity to accommodate change, and represents a landscape that is reasonably typical of landscape types found in surrounding areas of the New England Tablelands.

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

This LVIA has determined that the wind farm would not be an unacceptable development within the White Rock wind farm viewshed, which in a broader context also contains built elements such as roads, agricultural industry, aircraft landing strips, communication towers, power lines as well as an approved wind farm development within the vicinity of the White Rock wind farm site.

This LVIA notes that the Glen Innes wind farm has been approved for construction within the White Rock 10km viewshed; however, as this had not been constructed and was not a visible element at the time of this LVIA preparation, it has not been included in the assessment of landscape sensitivity. The presence of an existing wind farm would tend to decrease the level of sensitivity of any LCA in which it was located subject to an assessment and determination of cumulative impact.

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

7.1 Introduction

A key component of this LVIA is defined by the description, assessment and determination of the viewshed, zone of visual influence and visibility associated with the wind farm. It is a combination of these issues that sets out the framework for determining the significance and magnitude of potential visual impact of the wind farm on view locations within the landscape.

In order to clarify and explain this component of this LVIA, the relationship between viewshed, zone of visual influence and visibility is outlined and defined in **Table 9**.

Table 9 – Definitions

	Definition	Relationship
Viewshed	An area of land surrounding and beyond the project area which may be potentially affected by the wind farm.	Identifies the majority of this LVIA study area that incorporates view locations that may be subject to a degree of visual impact.
Zone of Visual Influence (ZVI)	A theoretical area of landscape from which the wind farm structures may be visible.	Determines areas within a viewshed from which the wind turbines may be visible.
Visibility	A relative determination at which a wind turbine or group of wind turbines can be clearly discerned and described.	Describes the likely number and relative scale of wind turbines visible from a view location.

An overview of viewshed, zone of visual influence and visibility is discussed in the following sections.

7.2 Viewshed

For the purpose of this LVIA viewshed is defined as the area of land surrounding and beyond the project area which could be potentially affected by the wind farm. In essence, the viewshed defines this LVIA study area. The viewshed for the White Rock wind farm has been illustrated as a series of concentric bands (at 2km, 5km and 10km distance offsets) extending across the landscape from the wind turbines. The viewshed extent can vary between wind farm projects, and be influenced or informed by a number of criteria including the height of the wind turbines together with the nature, location and height of landform that could limit visibility.

It is important to note that the wind turbines would be visible from some areas of the landscape beyond the nominated viewshed; however, within the general parameters of normal human vision, a wind turbine at a maximum height of 140m to the tip of the rotor blade would occupy a relatively small proportion of a person's field of view from distances in excess of 10km.

The viewshed is used as a framework and guide for visibility assessment, as the degree of visual impacts would tend to be graduated with distance although there are unlikely to be any distinct or abrupt noticeable changes between the nominated distance bands. For the purpose of this LVIA, the viewshed assumptions for the White Rock wind farm are outlined in **Table 10**.

Table 10 – Viewshed Descriptors

Distance from turbine	Potential Viewshed Descriptors
>20km	<p>Wind turbines become indistinct with increasing distance. Rotor movement may be visible but rotor structures are usually not discernable.</p> <p>Turbines may be discernable but generally indistinct within viewshed resulting in Low level visibility and Nil where influenced or screened by surrounding topography and vegetation.</p>
10km – 20km	<p>Wind turbines noticeable but tending to become less distinct with increasing distance. Blade movement may be visible but becomes less discernable with increasing distance.</p> <p>Turbines discernable but generally less distinct within viewshed (potentially resulting in Low level visibility).</p>
5km – 10km	<p>Wind turbines visible but tending to become less distinct depending on the overall extent of view available from the potential view location. Movement of blades discernable where visible against the skyline.</p> <p>Turbines potentially noticeable within viewshed (potentially resulting in Low to Moderate level visibility).</p>
3 – 5km	<p>Wind turbines clearly visible in the landscape but tending to become less dominant with increasing distance. Movement of blades discernable.</p> <p>Turbines noticeable but less dominant within viewshed (potentially resulting in Moderate level visibility).</p>
1 – 3km	<p>Wind turbines would generally dominate the landscape in which the wind turbine is situated. Potential for high visibility depending on the category of view location, their location, sensitivity and subject to other visibility factors.</p> <p>Turbines potentially dominant within viewshed (potentially resulting in Moderate to High level visibility).</p>
<1km	<p>Wind turbines would dominate the landscape in which they are situated due to large scale, movement and proximity.</p> <p>Turbines dominant and significant within viewshed (potentially resulting in High level visibility).</p>

7.3 Zone of Visual Influence (ZVI)

The 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 White Rock wind farm could be visible from surrounding areas.

Four ZVI diagrams have been prepared by the Proponent including:

- Diagram 1 - ZVI from any part of the wind turbines (tip of blade);
- Diagram 2 - ZVI from half the swept path of rotor (hub height);
- Diagram 3 - ZVI for full turbine visible; and
- Diagram 4 - ZVI for the cumulative result of White Rock and Glen Innes wind turbines (full turbine visible).

The ZVI diagrams are illustrated in **Figures 16, 17, 18 and 24**.

7.4 ZVI Methodology

The methodology adopted by the Proponent is a purely geometric assessment where the visibility of the proposed White Rock wind farm is determined from carrying out calculations based on a digital terrain model of the site and the surrounding terrain.

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

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

The calculations also take into account the terrain relief and earth curvature.

This assessment methodology is conservative as:

- The screening affects of any structures and vegetation above ground level are not considered in any way. Therefore the wind farm 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 the ZVI diagrams are a useful visualisation tool, they are very conservative in nature.

7.5 ZVI Summary

The most extensive and continuous area of visibility toward the White Rock wind turbines 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, and are generally visually negligible from medium to longer distance view 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 the Waterloo Range and surrounding hills for a number of areas between the 5 to 10km distance offsets.

The ZVI diagrams illustrate areas of landscape which are likely to provide a view toward a greater number of wind turbines generally occur within private property and across tracts of unoccupied rural landscape, including land belonging to associated landowners.

Areas of land that also offer an opportunity to view a greater number of wind turbines do, however, extend across neighbouring and non associated properties to the north east and west of the wind farm, including areas within the Wellingrove Creek Valley and to lesser degree the Furracabad Valley.

The ZVI diagrams also illustrate a small number of discrete pockets within the southern and eastern portion of the 1km to 5km distance offset from which the wind turbines would not be visible, although this band of the viewshed also represents areas, including the Wellingrove Creek Valley, within which a greater number of turbines could also be visible.

The ZVI diagrams illustrate that the influence of surrounding landform begins to disperse visibility from beyond 5km, although opportunities to view a large number of turbines from elevated (but moderately distant and generally unoccupied) areas exist within this portion of the viewshed, including areas west of the wind farm toward Spring Mountain Road as well as areas east along the Waterloo Range.

The ZVI diagrams illustrate that turbines would not be generally visible from residential areas within the Glen Innes, where any potential views would be subject to screening by built elements within urban areas.

It should be noted that the wind turbines, when viewed from distances of around, or greater than 15km, 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.

7.6 Visibility

The level of wind turbine visibility within the White Rock 10km viewshed can result from a number of factors including, but not limited to:

7.6.1 Distance

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

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

Whilst the distance between a view location and the wind turbines is a primary factor to consider when determining potential visibility, there are other issues which could also affect the degree of visibility.

7.6.2 Movement

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

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

7.6.3 Relative position

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

The level of contrast is also influenced by the position of the sun relative to the individual wind turbines and the view location. Where the sun is located in front of the viewer, the visible portion of the wind turbine would be seen in shadow. Where the background to the wind turbine is dark toned the visual contrast would be reduced. Where the sun is located behind the view location then the visible portion of the wind turbine would be in full sun. If the background is also light toned, such as white clouds, then the contrast is less when compared to a dark background.

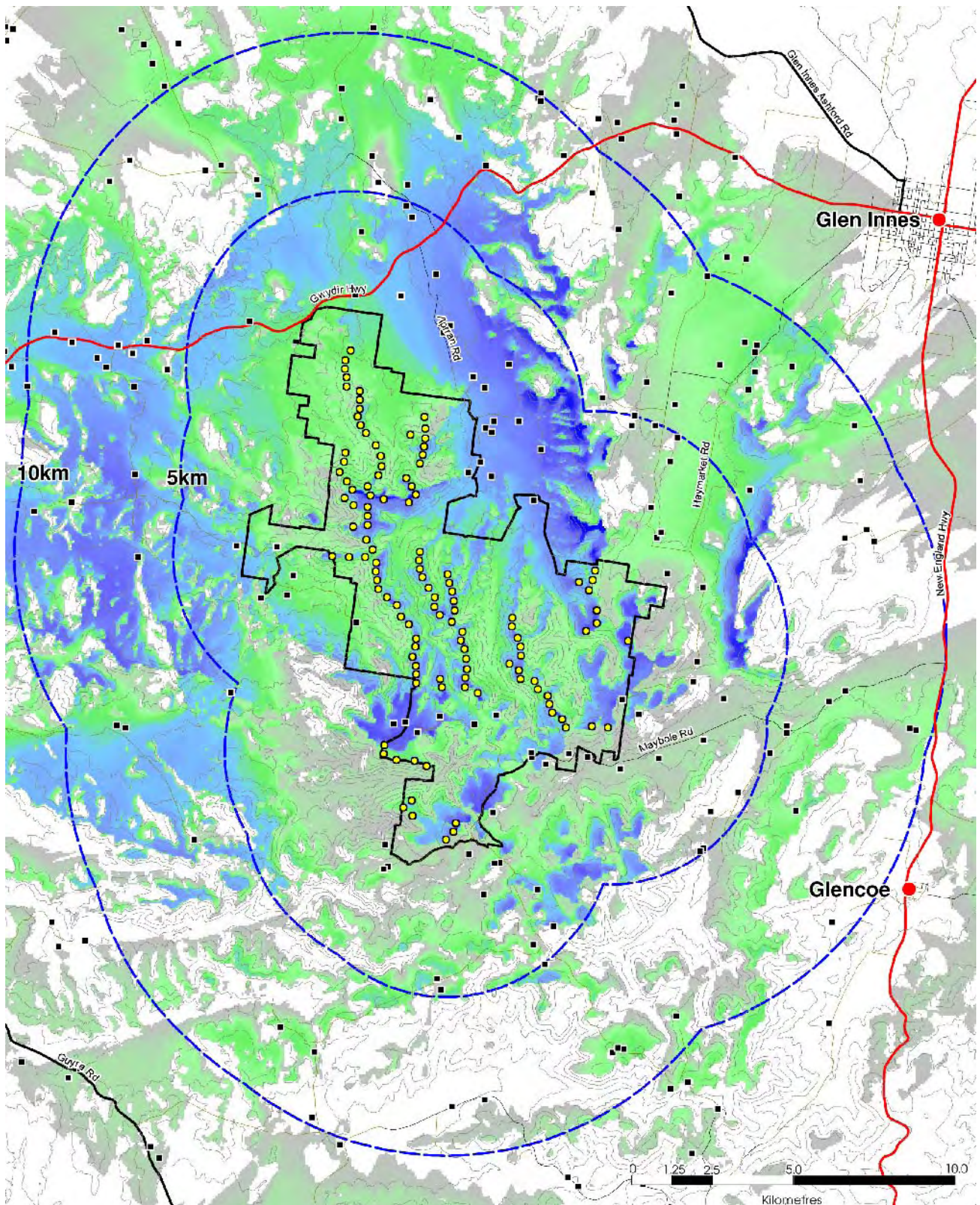
The ZVI diagrams illustrate overall visibility of the White Rock wind farm; however, the ZVI do not take into account the screening influence of vegetation and built structures. This LVIA has determined that levels of visibility (toward hub height) for the White Rock wind farm would be:

Low – up to 30% of the overall wind farm visible to any portion of the wind turbine (1 to 40 turbines);

Moderate – up to 60% of the overall wind farm visible to any portion of the wind turbine (40 to 80 turbines); and

High – over 60% of the wind turbines visible to any portion of the wind turbine (80 to 119 turbines).

Figure 16 ZVI Diagram 1
'Tips' Visible



Legend

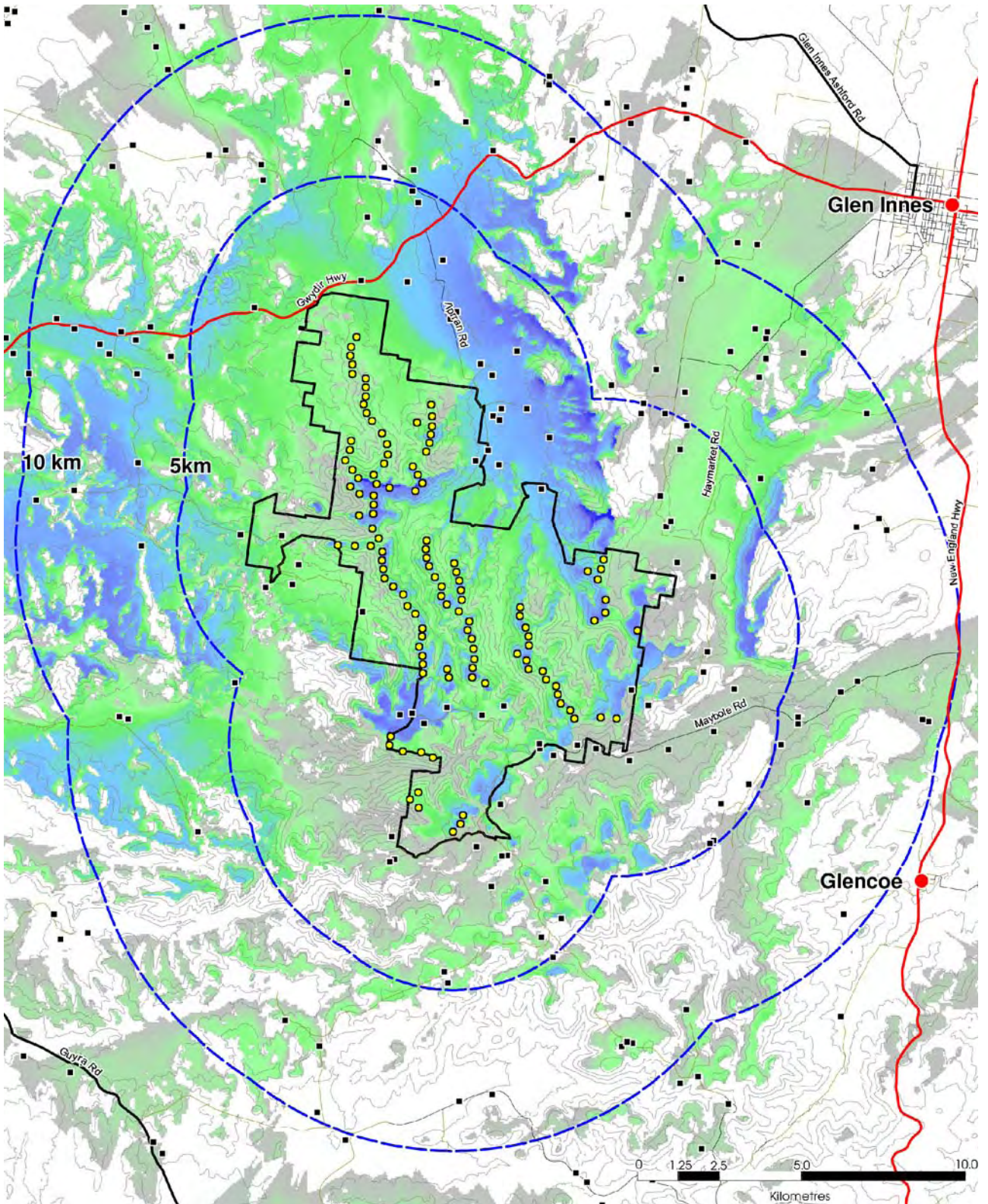
- Proposed Turbine
- House
- Site Perimeter
- Turbine Buffer
- 50m Contours

Number of tips visible

- | | |
|--|---|
| 0 | 60 |
| 1 | 80 |
| 20 | 100 |
| 40 | 120 |



Figure 17 ZVI Diagram 2
'Hubs' Visible



Legend

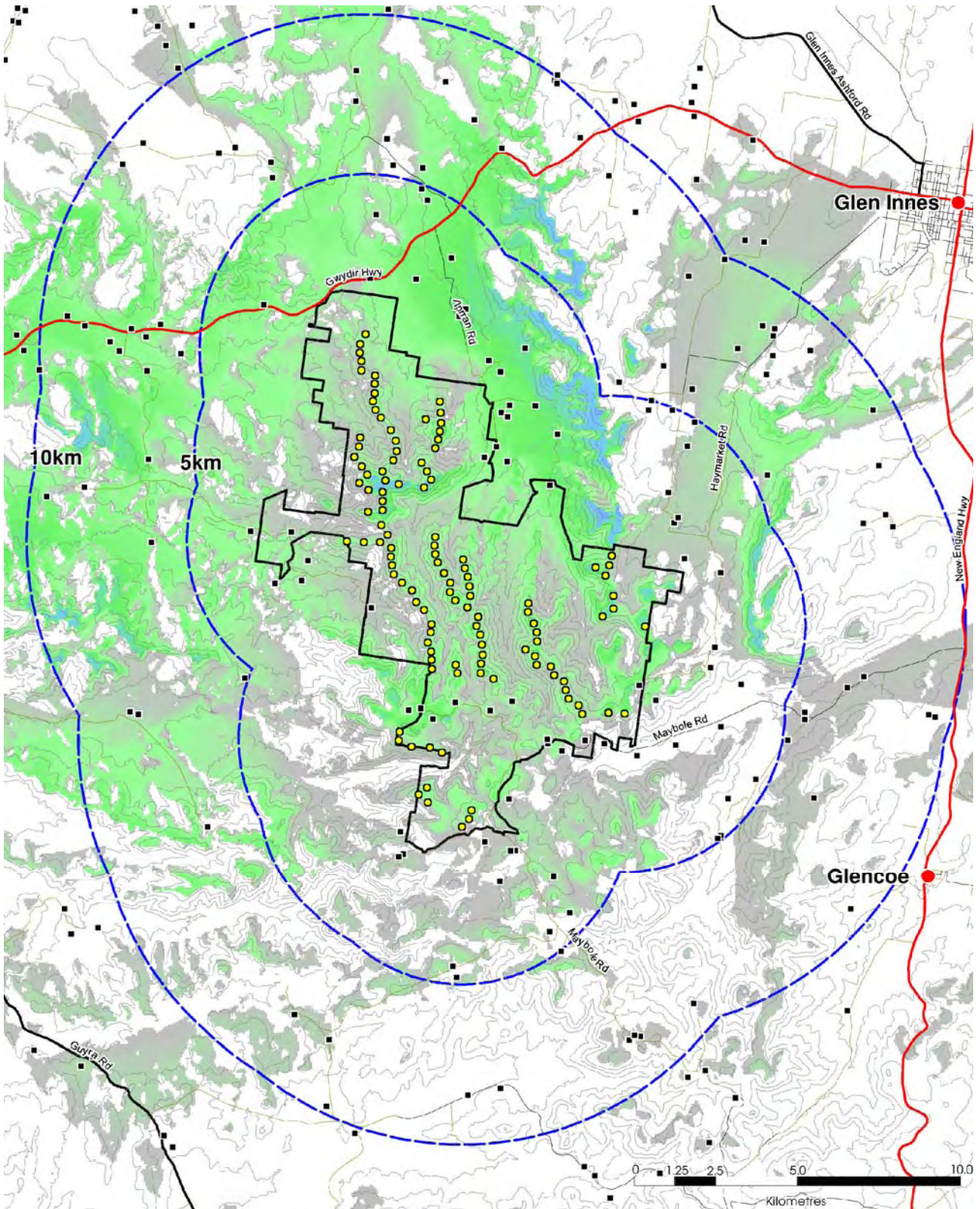
- Proposed Turbine
- Site Perimeter
- Turbine Buffer
- 50m Contours
- House

Number of hubs visible

- | | |
|--|---|
| 0 | 60 |
| 1 | 80 |
| 20 | 100 |
| 40 | 120 |



Figure 18 ZVI Diagram 3
'Full turbines' Visible



Legend

- Proposed Turbine
- House
- Turbine Buffers
- Site Perimeter
- 50m Contours

Number of full turbines visible

- | | | | |
|--|----|--|-----|
| | 0 | | 60 |
| | 1 | | 80 |
| | 20 | | 100 |
| | 40 | | 120 |



8.1 Introduction

The degree of visual impact resulting from the construction and operation of the White Rock wind farm would result primarily from the combination of the following factors:

- The visibility or extent to which the proposed wind farm structures would be visible from surrounding areas;
- The degree of visual contrast between the wind farm structures and the capability of the surrounding landscape to visually accommodate the wind farm;
- The category and type of situation from which people could view the wind farm (examples of view categories include residents or motorists);
- The distance between the view location and the wind farm turbines;
- The potential number of people with a view toward the proposed wind farm from any one location;
- The duration of time people could view the wind farm from any static or dynamic view location; and
- The visual sensitivity of view location surrounding the wind farm.

An overall determination of visual impact at each view location has also been assessed and determined against the criteria outlined in **Table 11** below:

Table 11 - View Location Assessment Criteria

Criteria	Definition
Category of Viewer	
Static	Residence
Dynamic	Motorist or passenger
Number of Viewers	
High	>500 people per day
Moderate	250 - 500 people per day
Low	100 - 250 people per day
Very Low	<100 people per day
View Distance	
Distant	>20km
Long	10km – 20km

Criteria	Definition
Medium	5 – 10km
Short	1 – 5km
Very short	<1km
Period of View	
Long term	> 2 hours
Moderate term	30 - 120 minutes
Short term	10 – 30 minutes
Very Short Term	< 10 minutes

Table 12 – Visual Impact Criteria Matrix

Period of View	Distant and Long Distance			Medium Distance			Short Distance			Very Short Distance		
	L/M	S	VS	L/M	S	VS	L/M	S	VS	L/M	S	VS
High No. of Viewers	M	L	L	H	M	M	H	H	M	H	H	H
Moderate No. of Viewers	L	L	L	M	M	L	H	M	M	H	H	M
Low No. of Viewers	L	L	L	M	L	L	M	M	L	H	M	L
Very Low No. of Viewers	L	L	L	L	L	L	M	L	L	M	M	L

- **Period of View** L/M=Long to Moderate term, S=Short term , VS=Very Short term
- **Levels of visibility** L=low, M=medium and H=high

The visual impact criteria matrix outlined in **Table 12** is used **as a guide** to determine levels of visual impact. The determination of visual impact for each view location is also considered against other factors, which include the sensitivity of the view category and overall visibility of the wind farm from surrounding view locations. The general relationship between view category and its potential level of sensitivity is outlined in **Table 13**.

Table 13 – View Location Sensitivity

View Category	Sensitivity
Residential Properties	Highest Sensitivity
Pedestrians (recreational)	▽
Public Recreational Space	▽

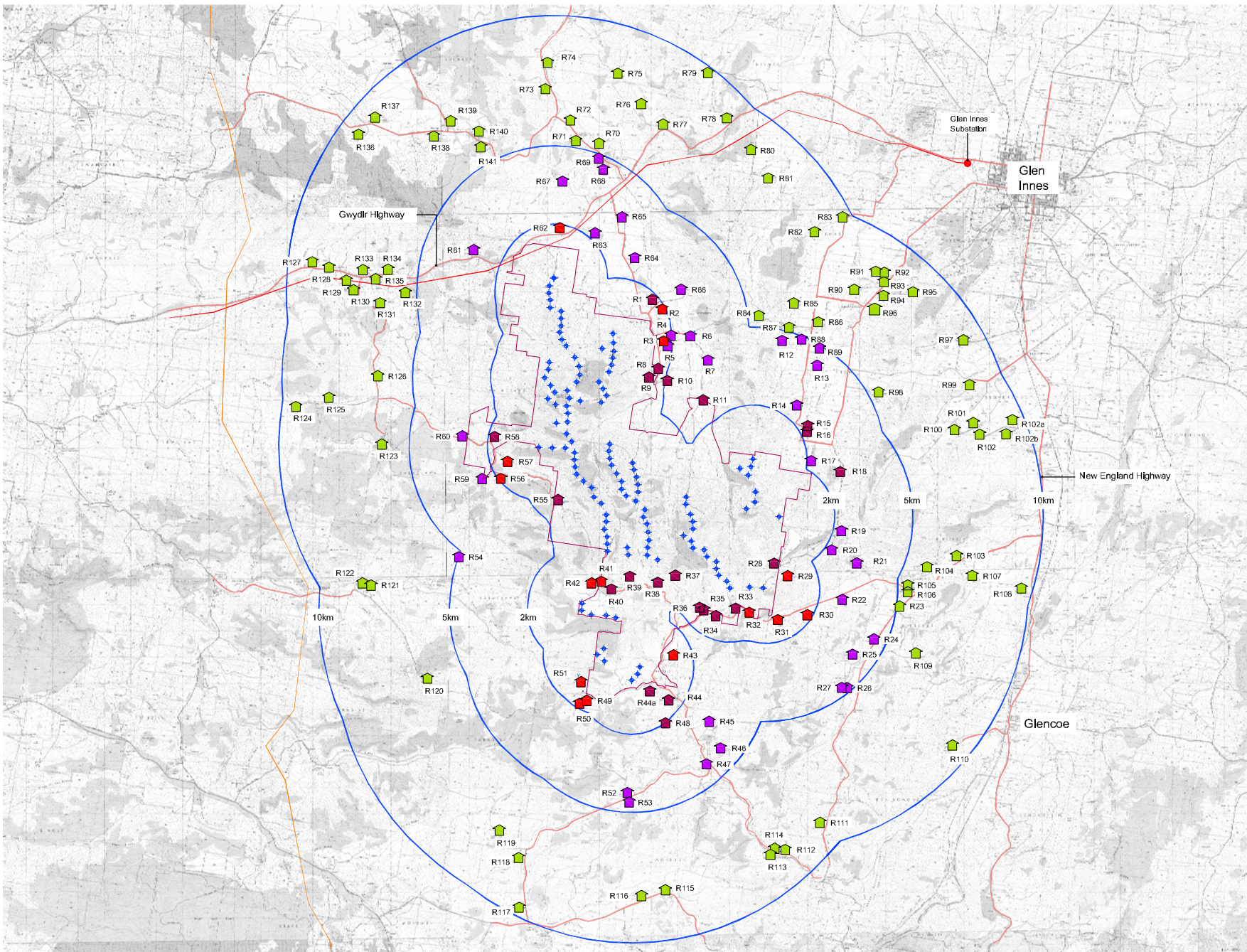
Rural employment/farming	▽
Motorists	▽
Business (commercial)	▽
Industry	Lower Sensitivity

8.2 Residential and Public View Location Visibility Matrices











Tables 14 and **15** present Visibility Matrices for the White Rock '119' design layout for residential and public view locations.

Potential residential and public view locations are illustrated in **Figures 19** and **20**.

Source: Copyright: Department of Lands, Panorama Avenue, Bathurst, 2795. (www.lands.nsw.gov.au)



Legend

- Associated Residential Dwelling 
- Residential dwelling within 2km of wind turbine 
- Residential dwelling between 2 and 5km of wind turbine 
- Residential dwelling between 5 and 10km of wind turbine 
- White Rock wind turbine 
- White Rock site boundary 
- Existing 132kV transmission line 
- Existing 330kV transmission line 
- Road 
- Offset distance as noted 

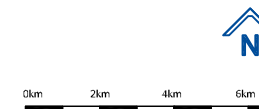


Figure 19
Residential View Locations

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R1	Resident (Associated)	View west to south west with scattered tree cover partially screening views toward wind turbines.	2km	Very Low	Varies – potential long term	High	Moderate	Moderate
R2	Resident	View west to south west with surrounding tree cover partially screening views toward wind turbines.	2.1km	Very Low	Varies – potential long term	High	Moderate	Moderate
R3	Resident	View west to south west with surrounding tree cover and agricultural buildings partially screening views toward wind turbines.	2km	Very Low	Varies – potential long term	High	Moderate	Moderate
R4	Dwelling unoccupied	View west to south west with surrounding tree cover and agricultural buildings partially screening views toward wind turbines.	2.2km	Very Low	Varies – potential long term	High	Moderate	Moderate
R5	Dwelling unoccupied	View west to south west with surrounding tree cover partially screening views toward wind turbines.	2km	Very Low	Varies – potential long term	High	Moderate	Moderate
R6	Resident	View west to south west with surrounding tree cover partially screening views toward wind turbines.	2.9km	Very Low	Varies – potential long term	High	High	Moderate

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R7	Resident	View west with scattered tree cover partially screening views toward wind turbines.	3.7km	Very Low	Varies – potential long term	High	Moderate	Moderate
R8	Resident (Associated)	View west with scattered tree cover partially screening views toward wind turbines.	1.8km	Very Low	Varies – potential long term	High	Moderate	Moderate
R9	Resident (Associated)	View west with scattered tree cover partially screening views toward wind turbines.	1.5km	Very Low	Varies – potential long term	High	Low	Moderate
R10	Resident (Associated)	View west with surrounding tree cover partially screening views toward wind turbines.	2.3km	Very Low	Varies – potential long term	High	Low	Moderate
R11	Resident (Associated)	View west to south west partially screening views toward wind turbines.	2.9km	Very Low	Varies – potential long term	High	Low	Moderate
R12	Resident	View west to south west screened by topography.	4.7km	Very Low	Varies – potential long term	High	Nil	Nil
R13	Resident	View south to south west with surrounding tree cover partially screening views toward wind turbines.	4.1km	Very Low	Varies – potential long term	High	Low	Low
R14	Resident	View south to south west with scattered tree cover partially screening views	2.6km	Very Low	Varies – potential	High	Low	Low

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
		toward wind turbines.			long term			
R15	Resident (Associated)	View south to south west with surrounding tree cover partially screening views toward wind turbines.	2.3km	Very Low	Varies – potential long term	High	Low	Low
R16	Resident (Associated)	View south to south west with surrounding tree cover partially screening views toward wind turbines.	2.2km	Very Low	Varies – potential long term	High	Low	Low
R17	Resident	View west to south west with surrounding tree cover partially screening views toward wind turbines.	2.2km	Very Low	Varies – potential long term	High	Low	Low
R18	Resident (Associated)	View west to south west screened by surrounding tree cover.	2.8km	Very Low	Varies – potential long term	High	Nil	Nil
R19	Resident	View west to south west screened by surrounding tree cover.	2.2km	Very Low	Varies – potential long term	High	Nil	Nil
R20	Resident	View west to south west screened by surrounding tree cover.	2.4km	Very Low	Varies – potential long term	High	Nil	Nil
R21	Resident	View west to south west with scattered tree cover.	3.5km	Very Low	Varies – potential long term	High	Low	Nil
R22	Resident	View north to north west with surrounding tree cover partially	2.9km	Very Low	Varies – potential long term	High	Low	Low

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
		screening views toward wind turbines.						
R23	Resident	View north west with surrounding tree cover partially screening views toward wind turbines.	5km	Very Low	Varies – potential long term	High	Low	Low
R24	Resident	View north west screened by landform and tree cover.	4.5km	Very Low	Varies – potential long term	High	Nil	Nil
R25	Resident	View north west screened by landform and tree cover.	4.1km	Very Low	Varies – potential long term	High	Nil	Nil
R26	Resident	View north west screened by landform and tree cover.	4.8km	Very Low	Varies – potential long term	High	Nil	Nil
R27	Resident	View north west screened by landform and tree cover.	4.8km	Very Low	Varies – potential long term	High	Nil	Nil
R28	Resident (Associated)	View north to south west with scattered tree cover partially screening views toward wind turbines.	1km	Very Low	Varies – potential long term	High	Low	Moderate
R29	Resident	View north to south west with scattered tree cover partially screening some views toward wind turbines. Direct and short distance views toward wind turbines from immediate dwelling curtilage.	1km	Very Low	Varies – potential long term	High	Low	Moderate

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R30	Dwelling unoccupied	View north to north west with scattered tree cover partially screening views toward wind turbines.	1.9km	Very Low	Varies – potential long term	High	Low	Moderate
R31	Dwelling unoccupied	View north to north west with scattered tree cover partially screening views toward wind turbines.	1.4km	Very Low	Varies – potential long term	High	Low	Moderate
R32	Resident	View north to north west with scattered tree cover partially screening views toward wind turbines.	980m	Very Low	Varies – potential long term	High	Low	Moderate
R33	Resident (Associated)	View north to north west with scattered tree cover partially screening views toward wind turbines.	840m	Very Low	Varies – potential long term	High	Low	High
R34	Resident (Associated)	View north with scattered tree cover partially screening views toward wind turbines.	1.3km	Very Low	Varies – potential long term	High	Low	High
R35	Resident (Associated)	View north east with scattered tree cover partially screening views toward wind turbines.	1.4km	Very Low	Varies – potential long term	High	Low	High
R36	Resident (Associated)	View north to north east with scattered tree cover partially screening views toward wind turbines.	1.3km	Very Low	Varies – potential long term	High	Low	High

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R37	Resident (Associated)	View north west to east with scattered tree cover partially screening views toward wind turbines.	910m	Very Low	Varies – potential long term	High	Low	High
R38	Resident (Associated)	View north west to east with scattered tree cover partially screening views toward wind turbines.	1km	Very Low	Varies – potential long term	High	Low	Moderate
R39	Resident (Associated)	View north west to east with scattered tree cover partially screening views toward wind turbines.	920m	Very Low	Varies – potential long term	High	Low	High
R40	Resident (Associated)	View north and south with scattered tree cover partially screening views toward wind turbines.	900m	Very Low	Varies – potential long term	High	Moderate	Moderate
R41	Resident	View north to south with scattered tree cover partially screening views toward wind turbines.	1.2m	Very Low	Varies – potential long term	High	Moderate	High
R42	Resident	View north and south with scattered tree cover partially screening views toward wind turbines.	720m	Very Low	Varies – potential long term	High	Moderate	Moderate

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R43	Resident	View west with scattered tree cover partially screening views toward wind turbines.	1.2km	Very Low	Varies – potential long term	High	Low	Moderate
R44	Resident (Associated)	View north with surrounding tree cover partially screening views toward wind turbines.	1.6km	Very Low	Varies – potential long term	High	Low	Moderate
R44a	Dwelling unoccupied and dilapidated (Associated)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R45	Resident	View north west to north with surrounding tree cover partially screening views toward wind turbines.	3.2km	Very Low	Varies – potential long term	High	Low	Moderate
R46	Resident	View north west with surrounding tree cover partially screening views toward wind turbines.	4.2km	Very Low	Varies – potential long term	High	Low	Low
R47	Resident	View north west with surrounding tree cover partially screening views toward wind turbines.	4.3km	Very Low	Varies – potential long term	High	Low	Low

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R48	Dwelling unoccupied (Associated)	View north to north west with surrounding tree cover partially screening views toward wind turbines.	2km	Very Low	Varies – potential long term	High	Low	Low
R49	Resident	View north to north east with surrounding tree cover partially screening views toward wind turbines.	1.8km	Very Low	Varies – potential long term	High	Low	Low
R50	Resident	View north to north east with surrounding tree cover partially screening views toward wind turbines.	1.9km	Very Low	Varies – potential long term	High	Low	Low
R51	Resident	View north east with scattered tree cover with surrounding tree cover partially screening views toward wind turbines.	1.2km	Very Low	Varies – potential long term	High	Low	Low
R52	Resident	View north with scattered tree cover with surrounding tree cover partially screening views toward wind turbines.	4.3km	Very Low	Varies – potential long term	High	Low	Low
R53	Resident	View north with scattered tree cover with surrounding tree cover partially screening views toward wind turbines.	4.6km	Very Low	Varies – potential long term	High	Low	Low
R54	Resident	View east with scattered tree cover partially screening views toward wind	5.2km	Very Low	Varies – potential long term	High	Low	Low

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
		turbines.						
R55	Resident (Associated)	View east with scattered tree cover partially screening views toward wind turbines.	1.4km	Very Low	Varies – potential long term	High	Low	High
R56	Uninhabited structure	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R57	Resident	View east with scattered tree cover partially screening views toward wind turbines.	1.3km	Very Low	Varies – potential long term	High	Low	Moderate
R58	Resident (Associated)	View east with surrounding tree cover partially screening views toward wind turbines.	1.8km	Very Low	Varies – potential long term	High	Low	Moderate
R59	Possible house location	View east with scattered and surrounding tree cover partially screening views toward wind turbines.	2.6km	Very Low	Varies – potential long term	High	Low	Moderate
R60	Resident	View east with scattered and surrounding tree cover partially screening views toward wind turbines.	3km	Very Low	Varies – potential long term	High	Low	Moderate
R61	Resident	View south east with scattered and surrounding tree cover partially screening views toward wind turbines.	3.3km	Very Low	Varies – potential long term	High	Low	Moderate

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R62	Resident	View south with scattered and surrounding tree cover partially screening views toward wind turbines.	1.7km	Very Low	Varies – potential long term	High	Low	Moderate
R63	Resident	View south to south west with scattered and surrounding tree cover partially screening views toward wind turbines.	2.3km	Very Low	Varies – potential long term	High	Low	Moderate
R64	Resident	View south to south west with scattered and surrounding tree cover partially screening views toward wind turbines.	2.9km	Very Low	Varies – potential long term	High	Moderate	Low
R65	Resident	View south to south west with scattered and surrounding tree cover partially screening views toward wind turbines.	4.5km	Very Low	Varies – potential long term	High	Moderate	Low
R66	Resident	View west to south west with surrounding and scattered tree cover partially screening views toward wind turbines.	3.1km	Very Low	Varies – potential long term	High	Moderate	Low
R67	Resident	View south with surrounding and scattered tree cover partially screening views toward wind turbines.	3.7km	Very Low	Varies – potential long term	High	Low	Low
R68	Resident	View south with surrounding and scattered tree cover partially screening	4.6km	Very Low	Varies – potential long term	High	Low	Low

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
		views toward wind turbines.						
R69	Resident	View south with surrounding and scattered tree cover screening views toward wind turbines.	4.9km	Very Low	Varies – potential long term	High	Nil	Nil
R70	Resident	View south with surrounding and scattered tree cover screening views toward wind turbines.	5.5km	Very Low	Varies – potential long term	High	Low	Nil
R71	Resident	View south with surrounding and scattered tree cover screening views toward wind turbines.	5.3km	Very Low	Varies – potential long term	High	Nil	Nil
R72	Resident	View south with surrounding and scattered tree cover screening views toward wind turbines.	6km	Very Low	Varies – potential long term	High	Low	Nil
R73	Resident	View south with surrounding and scattered tree cover screening views toward wind turbines.	7.2km	Very Low	Varies – potential long term	High	Low	Nil
R74	Resident	View south with surrounding and scattered tree cover screening views toward wind turbines.	8.4km	Very Low	Varies – potential long term	High	Low	Nil
R75	Resident	View south with surrounding and scattered tree cover screening views	8.2km	Very Low	Varies – potential long term	High	Nil	Nil

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
		toward wind turbines.						
R76	Resident	View south with surrounding and scattered tree cover screening views toward wind turbines.	7.5km	Very Low	Varies – potential long term	High	Nil	Nil
R77	Resident	View south with surrounding and scattered tree cover screening views toward wind turbines.	7.2km	Very Low	Varies – potential long term	High	Low	Nil
R78	Resident	View south west with surrounding and scattered tree cover screening views toward wind turbines.	8.9km	Very Low	Varies – potential long term	High	Nil	Nil
R79	Resident	View south west with surrounding and scattered tree cover screening views toward wind turbines.	9.8km	Very Low	Varies – potential long term	High	Nil	Nil
R80	Resident	View south west with surrounding and scattered tree cover screening views toward wind turbines.	9km	Very Low	Varies – potential long term	High	Nil	Nil
R81	Resident	View south west with surrounding and scattered tree cover and landform screening views toward wind turbines.	9km	Very Low	Varies – potential long term	High	Nil	Nil

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R82	Resident	View south west with surrounding and scattered tree cover screening views toward wind turbines.	8.6km	Very Low	Varies – potential long term	High	Nil	Nil
R83	Resident	View south west with surrounding and scattered tree cover partially screening views toward wind turbines.	9.8km	Very Low	Varies – potential long term	High	Low	Low
R84	Resident	View south west with scattered tree cover partially screening views toward wind turbines.	5.6km	Very Low	Varies – potential long term	High	Low	Low
R85	Resident	View south to south west with scattered tree cover partially screening views toward wind turbines.	6.2km	Very Low	Varies – potential long term	High	Low	Low
R86	Resident	View south to south west with surrounding and scattered tree cover screening views toward wind turbines.	5.7km	Very Low	Varies – potential long term	High	Low	Nil
R87	Resident	View south to south west partially screening views toward wind turbines.	5km	Very Low	Varies – potential long term	High	Low	Low
R88	Resident	View south to south west with surrounding and scattered tree cover screening views toward wind turbines.	4.8km	Very Low	Varies – potential long term	High	Low	Nil

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R89	Resident	View south to south west with landform and tree cover partially screening views toward wind turbines.	4.8km	Very Low	Varies – potential long term	High	Low	Low
R90	Resident	View south to south west with landform and tree cover partially screening views toward wind turbines.	7.5km	Very Low	Varies – potential long term	High	Low	Low
R91	Dwelling unoccupied	View west to south west with landform and tree cover partially screening views toward wind turbines.	8.5km	Very Low	Varies – potential long term	High	Low	Low
R92	Resident	View west to south west with landform and tree cover partially screening views toward wind turbines.	8.7km	Very Low	Varies – potential long term	High	Low	Low
R93	Resident	View west to south west with landform and tree cover partially screening views toward wind turbines.	8.7km	Very Low	Varies – potential long term	High	Low	Low
R94	Resident	View west to south west with landform and tree cover partially screening views toward wind turbines.	8km	Very Low	Varies – potential long term	High	Low	Low
R95	Resident	View west to south west with landform and tree cover partially screening views toward wind turbines.	8.8km	Very Low	Varies – potential long term	High	Low	Low

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R96	Resident	View west to south west with landform and tree cover partially screening views toward wind turbines.	7.3km	Very Low	Varies – potential long term	High	Low	Low
R97	Resident	View west with landform and tree cover partially screening views toward wind turbines.	9.2km	Very Low	Varies – potential long term	High	Low	Low
R98	Resident	View west to south west with landform and tree cover partially screening views toward wind turbines.	5.4km	Very Low	Varies – potential long term	High	Low	Low
R99	Resident	View west to south west with landform and tree cover partially screening views toward wind turbines.	8.7km	Very Low	Varies – potential long term	High	Nil	Low
R100	Resident	View west with surrounding tree cover and landform screening views toward wind turbines.	7.8km	Very Low	Varies – potential long term	High	Nil	Nil
R101	Resident	View west with surrounding tree cover and landform screening views toward wind turbines.	7.8km	Very Low	Varies – potential long term	High	Nil	Nil
R102	Resident	View west with surrounding tree cover and landform screening views toward wind turbines.	7.8km	Very Low	Varies – potential long term	High	Nil	Nil

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R102a	Resident	View west with surrounding tree cover and landform screening views toward wind turbines.	7.8km	Very Low	Varies – potential long term	High	Nil	Nil
R102b	Resident	View west with surrounding tree cover and landform screening views toward wind turbines.	7.8km	Very Low	Varies – potential long term	High	Nil	Nil
R103	Resident	View west with surrounding tree cover and landform screening views toward wind turbines.	7.5km	Very Low	Varies – potential long term	High	Low	Nil
R104	Resident	View west with landform and tree cover partially screening views toward wind turbines.	6.3km	Very Low	Varies – potential long term	High	Low	Low
R105	Resident	View west with landform and tree cover partially screening views toward wind turbines.	5.5km	Very Low	Varies – potential long term	High	Low	Low
R106	Resident	View west with landform and tree cover partially screening views toward wind turbines.	5.5km	Very Low	Varies – potential long term	High	Low	Low
R107	Resident	View west with surrounding tree cover and landform screening views toward wind turbines.	8km	Very Low	Varies – potential long term	High	Low	Nil

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R108	Resident	View west with surrounding tree cover and landform screening views toward wind turbines.	9.8km	Very Low	Varies – potential long term	High	Low	Nil
R109	Resident	View west to north west with surrounding tree cover and landform screening views toward wind turbines.	6.4km	Very Low	Varies – potential long term	High	Low	Nil
R110	Resident	View north west with surrounding tree cover and landform screening views toward wind turbines.	9.2km	Very Low	Varies – potential long term	High	Nil	Nil
R111	Resident	View north to north west with surrounding tree cover and landform screening views toward wind turbines.	9km	Very Low	Varies – potential long term	High	Low	Nil
R112	Resident	View north to north west with landform and tree cover partially screening views toward wind turbines.	8.8km	Very Low	Varies – potential long term	High	Low	Low
R113	Resident	View north to north west with surrounding tree cover and landform screening views toward wind turbines.	8.5km	Very Low	Varies – potential long term	High	Low	Nil
R114	Resident	View north to north west with landform and tree cover partially screening views toward wind turbines.	8.4km	Very Low	Varies – potential long term	High	Low	Low

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R115	Resident	View north with surrounding tree cover and landform screening views toward wind turbines	8.2km	Very Low	Varies – potential long term	High	Nil	Nil
R116	Resident	View north with surrounding tree cover and landform screening views toward wind turbines	8.2km	Very Low	Varies – potential long term	High	Nil	Nil
R117	Resident	View north with surrounding tree cover and landform screening views toward wind turbines	9.6km	Very Low	Varies – potential long term	High	Nil	Nil
R118	Resident	View north to north east with landform and tree cover partially screening views toward wind turbines.	7.8km	Very Low	Varies – potential long term	High	Low	Low
R119	Resident	View north to north east with landform and tree cover partially screening views toward wind turbines.	7.7km	Very Low	Varies – potential long term	High	Low	Low
R120	Resident	View east with landform and tree cover partially screening views toward wind turbines.	6.6km	Very Low	Varies – potential long term	High	Low	Low
R121	Resident	View east with landform and tree cover partially screening views toward wind turbines.	8.1km	Very Low	Varies – potential long term	High	Low	Low

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R122	Resident	View east with landform and tree cover partially screening views toward wind turbines.	8.5km	Very Low	Varies – potential long term	High	Low	Low
R123	Resident	View east with landform and tree cover partially screening views toward wind turbines.	6km	Very Low	Varies – potential long term	High	Low	Low
R124	Resident	View east with landform and tree cover partially screening views toward wind turbines.	9.4km	Very Low	Varies – potential long term	High	Low	Low
R125	Resident	View east with landform and tree cover partially screening views toward wind turbines.	8.3km	Very Low	Varies – potential long term	High	Nil	Low
R126	Resident	View east with landform and tree cover partially screening views toward wind turbines.	6.7km	Very Low	Varies – potential long term	High	Low	Low
R127	Resident	View east to south east with landform and tree cover partially screening views toward wind turbines.	9.1km	Very Low	Varies – potential long term	High	Low	Low
R128	Resident	View east to south east with landform and tree cover partially screening views toward wind turbines.	8.5km	Very Low	Varies – potential long term	High	Low	Low

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R129	Resident	View east to south east with landform and tree cover partially screening views toward wind turbines.	7.8km	Very Low	Varies – potential long term	High	Low	Low
R130	Resident	View east to south east with landform and tree cover partially screening views toward wind turbines.	7.5km	Very Low	Varies – potential long term	High	Low	Low
R131	Resident	View east to south east with landform and tree cover partially screening views toward wind turbines.	6.6km	Very Low	Varies – potential long term	High	Low	Low
R132	Resident	View east to south east with landform and tree cover partially screening views toward wind turbines.	5.5km	Very Low	Varies – potential long term	High	Low	Low
R133	Resident	View east to south east with landform and tree cover partially screening views toward wind turbines.	7.5km	Very Low	Varies – potential long term	High	Low	Low
R134	Resident	View east to south east with landform and tree cover partially screening views toward wind turbines.	6.2km	Very Low	Varies – potential long term	High	Low	Low
R135	Resident	View east to south east with landform and tree cover partially screening views toward wind turbines.	6.6km	Very Low	Varies – potential long term	High	Low	Low

Table 14 - Residential View Location Matrix

View Location	Category of Potential View Location	View context from residence toward White Rock wind farm	Approximate distance to closest turbine	Relative number of people	Period of view	View Location sensitivity	ZVI Hub height visibility rating from residence	Visual Impact
R136	Resident	View south east with landform and tree cover partially screening views toward wind turbines.	9.3km	Very Low	Varies – potential long term	High	Nil	Low
R137	Resident	View south east with landform and tree cover partially screening views toward wind turbines.	9.2km	Very Low	Varies – potential long term	High	Nil	Low
R138	Resident	View south east with landform and tree cover partially screening views toward wind turbines.	7.3km	Very Low	Varies – potential long term	High	Nil	Low
R139	Resident	View south east with landform and tree cover partially screening views toward wind turbines.	6.2km	Very Low	Varies – potential long term	High	Nil	Low
R140	Resident	View south east with landform and tree cover partially screening views toward wind turbines.	6.1km	Very Low	Varies – potential long term	High	Low	Low
R141	Resident	View south east with landform and tree cover partially screening views toward wind turbines.	5.6km	Very Low	Varies – potential long term	High	Low	Low

8.3 Future Residential Dwellings

In general existing residential dwellings in the vicinity of the wind farm are located below surrounding ridgelines to maximise potential for shelter from prevailing wind, and/or where exposed tend to include a degree of shelter from windbreak planting or tree planting around dwellings. The tendency to locate residential dwellings in sheltered situations also acts to limit the extent of available views across the surrounding landscape for the majority of residential view locations, although there are a small number of dwellings that appear to have been located on properties to take advantage of distant and panoramic views.

Potential future planning for residential dwellings would be able to take advantage of any approved layout design for the White Rock wind farm when determining the optimal location for residential dwellings on individual portions of land to minimise views toward wind turbines if desired. In some circumstances future residential dwellings could be located to take advantage of local topographic features in order to screen views toward wind turbines or implement in advance mitigation measures such as tree planting for windbreak and/or screening purposes.

Should residential dwellings be constructed on existing portions of land immediately adjacent to the wind farm site, there is likely to be an associated visual impact not only with additional residential structures within the landscape but also a range of domestic infrastructure associated with it.

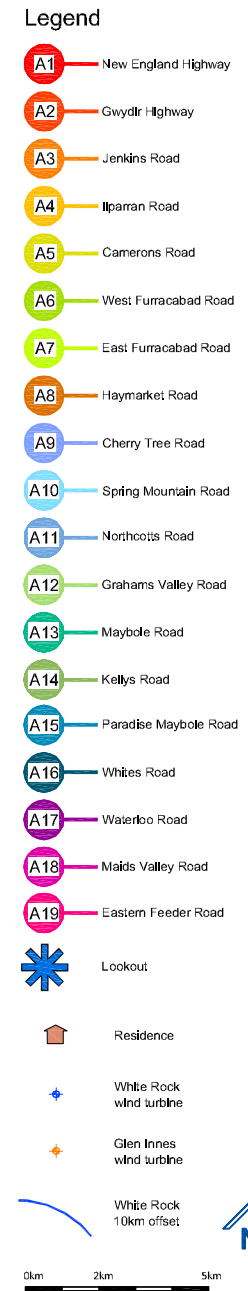
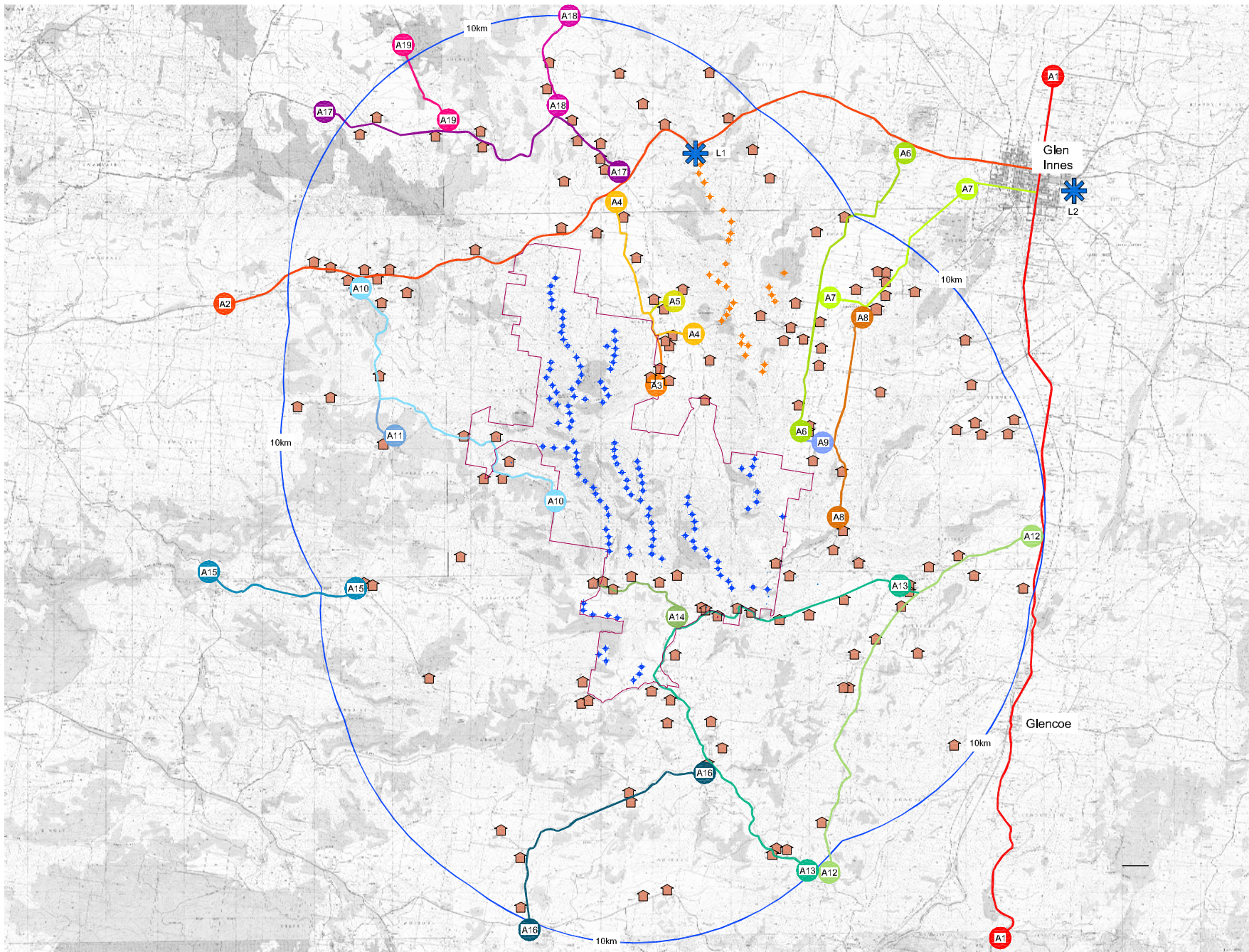


Figure 20
Public View Locations

Table 15 - Public View Location Matrix

View Location	Category of Potential View Location	View context	Approximate length of road with views toward White Rock wind farm	Approximate distance to closest wind turbine	Relative number of people	Period of view	View location sensitivity	Visual Impact
L1 Sinclair Lookout	Visitor	Elevated and distant views west from lookout that extend across north portion of White Rock wind farm. Lookout is also situated north of Glen Innes wind farm and would take in more extensive views across the proposed Sapphire wind farm development.	N/A	7km	Very Low	Varies	High	Low
L2 Centennial Parklands & Martins Lookout (Glen Innes)	Visitor	Partially restricted views west from park and entry road toward the Waterloo Range and Glen Innes wind farm turbines. Views toward the White Rock wind farm are screened by the north portion of the Waterloo Range.	N/A	18km	Varies – potentially high during events or festivals.	Varies – potentially long term during events or festivals.	High	Nil
A1 New England Highway	Motorist	Indirect view west from vehicles travelling north and south along the Highway road corridor are screened by a combination of ridgeline landform and vegetation.	0km (Total length of road within 10km viewshed is 5km)	10km	High	-	Low	Nil
A2 Gwydir Highway	Motorist	Indirect and direct views from vehicles travelling east or west bound north of the wind farm. Distant views from Gwydir Highway travelling eastbound.	5km (Total length of road within 10km viewshed is 22km)	1.6km	High	<3mins	Low	Low

Table 15 - Public View Location Matrix

View Location	Category of Potential View Location	View context	Approximate length of road with views toward White Rock wind farm	Approximate distance to closest wind turbine	Relative number of people	Period of view	View location sensitivity	Visual Impact
A3 Jenkins Road	Motorist	Direct views from vehicles travelling along short section of unsealed local road.	1.6km (Total length of road within 10km viewshed is 1.6km)	1.7km	Very Low	<1min	Low	Low
A4 Ilparan Road	Motorist	Direct views from vehicles travelling along short section of local road travelling north and south.	7km (Total length of road within 10km viewshed is 7km)	1.3km	Very Low	<4mins	Low	Low
A5 Cameron's Road	Motorist	Direct views from vehicles travelling along short section of local road travelling south west.	800m (Total length of road within 10km viewshed is 800m)	1.5km	Very Low	<1min	Low	Low
A6 West Furracabad Road	Motorist	Direct views from vehicles travelling south along local road.	4.7km (Total length of road within 10km viewshed 4.7km)	2km	Very Low	<3mins	Low	Low
A7 East Furracabad Road	Motorist	Direct views from vehicles travelling south west to west along local road.	5km (Total length of road within 10km viewshed 9km)	6.7km	Very Low	<5mins	Low	Low

Table 15 - Public View Location Matrix

View Location	Category of Potential View Location	View context	Approximate length of road with views toward White Rock wind farm	Approximate distance to closest wind turbine	Relative number of people	Period of view	View location sensitivity	Visual Impact
A8 Haymarket Road	Motorist	Direct views from vehicles travelling south along local road	5.5km (Total length of road within 10km viewshed 9km)	3km	Very Low	<5mins	Low	Low
A9 Cherry Tree Road	Motorist	Direct view from vehicles travelling west along short section of unsealed local road.	1.1km (Total length of road within 10km viewshed 1.1km)	1.9km	Very Low	<1min	Low	Low
A10 Spring Mountain Road	Motorist	Direct views from vehicles travelling east along unsealed local road. Views travelling north south are screened by tree cover.	8km (Total length of road within 10km viewshed 15km)	1km	Very Low	<8mins	Low	Low
A11 Northcotts Road	Motorist	Views from vehicles toward wind farm screened by tree cover.	0km (Total length of road within 10km viewshed 1.5km)	6.5km	Very Low	-	Low	Nil
A12 Grahams Valley Road	Motorist	Views from vehicles toward wind farm screened by landform.	0km (Total length of road within 10km viewshed 18km)	5.8km	Very Low	-	Low	Nil

Table 15 - Public View Location Matrix

View Location	Category of Potential View Location	View context	Approximate length of road with views toward White Rock wind farm	Approximate distance to closest wind turbine	Relative number of people	Period of view	View location sensitivity	Visual Impact
A13 Maybole Road	Motorist	Views from vehicles travelling along south west and north west portions of local road corridor.	15km (Total length of road within 10km viewshed 15km)	780m	Very Low	<10mins	Low	Low
A14 Durkins Road	Motorist	Views from vehicles travelling north west and south east along unsealed local road corridor.	4.5km (Total length of road within 10km viewshed 4.5km)	1km	Very Low	<3mins	Low	Low
A15 Paradise Maybole Road	Motorist	Views from vehicles travelling east along local unsealed road toward Sundown Pastoral Company property entrance.	2km (Total length of road within 10km viewshed 2km)	10km	Very Low	<4mins	Low	Low
A16 Whites Road	Motorist	Views from vehicles travelling north east toward Maybole Road junction. Wind farm largely screened by landform.	5km (Total length of road within 10km viewshed 11km)	4km	Very Low	<4mins	Low	Low
A17 Waterloo Road	Motorist	Views from vehicles travelling south east toward Gwydir Highway junction.	2km (Total length of road within 10km viewshed 12km)	4.6km	Very Low	<3mins	Low	Low

Table 15 - Public View Location Matrix

View Location	Category of Potential View Location	View context	Approximate length of road with views toward White Rock wind farm	Approximate distance to closest wind turbine	Relative number of people	Period of view	View location sensitivity	Visual Impact
A18 Maids Valley Road	Motorist	Views from vehicles travelling south are screened by landform and tree cover.	0km (Total length of road within 10km viewshed 4.5km)	6.2km	Very Low	-	Low	Nil
A19 Eastern Feeder Road	Motorist	Views from vehicles travelling south are screened by landform and tree cover.	0km (Total length of road within 10km viewshed 4.5km)	7km	Very Low	-	Low	Nil

8.4 Summary of Potential Visual Impact

This LVIA identified a total of 142 potential residential view locations within the White Rock wind farm 10km viewshed. Two of the residential view locations (R44a and R56) were determined to be either uninhabitable or not a residential structure. Unoccupied residential dwellings have been included and assessed as part of this LVIA where structures and buildings were considered to be habitable at the time of the field work.

An assessment of each potential residential view location indicated that for the White Rock '119' design layout:

- 8 of the 142 residential view locations have been determined to have a high visual impact.
- 29 of the 142 residential view locations have been determined to have a moderate visual impact;
- 65 of the 142 residential view locations have been determined to have a low visual impact; and
- 40 of the 142 residential view locations have been determined to have a nil visual impact.

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

A total of 19 public view locations were identified as part of the LVIA. An assessment of the visual impact for each public view location indicated that for the White Rock wind farm '119' design layout:

- 0 of the 19 public view locations have been determined to have a high visual impact;
- 0 of the 19 public view locations have been determined to have a moderate visual impact;
- 13 of the 19 public view locations have been determined to have a low visual impact; and
- 6 of the 19 public view locations have been determined to have a nil visual impact.

A cumulative assessment determined that the White Rock wind farm '119' design layout would not significantly increase the level of visual impact where views toward multiple wind farm developments occur either directly or indirectly whilst travelling along local roads within the White Rock wind farm 10km viewshed.

It should be noted that the term 'visual impact' does not necessarily imply or represent an individual's negative response toward the visibility of wind turbines, and that perceptions of wind farms amongst individuals within any community can be positive, negative or neutral.

9.1 What is Cumulative Impact Assessment?

A cumulative landscape and visual impact could result from a proposed wind farm development being constructed in conjunction with other existing or proposed wind farm developments, and could be either associated or separate to it.

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

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

‘Indirect’ cumulative visual impacts could occur where two or more wind farms have been constructed within the same locality, and could be viewed from the same view location but not within the same field of view.

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

There are a number of proposed, approved and operating wind farm developments within New South Wales which are illustrated in **Figure 21**. The general location of wind farms surrounding the White Rock wind farm are illustrated in **Figure 22**. These figures illustrate the location of wind farms known at the time this LVIA was prepared. The number and location of wind farms is likely to change as more wind farm projects are announced.

9.2 Other wind farm developments in the New England Tableland Region

The New South Wales Department of Planning website identifies 3 wind farm developments that are currently existing or proposed within the same locality as the White Rock wind farm and are identified in **Table 16**.

Table 16 Other Wind Farm Developments

Wind Farm	Proponent	Status	Number of turbines
Glen Innes Wind Farm	Infigen	Approved	27
Sapphire Wind Farm	Wind Prospect	DGR's Issued	Up to 178

Wind Farm	Proponent	Status	Number of turbines
Ben Lomond	AGL	DGR's lapsed	Up to 98

GBD is not aware of any smaller wind farm developments that are currently lodged, or being assessed by Glen Innes Severn or Inverell Shire Councils.

9.3 Other wind farm turbines within the White Rock 10km viewshed

A number of wind turbines within the Sapphire, Glen Innes and Ben Lomond wind farms would occur within the White Rock wind farm 10km view shed. The extent and location of wind turbines within the White Rock 10km viewshed are outlined in **Table 17** and illustrated in **Figure 23**.

Table 17 Other wind turbines within White Rock 10km viewshed

Wind Farm	Approximate number of turbines within White Rock 10km viewshed	General location of other wind farms relative to the White Rock wind farm	Approximate distance between closest White Rock wind turbine and other wind farm turbine
Glen Innes Wind Farm	27	The Glen Innes wind farm extends along the Waterloo Range ridgeline and runs approximately parallel east to north east of the White Rock wind farm.	4.2km
Sapphire Wind Farm	54	The Sapphire wind farm would extend along a series of ridgelines to the north of the Gwydir Highway and north to north west of the White Rock wind farm.	4.5km
Ben Lomond	50	The Ben Lomond wind farm would extend along a series of ridgelines to the south and south east of the White Rock wind farm generally below and to the west of Grahams Valley Road.	5.5km

A cumulative ZVI diagram illustrates the intervisibility of the White Rock and Glen Innes wind farm turbines. This ZVI identifies areas from which views to at least one full turbine from each project would potentially be visible (as 'direct' and 'indirect' views) and, as previously discussed, does not take into account the screening influence of above ground structures or vegetation. The cumulative

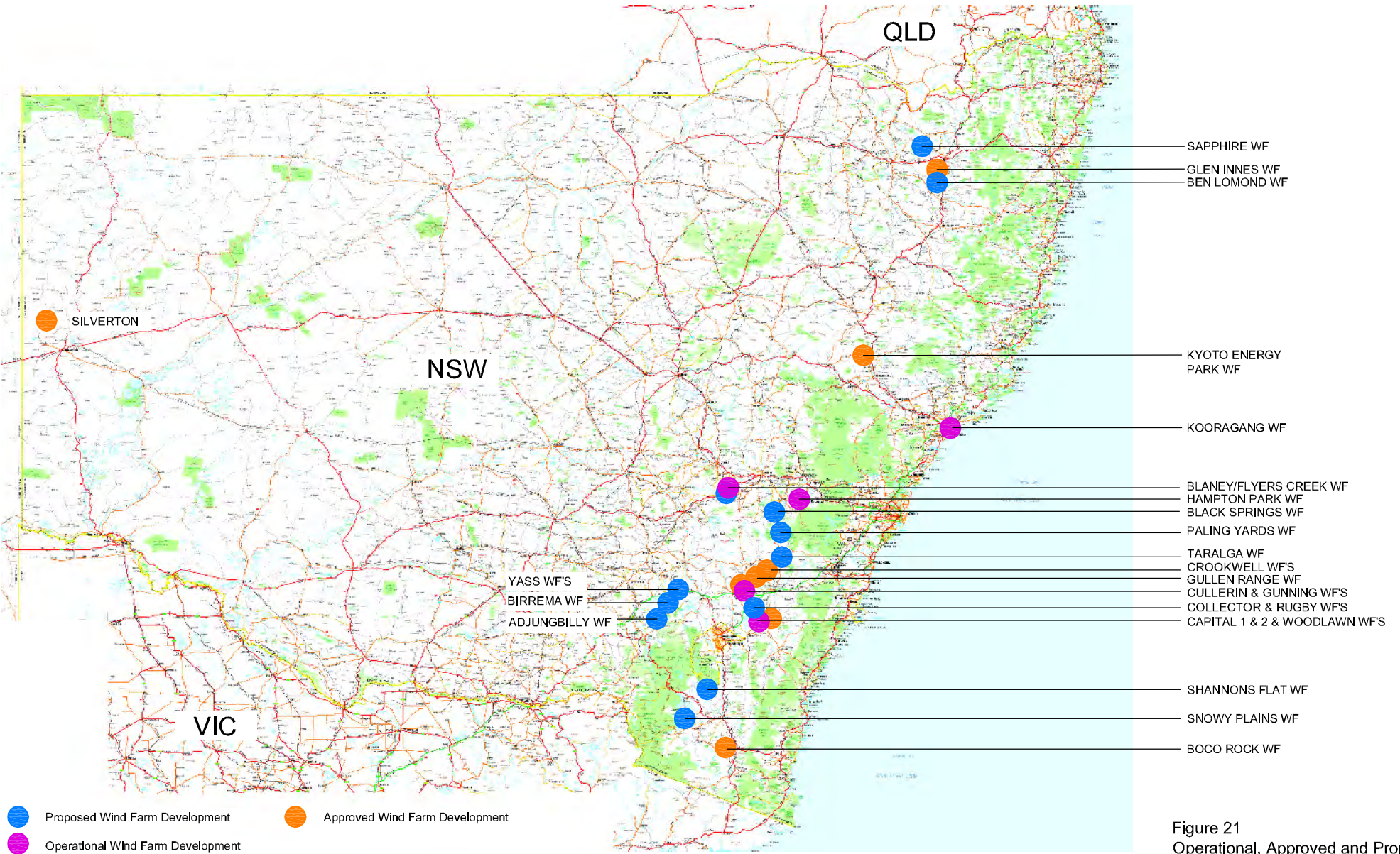
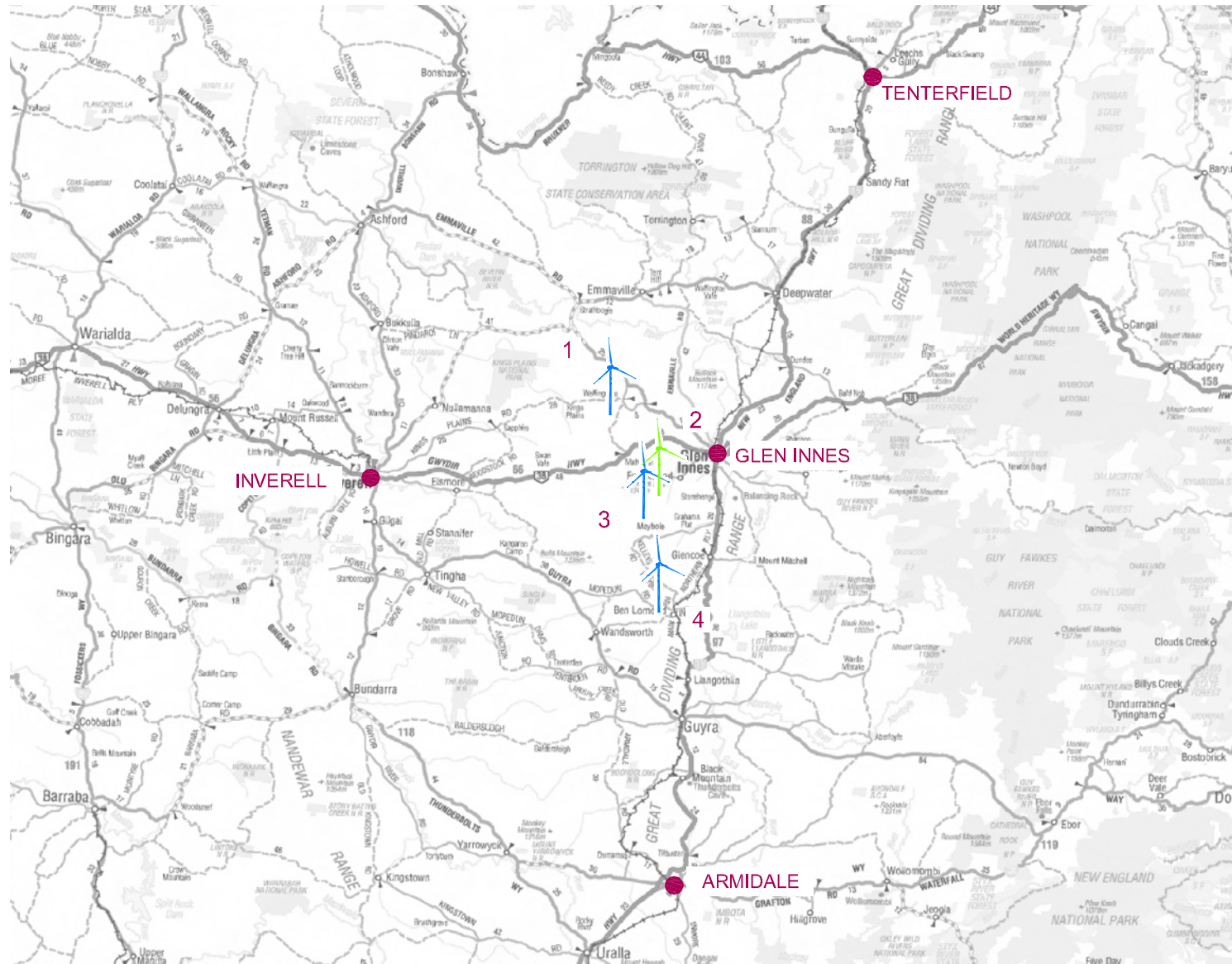


Figure 21
Operational, Approved and Proposed
Wind Farms in New South Wales (as of
December 2010)



Legend

- 1 Sapphire Wind Farm
- 2 Glen Innes Wind Farm
- 3 White Rock Wind Farm
- 4 Ben Lomond Wind Farm



-  Proposed wind farm development
-  Approved wind farm development

Figure 22
Wind farms in the
New England Tableland
(as of December 2010)

ZVI is illustrated in **Figure 24**. The cumulative ZVI demonstrates the influence of topography on the extent and intervisibility of multiple wind turbines.

9.4 White Rock and Sapphire wind farm intervisibility

The potential for the White Rock wind farm turbines to be visible from various view locations together with the Sapphire wind farm turbines are considered in **Table 18**.

Table 18 White Rock and Sapphire wind farm intervisibility

View Location	View description between the White Rock and Sapphire wind farms		
	'Direct' Views	'Indirect' Views	'Sequential' Views
Residences (R123 to R135) Residential dwellings west of White Rock and south of Sapphire wind farms.	There is limited potential for direct views due to tree cover surrounding residences and the visual separation of turbines. In addition to the individual residential visual impacts (Refer Table 14), direct cumulative visual impact would be low.	Indirect views toward the White Rock and Sapphire wind turbines are limited and largely restricted by landform and tree cover between the wind farm sites. In addition to the individual residential visual impacts (Refer Table 14), indirect cumulative visual impact would be low.	N/A
Residences (R136 to R141) Residential dwellings north of White Rock wind farm and within 2km Sapphire viewshed.	The potential for direct views are largely restricted by tree cover and landform surrounding residential dwellings within the Sapphire wind farm 2km viewshed. In addition to the individual residential visual impacts (Refer Table 14), direct cumulative visual impact would be low.	Indirect views toward the White Rock and Sapphire wind turbines are limited and largely restricted by landform and tree cover between the wind farm sites. In addition to the individual residential visual impacts (Refer Table 14), indirect cumulative visual impact would be low.	N/A
Residences (R67 to R78) Residential dwellings north of White Rock wind farm and east of the Sapphire wind farm.	Direct views are largely restricted by tree cover and landform surrounding residential dwellings to the east of the Sapphire wind farm. In addition to the individual residential visual impacts	Indirect views toward the White Rock and Sapphire wind turbines are generally limited by landform and tree cover between the wind farm sites. In areas where indirect views may occur, the overall	N/A

Table 18 White Rock and Sapphire wind farm intervisibility

View Location	View description between the White Rock and Sapphire wind farms		
	'Direct' Views	'Indirect' Views	'Sequential' Views
	(Refer Table 14), direct cumulative visual impact would be low.	indirect impact is likely to be low due to partial and filtered views by scattered tree cover. In addition to the individual residential visual impacts (Refer Table 14), indirect cumulative visual impact would be low.	
Residences (R62 to R65) Residential dwellings north of White Rock wind farm and south east of Sapphire wind farm.	Limited potential for direct views due to tree cover surrounding residences and the visual separation of turbines. In addition to the individual residential visual impacts (Refer Table 14), direct cumulative visual impact would be low.	Indirect views would extend toward turbines within the north portion of the White Rock and south east portion of the Sapphire wind farms (as well as turbines within the Glen Innes wind farm).	N/A
Residences (R1 to R11 and R66) Residences north east of the White Rock wind farm and south east of the Sapphire wind farm.	Direct views toward the Sapphire wind farm are partially screened by landform rising toward the main White Rock ridgeline. In addition to the individual residential visual impacts (Refer Table 14), direct cumulative visual impact would be low and nil for views blocked by landform.	Indirect views would extend toward turbines within the north portion of the White Rock and south east portion of the Sapphire wind farms (as well as turbines within the Glen Innes wind farm).	N/A
Gwydir Highway	The White Rock and Sapphire turbines are located north and south of the Highway and separated by approximately 4.5km. The direction of travel is generally perpendicular to the wind farms and would minimise potential and	Refer to sequential view.	A sequential view would occur along the Gwydir Highway, including distant and short distance views toward turbines within both wind farm developments.

Table 18 White Rock and Sapphire wind farm intervisibility

View Location	View description between the White Rock and Sapphire wind farms		
	'Direct' Views	'Indirect' Views	'Sequential' Views
	<p>duration for 'direct' views.</p> <p>In addition to the visual impact determined for motorists travelling along the Gwydir Highway (Refer Table 14), the direct cumulative visual impact would be low.</p>		<p>In addition to the visual impact determined for motorists travelling along the Gwydir Highway (Refer Table 15), the sequential cumulative visual impact would be low.</p>
Local Roads	<p>People travelling in vehicles along the majority of local roads would not experience direct views toward the White Rock and Sapphire wind farm turbines. This is largely due to direction of travel relative to the wind farm layouts as well as screening by landform and tree cover.</p> <p>In addition to the visual impact determined for motorists travelling along local roads (Refer Table 15), the direct cumulative visual impact would be low.</p>	Refer to sequential view.	<p>Sequential views from local roads would occur for a relatively short duration of time within the White Rock 10km view shed.</p> <p>In addition to the visual impact determined for motorists travelling along local roads (Refer Table 15), the sequential cumulative visual impact would be low.</p>

9.5 White Rock and Glen Innes wind farm intervisibility

The potential for the White Rock wind farm turbines to be visible from various view locations together with the Glen Innes wind farm turbines are considered in **Table 19**.

Table 19 White Rock and Glen Innes wind farm intervisibility

View Location	View description between the White Rock and Glen Innes wind farms		
	'Direct' Views	'Indirect' Views	'Sequential' Views
Residences (R1 to R11 and R62 to R66) Residences north and	Direct views toward both wind farms are limited by the relative position of residences to the turbines and separation	Indirect views would extend toward turbines within the White Rock and Glen Innes wind farms (as well as	N/A

Table 19 White Rock and Glen Innes wind farm intervisibility

View Location	View description between the White Rock and Glen Innes wind farms		
	'Direct' Views	'Indirect' Views	'Sequential' Views
north east of the White Rock wind farm and east to south east of the Glen Innes wind farm.	<p>distance between them.</p> <p>In addition to the individual residential visual impacts (Refer Table 14), direct cumulative visual impact would be nil to low for the majority of these residential dwellings.</p>	turbines within the Sapphire wind farm).	
Residences (R14 to R18) Residences north east of White Rock wind farm and south east of Glen Innes wind farm.	<p>Direct views toward both wind farms are limited by the relative position of residences to the turbines and separation distance between them.</p> <p>In addition to the individual residential visual impacts (Refer Table 14), direct cumulative visual impact would be nil to low for the majority of these residential dwellings.</p>	Indirect views would extend toward turbines within the White Rock and Glen Innes wind farms.	N/A
Residences (R80 to R88) Residences north east of Glen Innes wind farm.	<p>Views toward the White Rock wind farm are largely blocked by landform rising to the Waterloo Range ridgeline. Views extend toward the Glen Innes wind farm, but there would be limited opportunity for views toward the White Rock turbines.</p> <p>In addition to the individual residential visual impacts (Refer Table 14), direct cumulative visual impact would be nil or low for the majority of these residential dwellings.</p>	Indirect views are largely restricted by landform ridgeline of the Waterloo Range blocking views toward the White Rock wind farm.	N/A
Residences (R89 to R96)	Limited and partially restricted views toward the White Rock	Indirect views would extend toward turbines within the	N/A

Table 19 White Rock and Glen Innes wind farm intervisibility

View Location	View description between the White Rock and Glen Innes wind farms		
	'Direct' Views	'Indirect' Views	'Sequential' Views
Residences within and to the east of the Furracabad Valley.	<p>wind farm beyond the Glen Innes wind farm visible along the Waterloo Range ridgeline.</p> <p>In addition to the individual residential visual impacts (Refer Table 14), direct cumulative visual impact would be nil or low for the majority of these residential dwellings.</p>	<p>White Rock and Glen Innes wind farms. Views toward the White Rock turbines would tend to be beyond 5km and restricted to a small number of turbines in the east portion of the site.</p>	
Gwydir Highway	<p>Direct views from the Gwydir Highway toward the White Rock and Glen Innes wind farm turbines are largely limited and restricted by local landform features and tree cover, as well the orientation of turbines along ridgelines relative to the direction of travel.</p> <p>There would be a limited section of the Highway from which views toward the north portion of the White Rock wind farm and Glen Innes wind farm would be directly visible.</p> <p>In addition to the visual impact determined for motorists travelling along the Gwydir Highway (Refer Table 15), the direct cumulative visual impact would be low.</p>	<p>Refer to sequential view.</p>	<p>Sequential views would occur from vehicles travelling in east and west bound directions. Sequential views would be subject to some separation by roadside tree cover and occur over a distance around 5km in length.</p> <p>In addition to the visual impact determined for motorists travelling along the Gwydir Highway (Refer Table 15), the sequential cumulative visual impact would be low.</p>
Local roads	<p>People travelling in vehicles along the majority of local roads would not experience direct views toward the White Rock and Glen Innes wind farm turbines. This is largely due to direction of travel relative to the wind farm</p>	<p>Refer to sequential view.</p>	<p>Sequential views from local roads would occur for relatively short durations of time within the White Rock 10km view shed.</p> <p>In addition to the</p>

Table 19 White Rock and Glen Innes wind farm intervisibility

View Location	View description between the White Rock and Glen Innes wind farms		
	'Direct' Views	'Indirect' Views	'Sequential' Views
	<p>layouts as well as screening by landform and tree cover.</p> <p>In addition to the visual impact determined for motorists travelling along local roads (Refer Table 15), the direct cumulative visual impact would be low.</p>		<p>visual impact determined for motorists travelling along local roads (Refer Table 15), the sequential cumulative visual impact would be low.</p>

9.6 White Rock and Ben Lomond wind farm intervisibility

The potential for the White Rock wind farm turbines to be visible from various view locations together with the Ben Lomond wind farm turbines are considered in **Table 20**.

Table 20 White Rock and Ben Lomond wind farm intervisibility

View Location	View description between the White Rock and Ben Lomond wind farms		
	'Direct Views'	'Indirect' Views	'Sequential' Views
<p>Residences (R99 to 102b)</p> <p>Residences west of the White Rock wind farm and north to north east of the Ben Lomond wind farm.</p>	<p>Views toward the White Rock wind turbines are blocked by landform.</p> <p>In addition to the individual residential visual impacts (Refer Table 14), direct cumulative visual impact would be nil for the majority of these residential dwellings.</p>	<p>Indirect views between the White Rock and Ben Lomond wind farms are blocked by landform.</p>	N/A
<p>Residences (R103 to R109)</p> <p>Residences south east of White Rock wind farm and north east of the Ben Lomond.</p>	<p>Direct views toward White Rock and Ben Lomond wind turbines are limited by landform and separation distance between turbines.</p> <p>In addition to the individual residential visual impacts (Refer Table 14), direct cumulative visual impact would be low.</p>	<p>Indirect views toward wind turbines within both wind farm developments are partially restricted by landform and vegetation.</p> <p>Views toward the White Rock turbines would tend to be beyond 5km and restricted to a small number of turbines in the east portion of the site.</p>	N/A

Table 20 White Rock and Ben Lomond wind farm intervisibility

View Location	View description between the White Rock and Ben Lomond wind farms		
	'Direct Views'	'Indirect' Views	'Sequential' Views
Residences (R22 to R27, R45 to R48 and R52 to R53) Residences to the south and south east of White Rock wind farm and north of the Ben Lomond wind farm.	Residential dwellings are located between the two wind farms limiting the potential for direct views. In addition to the individual residential visual impacts (Refer Table 14), direct cumulative visual impact would be nil.	Indirect views toward wind turbines within both wind farm developments are partially restricted by landform and vegetation.	N/A
New England Highway	There are unlikely to be direct views available toward the White Rock and Ben Lomond wind farm turbines from vehicles travelling along the New England Highway.	Refer to sequential view.	Sequential views from vehicles travelling along the New England Highway are unlikely to incorporate views toward the White Rock wind farm due to screening by ridgeline landform and vegetation.
Local roads	Views from vehicles travelling along the majority of local roads would not include direct views toward the White Rock and Glen Innes wind farm turbines. This is largely due to direction of travel relative to the wind farm layouts as well as screening by landform and tree cover. In addition to the visual impact determined for motorists travelling along local roads (Refer Table 15), the direct cumulative visual impact would be low.	Refer to sequential view.	Sequential views from local roads would occur for relatively short durations of time within the White Rock 10km view shed. In addition to the visual impact determined for motorists travelling along local roads (Refer Table 15), the sequential cumulative visual impact would be low.