

# Appendix J

Landscape and Visual Impact Assessment

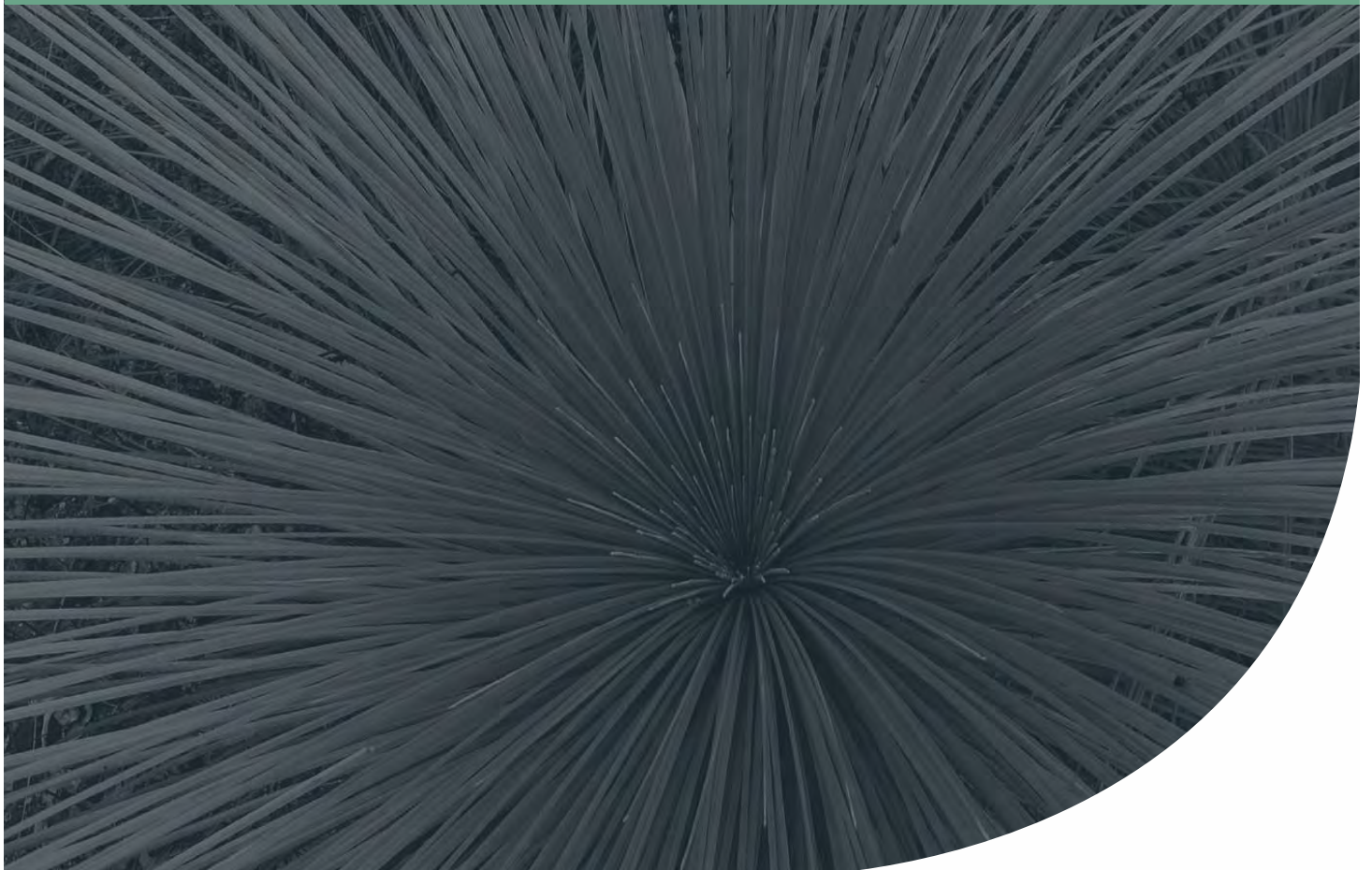


# Stage 2 Visual Impact Assessment

Parron Wind Farm Development

Project No: EP23-085(14)

**Prepared for Zephyr Energy Pty Ltd  
October 2024**



# Stage 2 Visual Impact Assessment

## Parron Wind Farm Development



## Document Control

<b>Doc name:</b>	Stage 2 Visual Impact Assessment Parron Wind Farm Development				
<b>Doc no.:</b>	EP23-085(14)—026a EKB				
Version	Date	Author	Reviewer		
1	September 2024	Emma Bentley	EKB	Kirsten Knox	KK
	Report issued for client comment.				
A	October 2024	Emma Bentley	EKB	Jason Hick	JDH
	Minor amendments and reissued to client.				

© 2024 Emerge Associates All Rights Reserved. Copyright in the whole and every part of this document belongs to Emerge Associates and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person without the prior written consent of Emerge Associates.

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



## Executive Summary

Zephyr Energy Pty Ltd ('the proponent') are proposing the Parron Wind Farm Development in the Badgingarra and Hill River localities, Western Australia. A Landscape Visual Impact Assessment (VIA) has been prepared to support the proposed development of the 79 wind turbine generators (turbines) (herein referred to as 'the project'). This builds on the work completed to support Stage 1 of the project (54 turbines, and includes 32 turbines with existing approvals), which was recently submitted to the Shire of Dandaragan, as well as earlier work undertaken by GHD (2008).

The VIA includes the following:

- A viewshed analysis for the 79 turbines, based on both average and maximum hub height of 150 m and 170 m respectively, as well as a blade length of 80 m. The viewshed analysis is based on assessing the 'seen' areas using topography only, to understand whether the turbines are likely to be visible. The available 2 m contours from the Department of Primary Industries and Regional Development (DPIRD) formed the basis for the assessment. The assessment provided a categorised analysis, showing number of turbines that could be visible from any given location within 20 km of the project.
- A site assessment, to ground truth the landscape features and character at locations of predicted visibility from the viewshed analysis (with a particular focus on areas with higher numbers of turbines predicted to be visible), and to capture appropriate photography (in accordance with the Western Australian Planning Commission *Visual Landscape Planning in Western Australia Manual* (2007) to be used in the preparation of photomontages. This included revisiting the GHD (2008) assessment locations as per consultation with the Shire of Dandaragan, as well as additional locations around the broader area, with a total of 36 locations reviewed.
- Preparation of photomontages for 10 selected viewpoints (5 GHD viewpoints and 5 additional viewpoints). The viewpoints prioritised (particularly outside the GHD viewpoints) were along roads, travel stops and attractions (e.g. around Badgingarra Roadhouse) to capture the areas likely to be most used by locals and travellers, and where amenity could be impacted. The photomontages were prepared using a 3D block model, with all relevant features geolocated and to actual size. The output from the block model was then applied to the photography captured during the site visit. This created a realistic image of anticipated changes to the landscape character.
- Outline of the assessed visual impact, particularly with consideration to the current land characteristics and the addition of further turbines.

The assessment found that the 79 turbines will be visible from various locations to different extents. The existing landscape provides high and low ridges which screen or display individual turbines at different points in the landscape. Vegetation along some of the major roads is tall enough to screen views of the turbines at some locations. The turbines will be most visible in high points of the landscape where natural screening from hills (landform) is reduced.

Similar to previous assessments, and given the current extent of wind turbines in the area, the visual impacts are overall expected to be marginal, and the turbines 'fit' well into the existing landscape and context. However at a number of locations to the east of the site, the project will introduce

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



turbines where these were not previously visible (or where only limited were visible). At some viewpoints, only the blades are likely to be visible, while at other locations the whole turbine is likely to be visible.

The viewpoints progressed to photomontages (noting 'new' indicates photomontages that are in addition to those presented as part of the 54 turbine proposal assessment) included:

- **Pinnacles Lookout - Viewpoint 2 (GHD 6).** Existing turbines are visible in the far distance from the lookout (and generally only if a viewer was looking for them) and relate to turbines assessed by GHD (2008), which are now implemented. The project would make no discernible difference to the scale or volume of turbines visible at this location (or the Pinnacles in general).
- **Cervantes Road - Viewpoint 6 (GHD 5).** Turbines are visible in the distance on the horizon and relate to turbines assessed by GHD (2008) but are now implemented. The project would make no discernible difference to the scale or volume of turbines visible, particularly at this distance. Most of the turbines from the site would only be partially visible due to the existing ridgeline, with existing turbines prominently located on the horizon.
- **Bibby road (west) - Viewpoint 9 (GHD 1).** Existing turbines are prominently visible in the foreground, midground and distance, along with existing large powerlines. The turbines visible were assessed by GHD (2008) but are now implemented. The turbines from the project are located more in the distance and would make no discernible difference to the scale or volume of turbines visible along the road at this location (or nearby).
- **Jurien Road - Viewpoint 19 (new).** This location is more than 13 km from the site and is one of the few locations along Jurien Road which provides an open view towards the site. Existing turbines are visible along the horizon at the top of the far ridge/hill line, with remnant vegetation and cleared paddocks interspersed from the foreground to the horizon. The extent of the horizon with turbines at this viewpoint would increase with the implementation of the project, with more turbines visible to the left of the photo but would be similar to the current viewer experience.
- **Springhill Road - Viewpoint 20 (GHD 4).** A small portion of the existing turbines to the west are visible in the photo frame (but otherwise are a prominent feature in the landscape extending further west, particularly at distance on the horizon). The project would extend the turbines visible to the north (left of the photo) but would not significantly change the current viewer experience. Observations during the site visit were in line with the predicted outcomes by GHD (2008).
- **Nylagarda Road - Viewpoint 25 (GHD 3).** Turbines and large powerlines are visible in the distance both in the mid-ground and along the horizon. The powerlines provide a strong linear feature that is fairly prominent across the landscape. The visible turbines were assessed by GHD (2008) but are now implemented. The turbines from the project will extend these features further to the east (left of photo) and closer to the viewer at this location than currently, but do not significantly change the viewer experience, particularly given the power lines that are visible in the mid-ground.
- **Cantabilling Road - Viewpoint 28 (new).** Currently, no turbines or powerlines are visible at this location due to the existing natural ridgeline (rolling hills). Portions of the turbines will be visible (predominantly portions of the blade) in the mid-ground, breaking the horizon but visibility of the 'whole' turbine is largely screened by the natural ridge. Turbines will be visible

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



to the south-east (left of photo) where the views open up, but the Emu Downs Wind Farm is visible on the horizon in the far distance. While the visibility of turbines would potentially change for residences to the north-east of the project, the existing ridge is likely to screen large portions of the turbines.

- **Brand Highway - Viewpoint 30 (new).** This viewpoint is near the intersection with Watheroo Road, with 1-2 m high heath vegetation present in the foreground and cleared paddocks interspersed with linear lines of remnant vegetation present in the mid ground. The project area is in the distance, on the ridgeline along the horizon. Existing turbines ‘peep’ over the horizon line in the immediate view, but are not seen fully, with more turbines visible to the left of the viewpoint. The project would increase the number of turbines fully visible at this location along Brand Highway. The turbines would be more prominent than the current turbines visible at this location. The ridgeline will screen some of the turbines, but not all.
- **Badgingarra town - Viewpoint 34 (new).** Viewpoint 34 was purposely taken at a high point in the landscape and is located away from the main travellers stop, Badgingarra road house and in front of existing residences. Due to the topography, Badgingarra road house was not predicted to have visibility of many, if any turbines, given it is a low point in the landscape and the ridge with Badgingarra National Park blocks most views of the project. Currently, no turbines or other existing infrastructure (powerlines etc.) are visible at the viewpoint, with Brand Highway and town buildings and facilities interspersed by vegetation present in the foreground, and Badgingarra National Park is prominent in the mid-ground. Cleared agricultural land (the site) is visible on the horizon in the distance. The project will result in visible turbines in the distance at the horizon, and while this will be a different outlook for existing residents, it will not likely have any discernible impact on travellers to any great extent given the visibility of turbines on the horizon along the travel route.
- **Bibby road (east) - Viewpoint 35 (new).** The viewpoint by Emerge Associates is slightly to the right of the photo by GHD (to focus better on the project), so only a small portion of the existing turbines to the west and south are visible in the photo frame (but otherwise are a prominent feature in the landscape, particularly in the mid-ground breaking the horizon). The project would extend the turbines visible to the north (right of the photo) but are located more distant to a viewer compared to the existing turbines. The project is not likely to significantly change the current viewer experience driving along Bibby Road in a westerly direction.

Overall, the predicted outcomes from the project were similar to that predicted as part of previous assessments (GHD 2008; Emerge Associates 2024). The 79 turbine proposal is not significantly different to the 54 turbine proposal. The greatest change in viewer experience will be from the east along Brand Highway and Cantabilling Road.

While views will change compared to the existing conditions, with no turbines currently constructed in the project area, as demonstrated by Viewpoint 28, Viewpoint 30 and Viewpoint 34 (more with the introduction of the 54 turbines proposal, which has been considered previously), travellers using both Cantabilling Road and Brand Highway will have views of existing turbines and powerlines over longer distances (up to at least 15 km away in some locations) as strong linear or grouped features. The project will not substantially change the scale or intensity compared to the existing infrastructure visible over a longer driving distance. Residents within Badgingarra townsite (e.g.

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



above the roadhouse) will likely experience different views to current conditions, with turbines predicted to be visible on the distant horizon.

# Stage 2 Visual Impact Assessment

## Parron Wind Farm Development



## Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Background .....	1
1.2	Purpose and scope .....	1
1.3	Applied method .....	1
1.4	Planning context .....	3
1.4.1	Previous approvals .....	3
1.4.2	Visual Landscape Planning in Western Australia .....	3
1.4.3	State Planning Policies .....	3
1.4.4	Local planning scheme .....	4
1.4.5	Local planning strategy .....	4
1.4.6	Position statement: renewable energy facilities.....	5
<b>2</b>	<b>Outline of the Proposed Development .....</b>	<b>6</b>
<b>3</b>	<b>Previous Assessments.....</b>	<b>8</b>
<b>4</b>	<b>Existing Landscape Character .....</b>	<b>10</b>
4.1	Site and region context .....	10
4.2	Landscape character type .....	10
4.3	Landscape character units .....	12
4.3.1	Rural landscape .....	13
4.3.2	Natural landscape .....	16
<b>5</b>	<b>Principles and Objectives for Assessment.....</b>	<b>18</b>
5.1	Visual landscape objectives .....	18
<b>6</b>	<b>Landscape Visual Impact Assessment.....</b>	<b>19</b>
6.1	Viewshed analysis .....	19
6.2	Field assessment .....	20
6.3	Viewpoint analysis .....	22
6.4	Photomontages.....	22
6.4.1	Viewpoint 2 (GHD 6) – Pinnacles Desert .....	24
6.4.2	Viewpoint 6 (GHD 5) - Cervantes Road .....	26
6.4.3	Viewpoint 9 (GHD 1) – Bibby Road (west).....	28
6.4.4	Viewpoint 19 - Jurien Road .....	30
6.4.5	Viewpoint 20 (GHD 4) – Springhill Road.....	32
6.4.6	Viewpoint 25 (GHD3) – Nylagarda Road .....	34
6.4.7	Viewpoint 28 – Cantabilling Road .....	36
6.4.8	Viewpoint 30 - Brand Highway.....	38
6.4.9	Viewpoint 34 – White Drive, Badgingarra.....	40
6.4.10	Viewpoint 35 - Bibby Road (east).....	42
6.5	Cross-sections .....	44
6.6	Other considerations .....	47
6.6.1	Shadow flicker .....	47
6.6.2	Blade glint .....	47
<b>7</b>	<b>Conclusion.....</b>	<b>48</b>
<b>8</b>	<b>References .....</b>	<b>49</b>

# Stage 2 Visual Impact Assessment

## Parron Wind Farm Development



## List of Plates

Plate 1: Visual landscape planning process .....	2
Plate 2: Components of a wind turbine (adapted from Aurecon (2024a)). .....	7
Plate 3: Representative views residents experience from Badgingarra town.....	13
Plate 4: Views of the rural landscape character unit experienced within the site.....	14
Plate 5: Rural landscape character within the site .....	15
Plate 6: Rural landscape character with native heath vegetation.....	15
Plate 7: Views of cleared paddocks with existing buildings on the horizon. ....	16
Plate 8: Native vegetation located within Lesueur National Park .....	17
Plate 9: Native vegetation located within Badgingarra National Park .....	17
Plate 10: Viewpoint 2 (GHD 6) - Pinnacles Desert .....	25
Plate 11: Viewpoint 6 (GHD 5) - Cervantes Road .....	27
Plate 12: Viewpoint 9 (GHD 1) – Bibby Road (west).....	29
Plate 13: Viewpoint 19 – Jurien Road.....	31
Plate 14: Viewpoint 20 (GHD4) – Springhill Road.....	33
Plate 15: Viewpoint 25 (GHD3) – Nylagarda Road .....	35
Plate 16: Viewpoint 28 – Cantabilling Road .....	37
Plate 17: Viewpoint 30 – Brand Highway .....	39
Plate 18: Viewpoint 34 – White Drive, Badgingarra.....	41
Plate 19: Viewpoint 35 - Bibby Road (east).....	43
Plate 20: Section A – Viewpoint 6 to Viewpoint 34.....	45
Plate 21: Section B – Viewpoint 9 to Viewpoint 28.....	46

## Figures

- Figure 1: Site Location and Proposed Development Layout
- Figure 2: Landscape Character Types and Soil Landscape Systems
- Figure 3: Landscape Character Units
- Figure 4: Viewshed analysis - Visible and Non-Visible based on 230 m Top of Blade Height
- Figure 5: Viewshed Analysis - Predicted Number of Visible Turbines based on 150 m Hub Height
- Figure 6: Viewshed Analysis - Predicted Number of Visible Turbines based on 170 m Hub Height
- Figure 7: Viewshed Analysis - Predicted Number of Visible Turbines based on 230 m Top of Blade Height
- Figure 8: Viewshed Analysis - Predicted Number of Visible Turbines based on 250 m Top of Blade Height

## Appendices

### Appendix A

Proposed Development Layout (Aurecon 2024b)

### Appendix B

GHD (2008) Figures Excerpt

### Appendix C

Viewpoint Data

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



## Abbreviation Tables

Table A1: Abbreviations – General terms

General terms	
DA	Development application
LPS	Local Planning Scheme
VIA	Visual impact assessment

Table A2: Abbreviations – Organisations

Organisations	
DBCA	Department of Biodiversity Conservation and Attractions
SoD	Shire of Dandaragan
DPLH	Department of Planning Lands and Heritage
WAPC	Western Australian Planning Commission

Table A3: Abbreviations – units of measurement

Units of measurement	
cm	Centimetre
ha	Hectare
m	Metre
m <sup>2</sup>	Square metre
mm	Millimetre
MW	Megawatt
RPM	Rotations per minute

Table A4: Key definitions

Key definitions	
Cross-section	Vertical profiles through a portion of the landscape. Cross-sections help to illustrate the relationship between landform and other landscape characteristics such as vegetation cover and land use.
Photomontage	Computer simulated images of a proposed development using the original photo as a base, to assess changes to the visual landscape.
Viewshed or seen area analysis	The land visible from a point or a series of points. Viewshed analysis identifies an area of landscape that would be visible assuming no vegetation cover or built structures, based on the height of the proposed development compared to the existing landform (topography).

# Stage 2 Visual Impact Assessment

## Parron Wind Farm Development



## 1 Introduction

### 1.1 Background

Zephyr Energy Pty Ltd ('the proponent') are proposing the Parron Wind Farm Development in the Badgingarra and Hill River localities, Western Australia (herein referred to as 'the project'). The project is located on approximately 8,392 ha of land across a number of land parcels, and is located within the Shire of Dandaragan (SoD), approximately 180 km north of Perth Central Business District CBD and 7.5 km west of Badgingarra town (herein referred to as 'the site'). The site location is shown in **Figure 1** and is generally bounded by Badgingarra National Park to the south and existing rural properties to the north, east and west, with Brand Highway located 2 km to 6 km east of the site. Nambung National Park (which includes the Pinnacles Desert, a popular tourist location), is located approximately 30 km to the south-west of the site.

The project has been subject to development approval (DA) that has been renewed a number of times over the years. Development approval (DA) was granted in June 2019 for a wind farm development in the site, based on a revised proposal following partial implementation of the original DA in other landholdings.

### 1.2 Purpose and scope

Emerge Associates (Emerge) were engaged by the proponent to undertake the Stage 1 hybrid Visual Impact Assessment (VIA), and then the Stage 2 VIA (this document) to support the proposed development. This VIA addresses the Stage 2 VIA and aims to assess visual impacts from the 54 turbines (Stage 1) to the 79 turbines (Stage 2).

The VIA prepared for the 79 turbine project (this Stage 2 Visual Impact Assessment) includes the following:

- An outline of the relevant state and local planning and policy framework (**Section 0**)
- An outline of the project (**Section 2**).
- A summary of the key findings of the assessment completed by GHD (2008) and Emerge Associates (2024), considering the requirements of the Western Australian Planning Commission's (WAPC) *Visual Landscape Planning in Western Australia Manual* (WAPC 2007) (Visual Landscape Manual) (**Section 3**).
- Identifies the existing visual landscape characteristics of the site and surrounds (prior to any works) and identifies visual landscape objectives (**Section 4**).
- Assessment of visual impacts from the project, through viewshed analysis, field assessment, photomontages and cross-sections to identify key views of the site (**Section 5**).

### 1.3 Applied method

The preparation of this VIA has been undertaken in consideration of the method outlined within the Western Australian Planning Commission's (WAPC) *Visual Landscape Planning in Western Australia Manual* (WAPC 2007) (Visual Landscape Manual) with consideration of the state planning framework requirements. An outline of the visual landscape planning process is shown in **Plate 1**.

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development

Steps regarding management and mitigation measures in the assessment process have not been applied (**Plate 1**). The previous assessment (and approved visual impact, given the approval of the DA) identified that it is not possible to mitigate the turbines (unless at receptors) due to their size and scale. As such, visual impact has been considered in this context, and if the predicted visual outcomes from the project (79 turbines) would be significantly different compared to that assessed by GHD (2008) and Emerge Associates (2024).

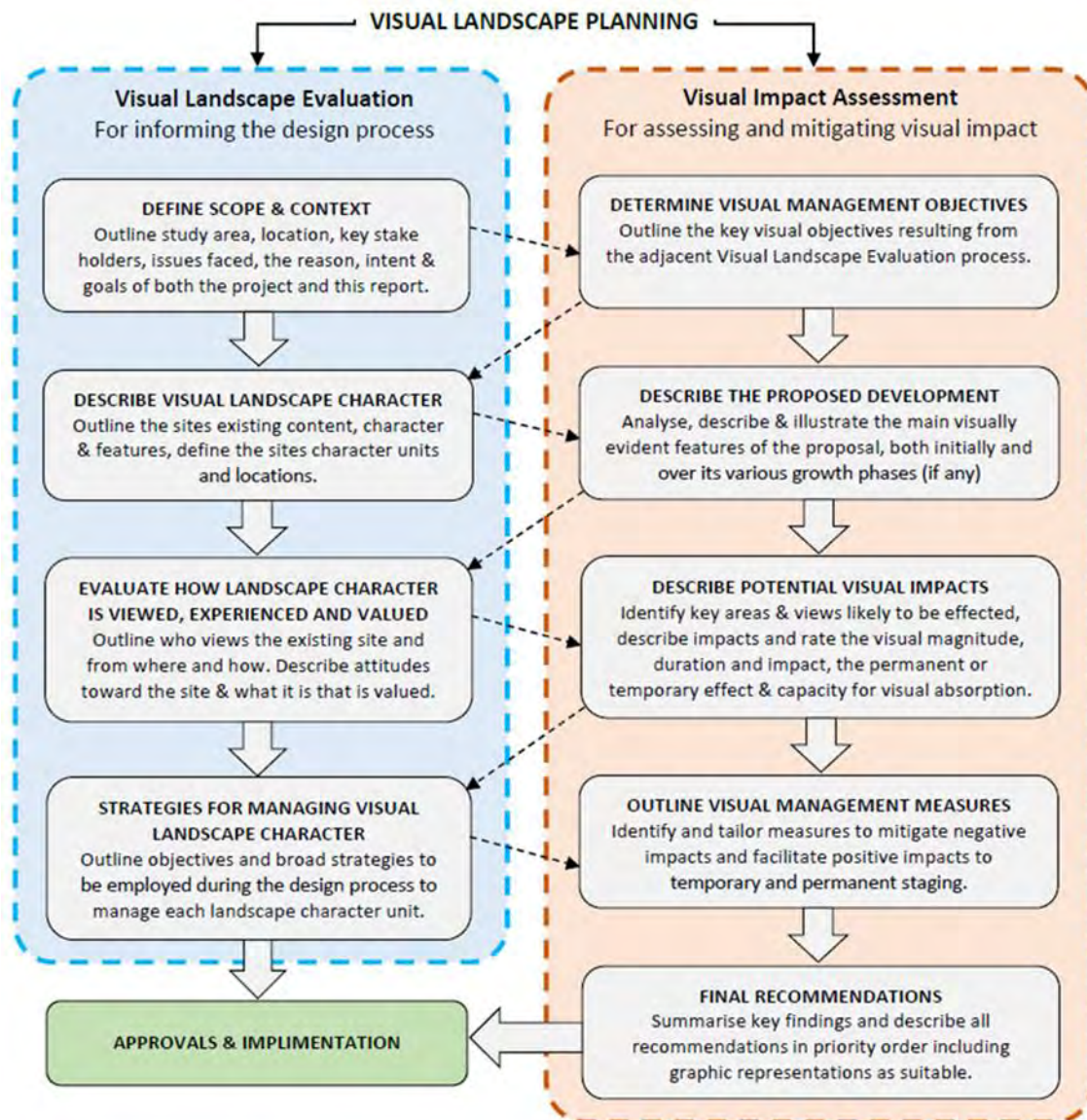


Plate 1: Visual landscape planning process as outlined within Visual Landscape Planning in Western Australia Manual (WAPC 2007)

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 1.4 Planning context

##### 1.4.1 Previous approvals

The project was originally included in the environmental assessments and approvals for the Badgingarra Wind Farm, which is located to the immediate west of the site. The Badgingarra Wind Farm has been operational since 2019, however the turbines in the site included in that proposal were not progressed at the time.

The SoD granted development approval for the project at the Ordinary Meeting of Council held on 27 June 2019 (for 32 turbines). The Council recognised 'Parron Wind Farm' as the title for the turbines to be constructed upon the following lots, which encompass the site:

- Lot 3738 Cowalla Road
- Lot 3739 Cadda Road
- Lot 3742 Yerramullah Road
- Lot 3743 Yerramullah Road
- Lot 3744 Yerramullah Road.

The SoD granted approval to increase the number of turbines of the Parron Wind Farm (the project) to 54 in September 2022, with a final determination pending an updated VIA and noise assessment. The visual impact considerations were addressed in the Stage 1 VIA (Emerge Associates 2024), which has been submitted to the Shire of Dandaragan. The project now proposes to include a total of 79 turbines and as such, this VIA addresses the additional turbines and associated visual impacts.

##### 1.4.2 Visual Landscape Planning in Western Australia

The Visual Landscape Manual (WAPC 2007) is a manual that has been developed to guide state agencies, local governments, developers and the community on techniques for incorporating visual landscape planning into the planning system. The manual explains fundamental planning tools of visual landscape evaluation and visual impact assessment (WAPC 2007). It provides guidelines for siting and design in relation to a range of landscape types and land uses, including development proposals. As discussed in **Section 1.3** above, the methodology for this VIA generally follows the guidance set out in the manual.

##### 1.4.3 State Planning Policies

*State Planning Policy 2.5 Rural Planning* (SPP 2.5) is relevant to the site (WAPC 2016) and states the following objectives of the policy:

- (a) support existing, expanded and future primary production through the protection of rural land, particularly priority agricultural land and land required for animal premises and/or the production of food;*
- (b) provide investment security for existing, expanded and future primary production and promote economic growth and regional development on rural land for rural land uses;*
- (c) outside of the Perth and Peel planning regions, secure significant basic raw material resources and provide for their extraction;*

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



- (d) provide a planning framework that comprehensively considers rural land and land uses, and facilitates consistent and timely decision-making;*
- (e) avoid and minimise land use conflicts;*
- (f) promote sustainable settlement in, and adjacent to, existing urban areas; and*
- (g) protect and sustainably manage environmental, landscape and water resource assets.*

Rural land use includes uses that are rural in nature and that support or are associated with natural resource management. SPP 2.5 acknowledges the use of renewable energy sources, including wind in a rural setting (WAPC 2016). Rural land uses are able to co-exist with wind farm developments. Landscapes and views are to be protected to ensure rural amenity is maintained.

#### 1.4.4 Local planning scheme

The SoD Local Planning Scheme No. 7 (LPS7) is applicable to the site. Part 3 of LPS7 describes the zones and associated land uses, with the site zoned 'rural'. The objectives of 'rural' land is:

*"To provide for a range of rural activities such as broadacre and diversified farming so as to retain the rural character and amenity of the locality, in such a way as to prevent land degradation and further loss of biodiversity".*

A wind farm use is not specified within LPS7 and as such clause 3.4.2 applies, which states:

*"If a person proposes to carry out on land any use that is not specifically mentioned in the Zoning Table and cannot reasonably be determined as falling within the type, class or genus of activity of any other use category the local government may:*

- a) determine that the use is consistent with the objectives of the particular zone and is therefore permitted;*
- b) determine that the use may be consistent with the objectives of the particular zone and thereafter follow the advertising procedures of clause 64 of the deemed provisions in considering an application for development approval; or*
- c) determine that the use is not consistent with the objectives of the particular zone and is therefore not permitted".*

#### 1.4.5 Local planning strategy

The SoD Local Planning Strategy identifies the site as part of a broader area containing wind farm development, as shown on Figure 1 and Figure 2 (of that report) (Shire of Dandaragan 2020), and approximately on **Figure 3** of this report.

Section 6.8 of the Local Planning Strategy states the below purpose of rural zoned land:

*"The purpose of the Rural zone is to provide for the sustainable use of rural land which primarily accommodates a range of rural pursuits compatible with the capability of the land and which retains the rural character and amenity of the locality within the Shire for future generations"*

Section 10.4.3 of the Local Planning Strategy discusses the need to address land use changes, including wind farm developments, and that landscape character should be assessed in line with the Visual Landscape Manual (WAPC 2007; Shire of Dandaragan 2020) and the Western Australian Planning Commission (2020) *Position Statement on Renewable Energy Facilities*.

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 1.4.6 Position statement: renewable energy facilities

The Western Australian Planning Commission's (WAPC) Position Statement: Renewable energy facilities (WAPC 2020), outlines the WAPC requirements to support the consistent consideration and provision of renewable energy facilities within Western Australia (WAPC 2020). The position statement objectives are to:

- *“Guide the establishment of renewable energy facilities to support the State Energy Transformation*
- *Outline key planning and environmental considerations for the location, siting and design of renewable energy facilities*
- *Promote the consistent consideration and assessment of renewable energy facilities*
- *Facilitate appropriate development of renewable energy facilities while minimising any potential impact upon the environment, natural landscape, and urban areas*
- *Encourage informed public engagement early in the renewable energy facility planning process.”*

The position statement suggests consideration to local planning strategies (for areas that indicate subject site suitability), SPP 2.5 (to consider integration of rural land uses and renewable energy facilities) and the Visual Landscape Manual (WAPC 2007) (for detailed guidance on VIA). More specifically, Section 5.3.3 of the position statement addresses visual and landscape impact and states:

*“The location and siting of a renewable energy facility may require a visual and landscape impact assessment that addresses:*

- *landscape significance and sensitivity to change, site earthworks, topography, extent of cut and fill, the extent and type of vegetation, clearing and rehabilitation areas, land use patterns, built form character, public amenity and community values*
- *likely impact on views including the visibility of the facility using view shed analysis and simulations of views from significant viewing locations including residential areas, major scenic drives and lookouts*
- *layout of the facility including the number, height, scale, spacing, colour, surface reflectivity and design of components, including any ancillary buildings, signage, access roads, and incidental facilities*
- *measures proposed to minimise unwanted, unacceptable or adverse visual impacts.*

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



## 2 Outline of the Proposed Development

The site is approximately 8,392 ha and the proposed development layout of the project considered as part of this VIA is provided in **Figure 1** and **Appendix A**.

The project comprises the following:

- 79 wind turbine generators likely to be of variable height, and discussed in further detail below.
- Permanent land uses (shown as ‘ancillary infrastructure on **Figure 1**) such as:
  - A power substation with a nominated capacity of 200m x 210m bench size for up to 489.8 megawatt (MW), which will have security fencing comprising galvanised chain wire mesh fence with barbed wire for a total fence height of 3 m.
  - A switching station which is required for connecting into the existing transmission line. Approximate spatial dimensions are 150 m in width and 200 m in length.
  - An operations and maintenance facility, which will include an office building and storage (compound) area. Security fencing (3 m-high galvanised chain wire mesh fence with barbed wire) will be provided around this facility.
  - Overground and underground electrical reticulation cabling requirements, which will be co-located within the internal access tracks.
  - Internal access tracks composed of crushed rock pavements over earth fill subbase. The tracks are likely to be 5.5 m wide with a 0.5 m shoulder each side and additional 2.5 m-wide area for cable installation.
- Temporary land uses associated with construction (shown as ‘ancillary infrastructure on **Figure 1**) including:
  - Laydown area including turbine and blade hardstand, which will be used to store infrastructure ahead of installation.
  - Three (3) temporary concrete batching plants, with a footprint of approximately 100 m x 100 m in size. These will be operated at different points of the site, to support the installation of the turbines.
  - Temporary construction infrastructure and facilities including site offices, construction camps, ablutions, power and water supply, storage/laydown, parking and access points.

Outside of the turbines, all other infrastructure will be at ground (e.g. roads and laydown areas) or low in height (site compound buildings, operations office), aligned with typical single storey construction. These features have not been assessed by the VIA given they will not be visible to any discernible extent given the scale of the site, and location generally more than 200 m to 300 m from public roads.

The key features of a wind turbine are illustrated in **Plate 2** below. The turbine design for the project is based on a Vestas V162 – 6.2 MW turbine with a hub height that is likely to range from 119 m to 166 m tall, with an associated blade tip maximum height that is likely to range from 198 m to 243 m based on a turbine blade length of 79 m. The potential rotation speed is likely to be up to 12 rotations per minute (RPM). The maximum range of power output for the project is likely to be between 0 MW to 489.8 MW.

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development

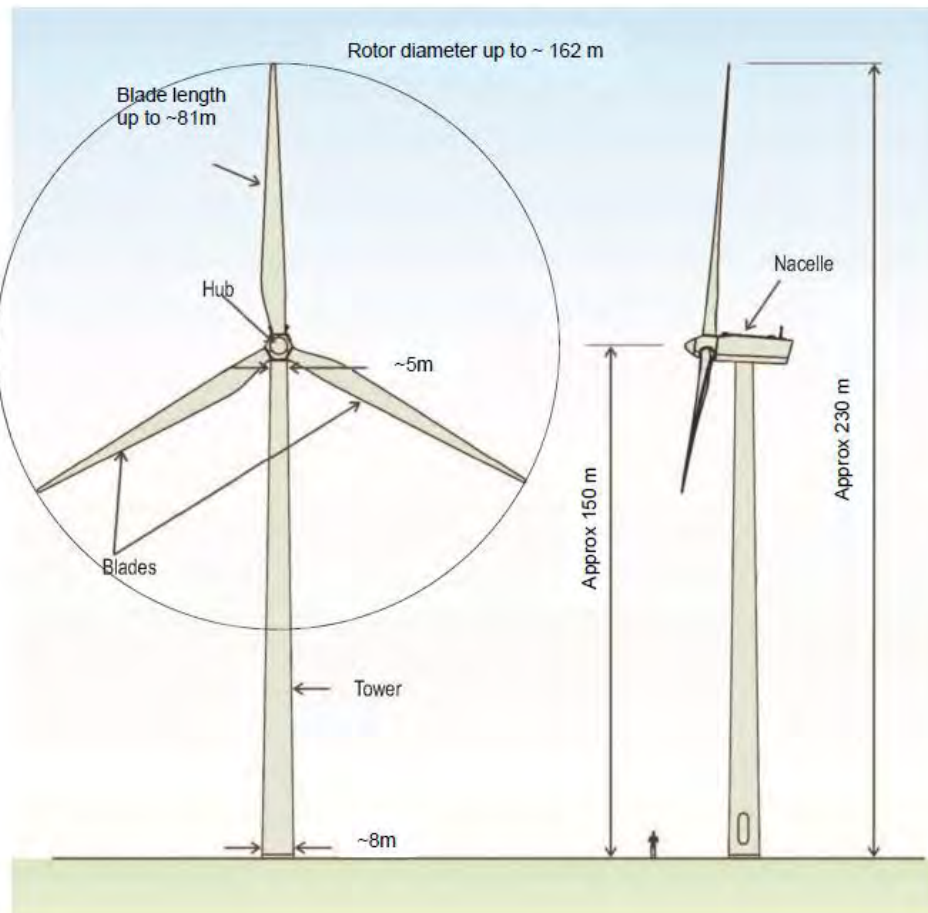


Plate 2: Components of a wind turbine (adapted from Aurecon (2024a)).

Final heights of the proposed turbines will be confirmed as part of final detailed design, therefore, for the purposes of this VIA, an average hub height of 150 m and maximum hub height of 170 m has been assumed. The blade length was rounded to 80 m for ease. This assumes that the average total turbine height with the blade would be 230 m and the maximum turbine height with blade would be 250 m. The materials that will be used to make the visible parts of the turbine will be predominantly steel (painted/coloured white, using non-reflective paint) and fibreglass or similar (also painted/coloured white, using non-reflective paint).

Overall, the turbine will be white in colour, using non-reflective paint and will be similar to the existing turbines in the surrounding area.

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



## 3 Previous Assessments

A VIA was previously undertaken by GHD (2008) to support the original wind farm proposal, Badgingarra Wind Farm, which is located to the west of the site, and included the project site originally. The GHD (2008) VIA considered the introduction of turbines within the site as well as to the west of the site. The area considered by GHD is shown in **Appendix B**, which is an excerpt of key maps and imagery from the GHD report and provided for ease of reference.

As outlined in **Section 1.4.1**, the SoD granted approval to increase the number of turbines for the project to include 54 turbines in September 2022, and as part of this requested that the VIA to support this project be reviewed and consider the GHD (2008) assessment, with the viewpoint locations to be revisited. As such, the Stage 1 hybrid VIA was undertaken by Emerge Associates (2024) with the key requirement, as per consultation with the SoD, to review and revisit the six viewpoints previously assessed by GHD (2008), with updated photomontages to be prepared. One of the GHD viewpoints (GHD 2) was not considered relevant to the project given the photo was facing the opposite direction to the site (west facing rather than east facing) and was on private property that could not be accessed. Therefore, GHD viewpoints 1 and 3-6 (five GHD viewpoints) were revisited as best as possible, based on the information provided in the report, in terms of preparing photomontages, along with three additional viewpoint locations to provide additional context and understanding of expected visual impacts of the site.

The key findings from the previous VIAs (GHD (2008) and Emerge Associates (2024)) included:

- GHD 2008
  - The assessment was prepared in line with the Visual Landscape Manual (WAPC 2007) and followed the visual impact principles.
  - The assessment identified key travel routes, natural characteristics and significant features in the surrounding area with potential to be subject to impacts, and the assessments chose viewpoints that were reasonable to demonstrate the expected visual impacts of these points. This is in accordance with the Visual Landscape Manual (WAPC 2007).
  - The viewpoint locations from GHD (2008) were consistent with areas identified in the Stage 1 VIA viewshed analysis as having potential impacts. The Stage 1 VIA photomontages prepared showed a marginal change to views and GHD (2008) stated that the turbines ‘fit’ well in the rural landscape character and the topography of the site (which included a broader area than the project) complements the turbines by providing high and low ridges to screen or display each structure at various points throughout the landscape.
  - Portions of the turbines assessed as part of GHD (2008) have since been commissioned and the turbines were visible during the field assessment for the Stage 1 VIA (and this assessment). The landscape views assessed in Emerge Associates (2024) appeared to be similar to that predicted in the 2008 assessment.
  - The effects that roads have on visibility was considered and concluded that factors such as travel direction, speed, traffic density, type of traffic (local, regional, commercial etc.), visual barriers and detractors, and road surfaces will have direct and/or practical influence on the visibility of the surrounding and adjacent landscape. GHD noted that it was expected that high speeds, high traffic, foreground attractors (signs, roadside vegetation, houses) would detract from the midground and background features that may be present, suggesting some

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



- roads around the assessment area will likely receive reduced visual impacts than what may be able to be 'measured' through a VIA (GHD 2008).
- GHD (2008) concluded that cumulative impacts to the regional landscape of the Badgingarra Wind Farm (which included the site) with the existing Emu Down Wind Farm were not considered significant. It was also concluded that increased visibility is not necessarily a negative impact, and many stakeholders are likely to view changes as a positive impact.
  - The majority of the turbines assessed as part of GHD (2008) have now been commissioned (e.g. only the site has not been implemented), with the constructed turbines visible during the site visit for the Stage 1 and Stage 2 VIA.
  - Emerge Associates (2024)
    - The Stage 1 VIA found that the 54 turbines will be visible from various locations to different extents. The existing landscape provides high and low ridges which screen or display individual turbines at different points in the landscape. The turbines will be most visible in high points of the landscape where natural screening from hills is reduced. Visual impacts are overall expected to be marginal compared to the existing views of turbines in the area, and the turbines 'fit' well into the existing landscape. At some viewpoints, only the blades are likely to be visible, while at other locations the whole turbine structure is likely to be visible.
    - Mitigation of visual impacts of the turbines through screening or landscaping due to the size of the turbines was not considered in either the GHD or Emerge Associates assessments based on the turbines being too large to screen with vegetation to make a difference for the visibility (unless planted directly in front of identified receptors to block views of the turbines).
    - Concluded that views experienced from Viewpoint 28 and Viewpoint 34 will change compared to the existing conditions. However, travellers using both Cantabilling Road and Brand Highway will have views of existing turbines and powerlines over longer distances (up to at least 15 km away in some locations) as strong linear or grouped features and the project will not substantially change the scale or intensity of human infrastructure compared to the existing infrastructure visible.

The findings from these assessments are considered in this Stage 2 VIA, specifically regarding the increase of proposed turbines from 54 turbines (Stage 1) to 79 turbines (Stage 2).

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



## 4 Existing Landscape Character

Landscape values are a measure of the importance that the community places on the landscape at any particular place. Landscape values are a combination of the physical environment and the public perception of the environment. Landscape character is used to understand the particular landscape values of an area and are often measured through landscape character types (LCT), landscape character sub types (LCST) and landscape character units (LCU) (CALM 1994; WAPC 2007). The site context and landscape character are discussed in the sections below.

### 4.1 Site and region context

The site is located approximately 7.5 km west of Badgingarra town and is generally bounded by Badgingarra National Park to the south and existing rural properties to the north, east and west, with Brand Highway located 2 km to 6 km east of the site. Nambung National Park (which includes the Pinnacles Desert, a popular tourist location), is located approximately 30 km to the south-west of the site. The site and surrounding area are generally comprised of:

- Undulating rolling hills that comprise a mix of largely cleared agricultural land within patches of variable height remnant and/or plantation vegetation. The horizon has paddocks cleared of vegetation, depending upon the location of a viewer.
- Natural vegetation varies in height, from kwongan/sandplain heaths between 1 m and 3 m in height, to taller eucalypt woodlands up to 20 m in height. Plantation vegetation is present to the south of the site, and varies in height between 20 m and 40 m.
- Badgingarra National Park is a prominent feature to the south of the site, comprised of dense continuous low kwongan heath, dominated by grass trees, banksias and smaller flowering shrubs.
- Low intensity agricultural uses co-dominate the area, and align with existing cleared areas.
- Existing man-made infrastructure including wind farms to the immediate west (Badgingarra Wind Farm) and 132 KV to 330 KV power lines, which are present within the site and surrounding area. These features are tall (in excess of 100 m in height) and are prominent features in the land over long distances (e.g. 20 km or more).

All remnant vegetation is proposed to be retained within the site and the project layout has avoided all areas of native vegetation and Carnaby's black cockatoo habitat, with the total disturbance footprint being approximately 491ha. This is approximately 5% of the land area associated with the site.

### 4.2 Landscape character type

*Reading the Remote: Landscape Characters of Western Australia* (Reading the Remote) (CALM 1994) provides a regional assessment of the varied and unique landscapes in Western Australia and is a common means of determining the broad landscape character classifications that may be applicable at a regional level. Landscape character types (LCT) are used to categorise broad areas and describe the physical characteristics and overall visual appearance of an area. LCT are further split into landscape character sub types (LCST) in some instances, to identify areas that have shared

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



characteristics to the LCT but also have different distinguishing features. LCT and LCST describe patterns of characteristics such as landform, vegetation, water and landforms, as well as individual features, which can be used to understand how the proposed development may work within the existing landscape, and views from various locations around the site.

The site is within the Wheatbelt Plateau LCT which spans a large area from Geraldton to Esperance and is divided into four LCST (CALM 1994). The site is located within the Geraldton Plains LCST. The landscape character of the Geraldton Plains LCST within the site can be described as an extensive rural landscape with vast areas of native vegetation (generally in the distance), disrupted by open and mostly cleared agricultural land (CALM 1994). The landscape feels expansive with pleasant views that often flow into the distant horizon (CALM 1994). In contrast, enclosed river valleys are observed occasionally in the landscape to the north of the site.

The Geraldton Plains LCST has various landscape characteristics that span from the coastal fringing vegetation on sand dunes to open, sparse plains with undulating to rolling low hills, and further east where flat top ranges, near circular mesas and escarpments with sharp breakaways are apparent. Vegetation is variable and includes coastal heath along the coastline, kwongan heath, shrub and scrub associated with sandy plains and slopes and taller woodland vegetation is common in enclosed valleys.

Due to the variety of landforms present within the overarching Geraldton Plains LCST, it was determined appropriate to differentiate where the different landforms occur and the associated experience. As such, soil landscape mapping from the Department of Primary Industries and Regional Development (DPIRD) (DPIRD 2018) has been used in conjunction with the LCST to better understand where differing landform elements (and associated vegetation and soils) are likely to occur. The soil landscape mapping is shown in **Figure 2** and a description of each with consideration to the Geraldton Plains LCST, is provided below:

- A coastal system of pale windswept dunes along the western fringe of the coastline, associated with the Quindalup South System. This system is generally more than 20 km from the site. This includes the foredune complex immediately adjacent to coast and beach, with parabolic and undulating domed dunes of white and/or yellow sands associated and coastal scrub vegetation. Vegetation is of varying colours of greens, yellowy green and bluey green, typical of coastal vegetation.
- A band of rough grey limestone outcropping and/or expansive sand plains and dunes associated with the Spearwood System and Bassendean Plain, which is positioned slightly inland from the coastline and generally more than 12 km from the site. This includes mixed shallow soils and pockets of pale deeper sands or semi-wet and wet soil and vegetation of banksia and paperbark woodlands and/or species rich heaths. Cleared agricultural land, supporting predominantly grazing, is common in this area.
- A subdued dissected lateritic plateau with undulating low hills and rises, associated with the Yerramullah System, which is where the site is located and within 6.5 km. This area includes lateritised weathered sandstone, pale deep sand, sandy gravels and yellow deep sand. Banksia woodlands are common on the lower slopes and depressions, and heathlands are also present. Near circular mesas and escarpments are scattered through the landscape. Extensive areas of cleared agricultural land, supporting predominantly grazing, is common in this area, providing views of muted red and orange paddocks on rolling hills. Native vegetation within the site is

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



largely dominated by Kwongan heath (comprised of stunted *Eucalyptus todtiana*, various banksia species and mixed native shrubs and herbs, generally low shrubs, less than 2 m in height), with some patches of low open woodland including *Corymbia calophylla* and/or *Eucalyptus lane-poolei*, providing emergent taller trees to approximately 5 m tall. Native vegetation associated with the site and broader area is described and discussed further in **Section 4.3**.

- A subdued strip of lateritic plateau with gently undulating rises associated with the Boothendarra Subsystem. This system is to the east of the site, between 13 km and 18 km. It includes low hillcrests and hillslopes with sandy and loamy gravels and sandy duplexes.
- A range of low hills on sedimentary rocks, associated with the Mintaja Hills System. This includes variable soils including red/brown non-cracking clays, brown loamy earths, and grey/brown shallow loamy duplexes. It is located to the north-west of the site. Woodland vegetation is common providing a dense shrubland with taller trees scattered throughout the vegetation, and has also been cleared to support agricultural land uses.
- The Mount Lesueur System which is described as a dissected landscape of low hills and rises exposing a variety of sedimentary rocks. This landform is approximately 15 km north-west of the site and is associated with Mount Lesueur National Park. It includes sandstones, siltstones and shales with variable soils. Woodland and heathland vegetation is common in this area.
- Alluvial plains and terraces of the Hill River and major creeks of the north coastal plain, associated with the Nylagarda System. This system is located to the north of the site, immediately adjacent to the boundary to the east and within 6.5 km to the north. It includes brown deep sands and brown sandy earths, with occasionally minor pale deep sand and saline wet soil. Woodland vegetation is present and follows the river and creek line providing enclosed flowing runs of elegant Eucalypts. It is a reasonably strong feature across the landscape, providing strong linear lines of native vegetation.

### 4.3 Landscape character units

The landscape character unit (LCU) is used to further distinguish the appearance of landscape elements such as landform, vegetation, human land use and water bodies that are relevant to the specific area. The LCT and LCST, as discussed above, has common characteristics at a regional scale, while variations of the LCT and LCST can be mapped at a local scale and are called LCU.

Three LCUs have been identified in relation to the site and broader area based on descriptions provided within the Visual Landscape Manual (WAPC 2007), including:

- Rural landscape
- Natural landscape
- Urban landscape.

The rural and natural LCU's share the same LCST (Geraldton Plains) and soil system (Yerramullah System) and as such, exhibit common characteristics in terms of landform and overarching broad visual experiences. However, the main difference between the rural and natural LCU's is the human presence, associated with clearing and agricultural/energy supply-based land uses.

The rural landscape is the most dominant unit and the natural landscape occurs mostly outside the site associated with the Badgingarra National Park and Leuseur National Park. The LCU are shown in

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development

**Figure 3** and the rural and natural LCU, which are most relevant to the site, are discussed in **Section 4.3.1** and **Section 4.3.2** below. The urban LCU is associated with small coastal and rural towns (Jurien Bay, Cervantes and Badgingarra) and are not discussed in detail further below due to the distance from the site and not having a major influence on the character experienced by people in or travelling through in proximity to the site.

For Badgingarra town (closest to the site), residents would experience man-made features in/around the town, with a major highway (Brand Highway) immediately adjacent to residences, and dwellings, community infrastructure, lighting, electricity poles etc. Views from the town would be rural character type to the east and on the horizon to the west, and natural character to the west where Badgingarra National Park and low Kwongan heath vegetation dominates the mid-ground. This is shown in **Plate 3**.



*Plate 3: Representative views residents experience from Badgingarra town demonstrating the man-made features including roads, houses and power poles and natural landscape character in the distance.*

#### 4.3.1 Rural landscape

The rural LCU is the dominant unit in the site and broader area and is associated largely with areas of cleared paddocks and scattered patches of vegetation. The rural LCU comprises the following characteristics:

- Areas of cleared paddocks, used for agricultural purposes in colours of muted browns, oranges and reds that flow across the rolling hills. However, seasonally transform into a sea of rich greens and/or bright yellow crops. Generally paddocks are mostly clear of native vegetation, although vegetation may be present in scattered isolated patches of native or non-native vegetation including small remnant patches of vegetation, tree plantations or wind rows. These aspects are shown in **Plate 4**, **Plate 5** and **Plate 6**.

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development

- Patches of remnant native vegetation vary in colours and textures with dark olive being prominent of the low shrubs with glossy green grass trees and stunted Eucalypts occasionally protruding from the shrubs. Flowers come in clusters and spikes of red, pink, orange and yellow. Pale muted cream and white tree trunks blend into the views or appear in linear rows, breaking up the view between cleared paddocks.
- Abrupt edges cut across the landscape between patches of vegetation (remnant native vegetation or symmetrical plantations) and cleared land, which is shown in **Plate 4**.
- Existing infrastructure including turbines, powerlines and irregular/sparse rural buildings (homestead and associated buildings) are visible at regular intervals, with the wind turbines and powerlines dominant features. Existing turbines and powerlines often partially or fully visible between the rolling hills, which provide intermittent cover of infrastructure. The powerlines provide a strong linear feature from north to south and along the horizon line when looking east to west. Examples of the views of existing turbines and powerlines are shown in **Plate 5** and **Plate 6**. An example of rural buildings is shown in **Plate 7**.
- Vertical but variable fencing and horizontal unsealed and sealed roads servicing rural lots and also providing access between rural areas and towns.



*Plate 4: Views of the rural landscape character unit experienced within the sitedemonstrating the scattered patches of vegetation and associated abrupt edges between the tree wind rows and cleared paddocks.*

# Stage 2 Visual Impact Assessment

## Parron Wind Farm Development



*Plate 5: Rural landscape character within the site with mostly cleared land visible, existing turbines and powerlines on rolling hills.*



*Plate 6: Rural landscape character with native heath vegetation observed from the road in the foreground with cleared rural land in the background and existing turbines on the horizon*

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



*Plate 7: Views of cleared paddocks with existing buildings on the horizon. Existing powerlines as a strong linear feature in the background and on the horizon (from viewpoint 14).*

#### 4.3.2 Natural landscape

The 'natural' LCU is associated with large, generally intact areas of remnant vegetation and comprises the following characteristics:

- Large areas of intact remnant vegetation with variable texture and colour, associated with the surrounding national parks and nature reserves (i.e. Badgingarra National Park, Lesueur National Park and Coomallo Nature Reserve).
- Vegetation is wind pruned kwongan heath with varying colours and textures. Prominent vegetation colours are dark olive green and golden blankets of heath with occasional glossy and bright green glimpses throughout. Taller spiked grasstrees and stunted Eucalypts occasionally protrude from the shrubs. Flowers provide splashes of colour with bushy orange grevilleas, deep blue and bright red leschenaultias, white and pink wispy edged feather flowers and grey smoke bush. Pale muted cream and white tree trunks of stunted Eucalypts are scattered through the vegetation. Typical vegetation is shown in **Plate 8** and **Plate 9**.
- A natural feel from the minimal to no evidence of human presence in the immediate or mid-ground (in particular).
- Rolling and undulating hills covered with expanses of remnant vegetation providing long, encompassing views only enclosed by landform and the occasional patches of taller woodlands, as shown in **Plate 8**.

Where the natural LCU is in proximity to the site, rural/human character does appear on the horizon, particularly where Badgingarra National Park is, given the existing turbines in the area are visible over the top of the vegetation.

# Stage 2 Visual Impact Assessment

## Parron Wind Farm Development



*Plate 8: Native vegetation located within Lesueur National Park nearby to the site, showing the natural landscape character*



*Plate 9: Native vegetation located within Badgingarra National Park nearby to the site (taken from Brand Highway), showing the natural landscape character with long, open, encompassing views. The site is in the far background.*

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



## 5 Principles and Objectives for Assessment

### 5.1 Visual landscape objectives

The overall management objective is to ensure that the proposed development is designed and implemented in such a way that the existing landscape character at both the regional level (i.e. LCT in accordance with (Reading the Remote) (CALM et al 1994)) and local level (i.e. LCU in accordance with the Visual Landscape Manual (WAPC 2007)) is protected and maintained.

Specific management objectives (as determined by Emerge Associates) relevant to each LCU are provided **Table 1** below and are considered appropriate for the site and location.

*Table 1: Landscape character objectives*

Landscape character unit	Objectives
Rural	<ul style="list-style-type: none"> <li>• To maintain and protect the visual quality and experience of the rural landscape including the expansiveness associated with large areas of cleared land.</li> <li>• To incorporate wind farms into the rural setting while maintaining rural amenity (based on SPP 2.5 (WAPC 2016)).</li> </ul>
Natural	<ul style="list-style-type: none"> <li>• To maintain the visual quality of the natural landscape including through maintaining and protecting the expansive natural experience including the associated open, encompassing natural views of kwongan vegetation, rolling hills and flat-topped circular mesas.</li> </ul>

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



## 6 Landscape Visual Impact Assessment

A visual impact assessment includes the following steps:

1. Understanding the existing landscape character (outlined in **Section 4**);
2. Assessing the likely visibility of the proposed turbines (viewshed analysis), based on existing contour data.
3. Ground-truthing the landscape character and visibility of the proposed turbines through field investigations.
4. Assessing the anticipated impacts based on the viewshed analysis and through the preparation of cross-sections and photomontages (based on existing photographs from the area).

The following sections (**Section 6.1 to Section 6.5**) addresses point 2, 3 and 4 of the above.

### 6.1 Viewshed analysis

A viewshed or ‘visible area’ is defined by WAPC (2007) as *“a portion of the landscape that can be seen from one or more observer positions. The extent of the area that can be viewed is normally limited by landform, vegetation and distance”*. An assessment of the visible area is a useful tool in visual impact assessments, for identifying areas of potential concern or impact that should be investigated further.

To support the preparation of this VIA, and consideration of the 79 turbines, a number of viewshed analyses were completed based on the existing topography of the site and surrounding area, to determine which locations within 20 km of the site would have potential views of the proposed turbines. These analyses utilised the available 2 m contours from the Department of Primary Industries and Regional Development (DPIRD) and identified the extent of the ‘seen area’ based on different height scenarios, and any land equal to or greater than that height (the ‘height’ being a block from ground to the top of the turbine and blade). Vegetation (and height of vegetation) is not considered as part of a viewshed analysis. This can result in a ‘seen area’ that is larger than when actually viewed in person. Features such as existing vegetation can block views in addition to landform.

As discussed in **Section 2**, the turbine height is pending final detailed design and therefore a conservative average hub height of 150 m and maximum hub height of 170 m was assumed (with both tested). The blade length was rounded up to 80 m for simplicity.

An initial screening viewshed analysis provided a simple assessment of ‘visible’ and ‘not visible’ based on an average turbine height including the blade of 230 m. The outputs from this assessment are shown in **Figure 4**.

Further viewshed analysis considered the ‘visible areas’ from ground level of the turbines to the hub height and blade height separately, in order to understand what areas are likely to receive a constant view of the turbine hubs, which are stationary, and what areas will receive a view of the turbine blades, which will be either rotating or stationary. These viewshed analyses categorised the ‘visible areas’ into ranges of the predicted number of turbines expected to be seen from particular locations based on following four height scenarios:

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



1. An average turbine hub height of 150 m only, measured from the ground. This is shown in **Figure 5**.
2. A maximum turbine hub height of 170 m only, measured from the ground. This is shown in **Figure 6**.
3. An average blade height of 230 m, based on an 80 m blade length and the average hub height of 150 m measured from the ground. This is shown in **Figure 7**.
4. A maximum blade height of 245 m, based on an 80 m blade length and the maximum hub height of 170 m measured from the ground. This is shown in **Figure 8**.

The distance zones used for the viewshed analysis were sourced from the Visual Landscape Manual (WAPC 2007), and include the 'middleground' (500 m to 6.5 km) and 'background' (greater than 6.5 km). Closer views were not considered in detail, as at that scale the proposed turbines within the site will be very large and have different visual impacts compared to when multiple turbines are viewed from greater distances in the broader context, and the closer views are only likely to impact the landowner for the site. Views from the middleground and background were instead the focus, to understand expected impacts on the community and visitors in the broader landscape context.

The results of the viewshed analysis indicate that the majority of the potential visibility is influenced by topography and visible areas are located on hill tops whereas non-visible areas are located in valleys and low points of the landscape, where other landform screens views into/across the site.

Based on the findings of the GHD (2008) report, and desktop review, potentially significant visual receptors were identified and included points of interest such as Nambung National Park and the Pinnacles Desert to the south-west of the site, Lesueur National Park to the north-west of the site, Badgingarra town to the east of the site, and nearby roads and lookouts.

The likely visibility of the turbines were considered further through the field assessment and photo montages (including cross-sections), described in **Section 6.2** and **Section 6.3**.

## 6.2 Field assessment

A site visit was undertaken by two consultants from Emerge Associates between the 23-24<sup>th</sup> May 2024, to ground truth the outcomes of the viewshed analysis and determine locations where the proposed turbines may be visible. This is on the basis that existing vegetation and other features have the ability to also prevent the turbines from being seen, as per best practice siting and design approaches outlined within the *Visual Landscape Manual* (WAPC 2007).

In general, it was found that very few of the locations assessed were benefited by the vegetation present, in terms of screening the visibility of the turbines, given either the low height of the vegetation, its sparseness and the height of the turbines. Generally only a few locations to the north, and Badgingarra roadhouse has existing vegetation that offered screening of the site.

Photos were captured using a Sony A600 digital mirrorless camera using a focal length of approximately 87 mm based on the camera and lens limitations (to generally align with the recommended focal length from the Visual Landscape Manual (WAPC 2007), which recommends a 90 mm focal length) in order to represent what the human eye sees. These were to enable the photos to be used in the production of photomontages, discussed further in **Section 6.4**.

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



A total of 36 viewpoint locations were visited and in general:

- Viewpoints were informed by the viewshed analysis and selected at various locations around the site with viewpoints prioritised along roads, travel stops and attractions to capture the areas likely to be most used by locals and travellers, where views are most likely to be impacted. Areas of predicted high visibility (e.g. the most turbines) were selected as a preference.
- Considering turbines have been constructed in surrounding areas (including the Emu Downs Wind Farm and Badgingarra Wind Farm), cumulative impacts were considered during the site visit by locating viewpoints to capture representative photos of the project in the context of existing turbines, where relevant. It is not expected that the existing turbines will always be visible in the same locations where the proposed turbines will be, so cumulative impacts were not relevant across the entire site.
- Key tourism features identified in the GHD report (including from the Department of Biodiversity Conservation and Attractions (DBCAs)) were also visited, including Nambung National Park and the Pinnacles Desert, Lesueur National Park and Brand Highway.

Nambung National Park and the Pinnacles Desert were re-visited and as it was a location assessed by GHD, it has also been considered further through a photomontage (discussed further in **Section 6.3** below).

Lesueur National Park was visited, and a viewpoint was located along the drive trail and an area of predicted visibility (**Figure 4**, viewpoint 18). The site was not visible from this location (e.g. rolling cleared paddocks, which would be an indicator for land beyond the national park, could not be seen over existing vegetation). It was determined that from this distance and considering the drive trail faces mostly north, as it is a one-way loop in the opposite direction to the site, the views from the National Park will not be significantly altered. There is a walk trail within Lesueur National Park that may receive views of the proposed turbines. This walk trail was not assessed, however it is expected that from the National Park, which is approximately 18 km away, the turbines will appear small on the horizon. Additionally, the existing turbines from Emu Downs Wind Farm and Badgingarra Wind Farm would also be visible from the walk trail. As such, no significant changes to the current views are anticipated and Lesueur National Park was not considered further.

Brand Highway was driven, and two viewpoints (30 and 36) were assessed in the field in areas identified to have higher visibility of turbines. Based on the site assessment and viewshed analysis, it was determined that approximately 12 km of Brand Highway that runs parallel to the site is likely to receive glimpses of the proposed turbines, but travellers will also receive views of the existing Emu Downs Wind Farm and Badgingarra Wind Farm that are located to the west and south of the site. The travel speeds (approximately 100 km/hour) along Brand Highway, the amount of traffic, presence of variable signage and patches of tall vegetation will break up the visibility of the proposed turbines to travellers, similar to how the existing turbines are viewed. As part of this assessment, viewpoint 30 along Brand Highway was subject to further assessment as well as viewpoint 34, which is located at a high point above the Badgingarra roadhouse and nearby to the existing residences and are discussed further below. Due to Badgingarra roadhouse being located in a low point and the presence of existing taller vegetation, the project was assessed as not likely to be visible at that location.

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



### 6.3 Viewpoint analysis

A total of 36 viewpoint locations were formally visited (although the entire area was traversed as part of getting to each location), including five (5) of the viewpoints from the original VIA by GHD. As noted in **Section 3**, one of the GHD viewpoints faced the wrong direction and was on private land, and therefore not accessible or relevant for the project. Each viewpoint location was labelled 'EA' followed by a unique viewpoint number (1-36) and to easily distinguish the viewpoints that were also assessed by GHD, the associated GHD viewpoint number has been included in the label (e.g. EA02(GHD 6)).

Viewpoint analysis was undertaken for the 36 viewpoint locations with a summary of findings, including representative image, landscape description and predicted number of turbines visible for each viewpoint is provided in **Appendix C**. The predicted number of turbines expected to be visible from each viewpoint was affected by screened/obscured views or open views. Where vegetation or structures screened views, predicted visibility is assumed to decrease (e.g. **Appendix C**, viewpoint 21) or be partially obscured (e.g. **Appendix C**, viewpoint 12). Alternatively, where nothing screened views, predicted visibility is assumed to be the same. The viewpoint locations are shown in **Figure 4** to **Figure 8**.

Further viewpoint analysis, through the preparation of photomontages and cross sections, was undertaken on ten selected viewpoints to understand the potential changes to views and the associated visual impacts that may result from the project. Viewpoints selected for further analysis, including photomontages, is in discussed in **Section 6.4.1** to **Section 6.4.10** below. The visual analysis provides a factual description of the current views and observations of any likely changes to the current visual experience based on the photomontages prepared, with consideration of the LCST, LCU and visual landscape objectives (as discussed above).

### 6.4 Photomontages

A photomontage is an image that combines a 3D model that is rendered realistically and integrates these with real life photographs, creating a realistic view of predicted visual amenity.

As mentioned in **Section 1.2** above, one of the GHD viewpoints (GHD 2) was not considered relevant to the project and therefore excluded. The viewpoints prioritised (particularly outside the GHD requested viewpoints) were largely to the east of the site (which was not assessed by GHD (2008)) and focussed along roads, travel stops and attractions (e.g. around Badgingarra Roadhouse) to capture the areas likely to be most used by locals and travellers, and where visual amenity could be impacted.

The viewpoint locations selected and progressed to photomontages are shown on **Figure 4** to **Figure 8** and include:

- Pinnacles Lookout - Viewpoint 2 (GHD 6)
- Cervantes Road - Viewpoint 6 (GHD 5)
- Bibby road (west) - Viewpoint 9 (GHD 1)
- Jurien Road - Viewpoint 19
- Springhill Road - Viewpoint 20 (GHD4)

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



- Nylagarda Road - Viewpoint 25 (GHD3)
- Cantabilling Road - Viewpoint 28
- Brand Highway - Viewpoint 30
- Badgingarra town - Viewpoint 34
- Bibby road (east) - Viewpoint 35.

Viewpoint 19, 25, 28 and 35 used two individual photos to create the photomontage output, to represent the breadth of the view (i.e. panorama), rather than taking a panorama or wide-angle view photo. This is in accordance with the techniques recommended in the Visual Landscape Manual (WAPC 2007). This enabled the current viewer context to be more accurately represented in order for the project to consider cumulative impacts.

To create the photomontages, a 3D model was prepared for the site and surrounds using the data recorded to digitally replicate the existing conditions and anticipated views of the 'real-life' turbines from viewpoint locations. The data input to the 3D model included:

- Proposed turbine locations using recorded GPS coordinates.
- Turbine hub height (average) of 150 m, based on a model of the Vestas V162 – 6.2 MW turbine provided by the project engineer.
- Turbine proposed blade length of 79 m, based on a model of the Vestas V162 – 6.2 MW turbine provided by the project engineer.
- 2 m contours from the Department of Primary Industries and Regional Development (DPIRD)
- Viewpoint location using recorded GPS coordinates during the site visit.

The output from the 3D model is applied to the photos captured during the field assessment, and are integrated using existing land marks and features visible/identified in available mapping and the photos. This creates a realistic image of anticipated changes to the landscape character.

For each selected viewpoint location, a compilation of three images are presented, including the current view (image 1), the predicted views with turbines from the project shown in red (Stage 1 turbines) and blue (Stage 2 turbines) (image 2), and the predicted views with turbines based on the actual colour (white) (image 3). In each montage, image 2 shows the proposed turbines in red and blue solely for the purpose of differentiating them from the existing turbines. The actual design colour of the proposed turbines is white. Photomontages for each viewpoint location are shown in **Plate 10 to Plate 19**.

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 6.4.1 Viewpoint 2 (GHD 6) – Pinnacles Desert

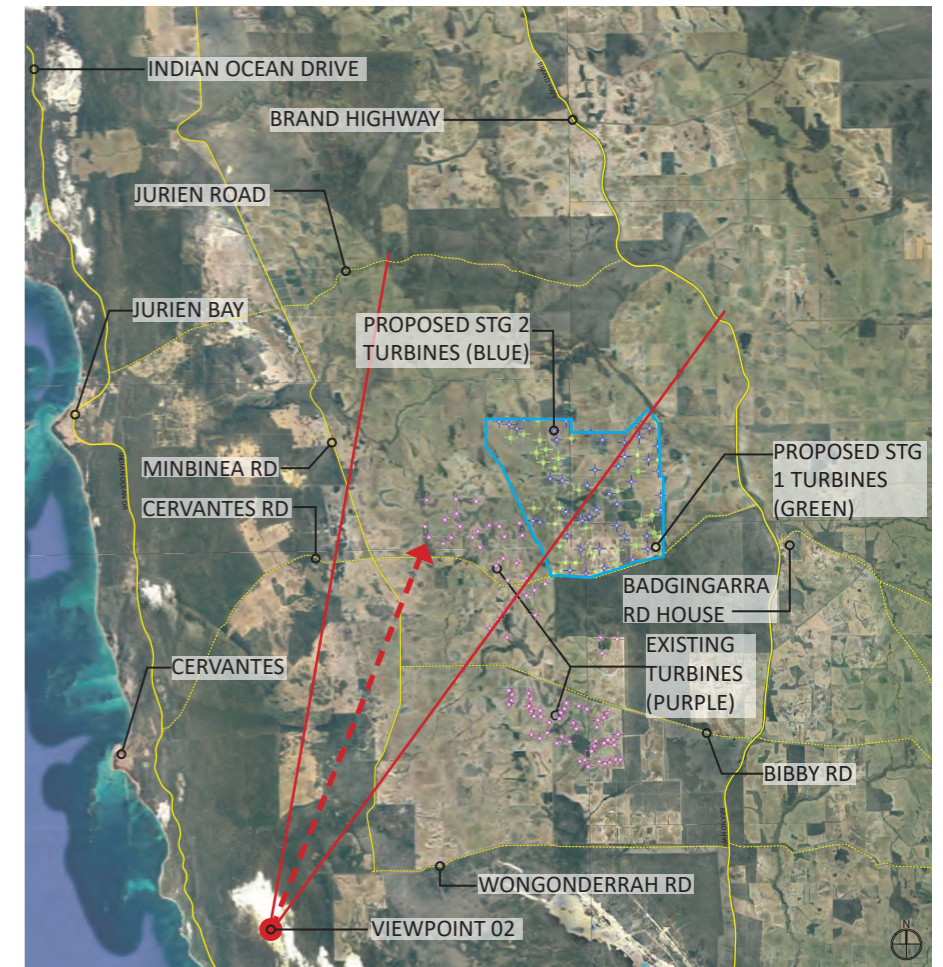
Viewpoint 2 replicates GHD viewpoint 6 (GHD 6), located at a lookout within Nambung National Park and the Pinnacles Desert, a tourist destination located off Indian Ocean Drive, approximately 27 km to the southwest of the site. The current view and predicted view are shown in **Plate 10**.

Currently, the tourist boardwalk and low to mid shrubs are visible in the foreground with vegetated hills, in the middle ground and extending into the background. On the horizon, existing turbines are just visible when viewers look to the north and north-east.

From this viewpoint, the proposed turbines are expected to be barely visible and mostly covered by vegetation. There will be minimal changes to the current views and the proposed turbines are expected to blend in behind the existing turbines. Additionally, visitors to the Pinnacles Desert are likely to be focused on the pinnacles in the immediate area and would have to be actively searching for turbines to notice the existing or proposed turbines in the far distance.



IMAGE 1: ORIGINAL PHOTO JUNE 2024 (Emerge Associates)



LOCATION PLAN - NOT TO SCALE



IMAGE 2: SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



IMAGE 3: SUPERIMPOSED VIA MODEL - SHOWN WHITE TO MATCH PROPOSED COLOUR (SAME AS EXISTING)



## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 6.4.2 Viewpoint 6 (GHD 5) - Cervantes Road

Viewpoint 6 aims to replicate GHD viewpoint 5 (GHD 5) and is taken from the roadside on Cervantes Road and is facing east. Cervantes Road runs east from Cervantes town in the west to the intersection with Munbinea Road (located west of the site). The current view and predicted view are shown in **Plate 11**.

Existing turbines from the Badgingarra Wind Farm (related to the turbines assessed by GHD (2008), which have now been implemented) are currently visible to varying extents in the distance along the horizon line, largely where a contiguous patch of remnant vegetation intersects the sky. Cleared agricultural land extends into the midground, which is quite busy due to the disbursed rows of trees, scattered patches of vegetation, large sheds and strong linear road features. A row of trees is quite prominent across a ridge in the midground as well as Cadda Road that draws the eye to the right of the view. Native vegetation takes up the remaining midground and foreground.

The project would extend turbine visibility further into the distance with additional turbine blades partially visible over the horizon and also add to the number of turbines visible to the south (right) of the current view. These differences would not significantly change the current viewer experience in consideration to the existing turbines present which are generally closer to the viewer than those that will be constructed as part of the project. The differences between the Stage 1 turbines only and the inclusion of Stage 2 turbines is not considered to make a significant difference. This viewpoint shows a rural LCU and the project is unlikely to alter the rural LCU experience, as the turbines 'fit' well into this landscape given existing and more prominent turbines and large areas of visible human habitation.

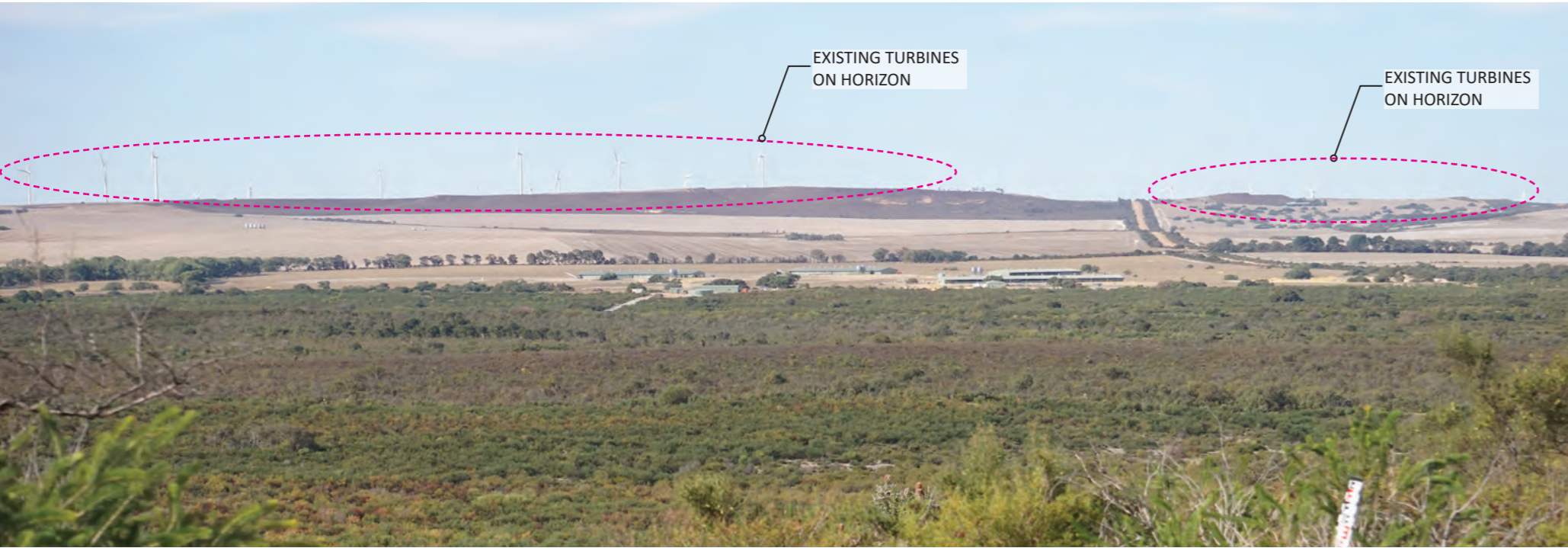
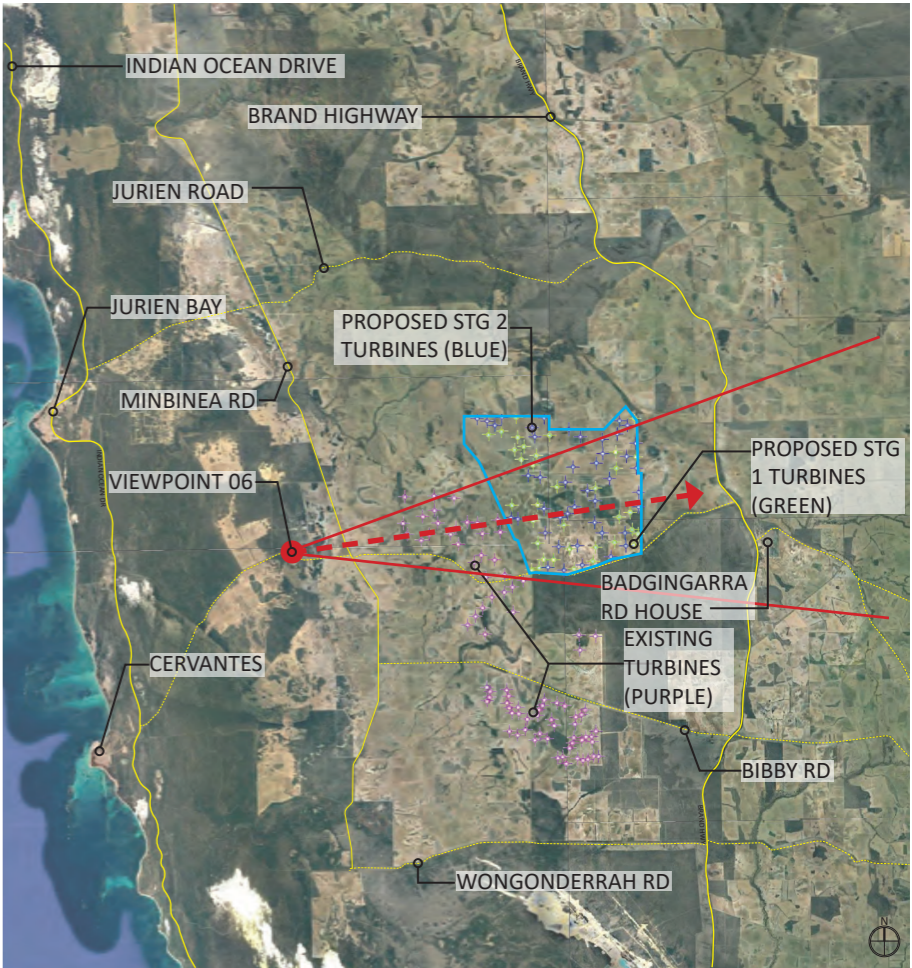


IMAGE 1: ORIGINAL PHOTO JUNE 2024 (Emerge Associates)



LOCATION PLAN - NOT TO SCALE



IMAGE 2: SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



IMAGE 3: SUPERIMPOSED VIA MODEL - SHOWN WHITE TO MATCH PROPOSED COLOUR (SAME AS EXISTING)

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 6.4.3 Viewpoint 9 (GHD 1) – Bibby Road (west)

This viewpoint replicates GHD viewpoint 1 (GHD 1) and is taken from the roadside on Bibby Road and is facing northeast. Bibby Road connects from Brand Highway to the southern end of Munbinea Road in the west. The current view and predicted view are shown in **Plate 12**.

Existing turbines from the Badgingarra Wind Farm (related to the turbines assessed by GHD (2008)) are prominent in the midground, background and ridgeline of the rolling hills. The existing 132 KV and 330 KV power lines are also visible in the midground and background, across the top of the ridgeline. Cleared paddocks and patches of native and plantation vegetation are visible across the midground, with remnant roadside vegetation (predominantly native, but is patchy at times) present in the foreground.

The project would extend the visibility of turbines in the far distance compared to the current view. However, there are prominent existing human infrastructure (turbines and power lines) visible on the horizon and closer (e.g. midground) to the viewer at this location. The proposed turbines are more distant, and the additional turbines would not significantly change the current viewer experience when considered next to the existing turbines and power lines present. The differences between the Stage 1 turbines only and the inclusion of Stage 2 turbines is not considered to make a significant difference. This viewpoint is within a rural LCU with turbines already present and the rural LCU experience can be maintained with the implementation of the project.



IMAGE 1: ORIGINAL PHOTO JUNE 2024 (Emerge Associates)

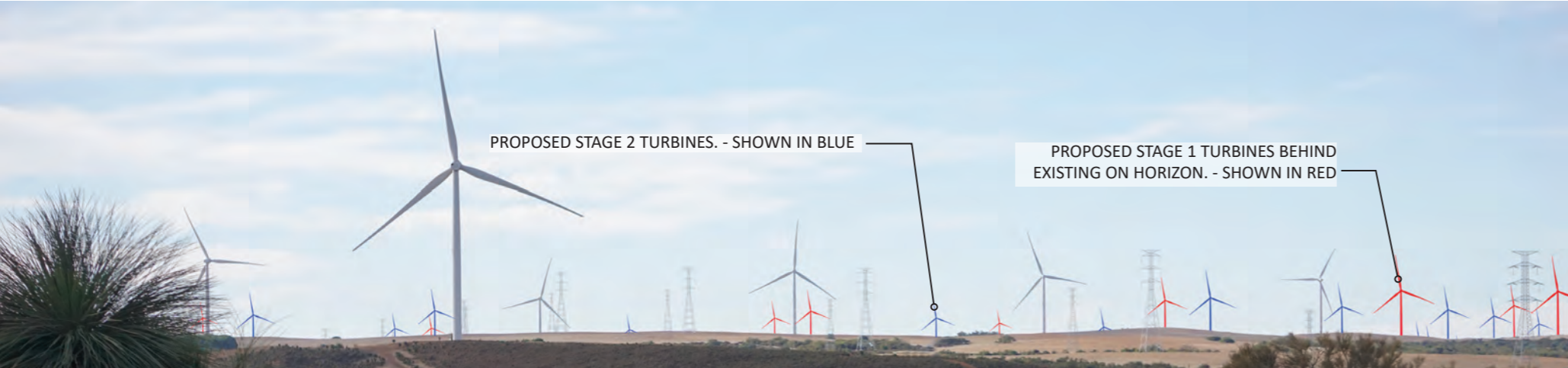
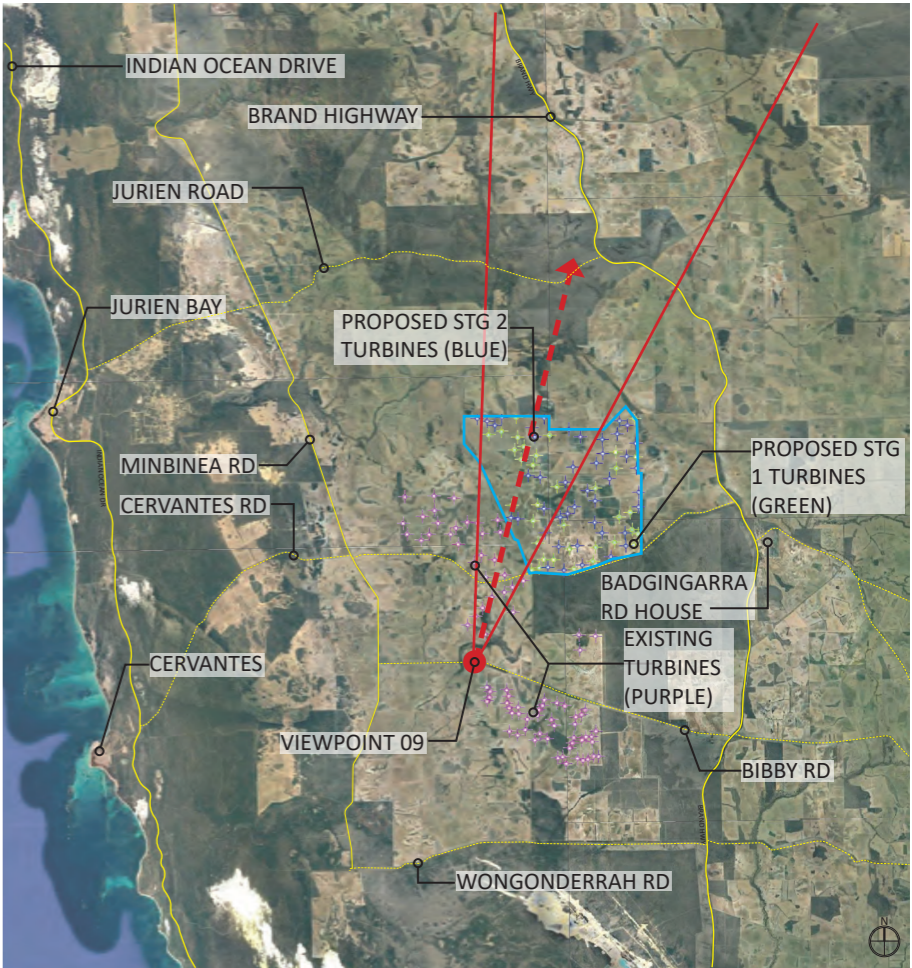


IMAGE 2: SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



IMAGE 3: SUPERIMPOSED VIA MODEL - SHOWN WHITE TO MATCH PROPOSED COLOUR (SAME AS EXISTING)



LOCATION PLAN - NOT TO SCALE

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 6.4.4 Viewpoint 19 - Jurien Road

This viewpoint is taken from the roadside of Jurien Road, which runs east from Jurien Bay town to Brand Highway. The viewpoint was chosen at a high point in the landscape, with open views across the landscape of the site. It is one of the few point along the road where expansive views to the south are visible, noting the travel speed along the road is 80 km/hr to 100 km/hr and drivers would not see the view for very long, and generally only when travelling in an easterly direction (from Jurien Bay to Brand Highway). The current view and the predicted view are shown in **Plate 13**.

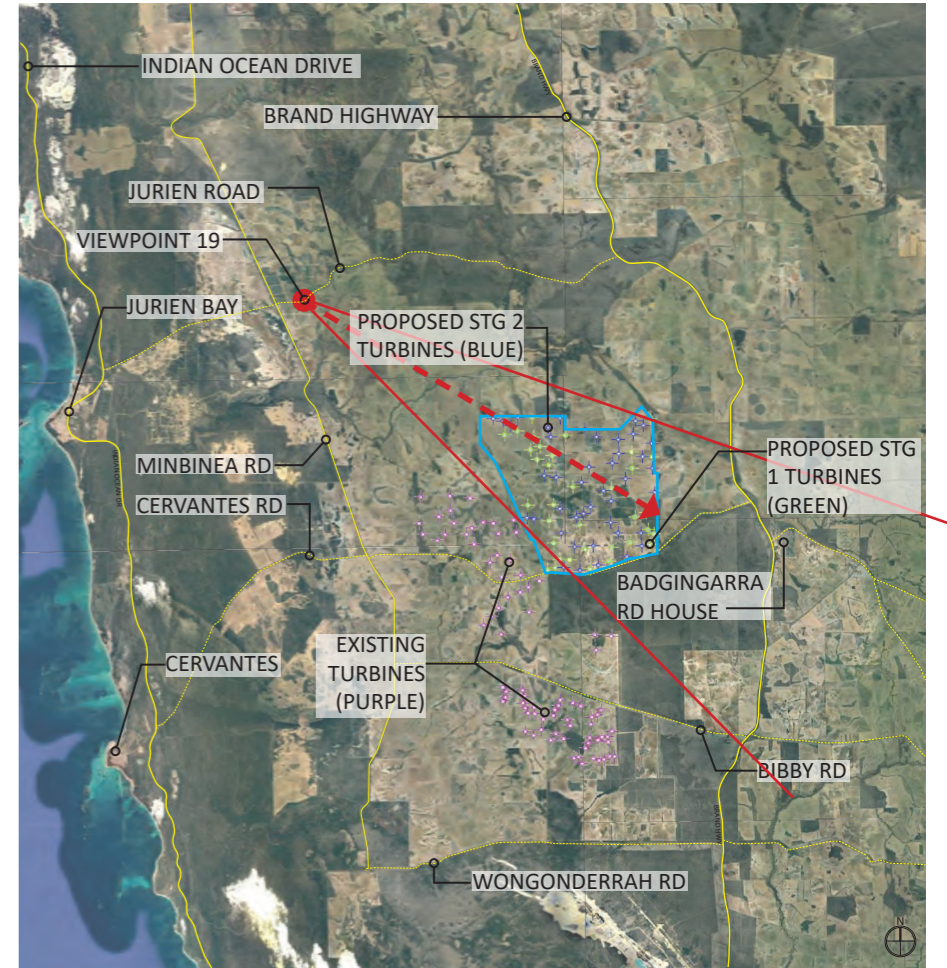
Currently, existing turbines are visible in the far distance on the top of the far ridge/hill line with a mosaic of remnant vegetation and cleared agricultural land in the foreground to the horizon. Cleared agricultural land from the site is visible on the horizon and on rolling hills in the distance.

The project will extend the number of turbines visible in the distance on the horizon to the left of the photo. While the number of turbines visible will increase, the scale of the turbines is not dissimilar to those viewed to the west (right of the photo). The expected views of turbines are not uncommon in the broader rural landscape setting with existing turbines currently visible around the site. For travellers, they already experience glimpses of turbines and powerlines (interspersed with cleared land) along Jurien Road, when travelling in an easterly direction and will be before the project site is visible. Travellers going west will first glimpse the site, and this will then open up to the existing powerline and turbine infrastructure. The turbines associated with the project are on the far horizon, the same as the current turbine.

The project will not substantially change the scale or intensity of turbine visible for travellers. As such, the rural LCU of this view can be maintained with implementation of the project.



IMAGE 1: ORIGINAL PHOTO JUNE 2024 (Emerge Associates)



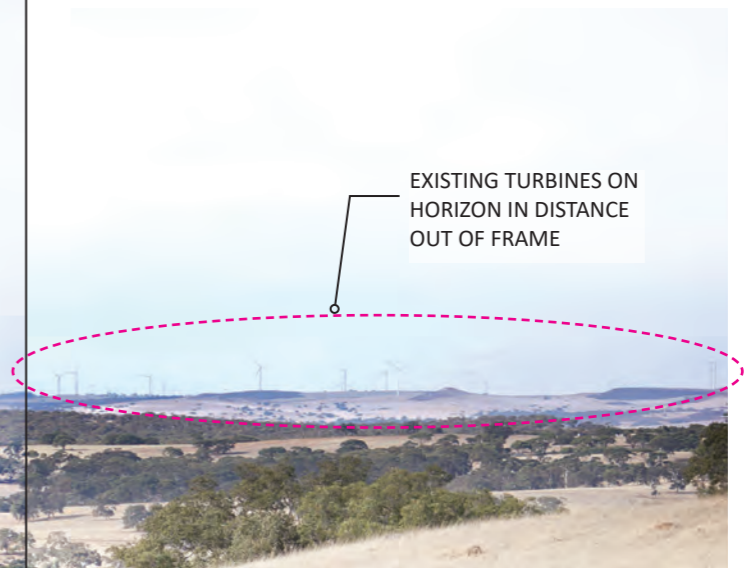
LOCATION PLAN - NOT TO SCALE



IMAGE 2: SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



IMAGE 3: SUPERIMPOSED VIA MODEL - SHOWN WHITE TO MATCH PROPOSED COLOUR (SAME AS EXISTING)



EXISTING TURBINES ON HORIZON IN DISTANCE OUT OF FRAME

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 6.4.5 Viewpoint 20 (GHD 4) – Springhill Road

This viewpoint aims to replicate GHD viewpoint 4 (GHD 4) and is located on the roadside of Springhill Road, which is a small dead-end road off Munbinea Road which leads to a rural residence. The viewpoint is facing east and it provides an open view of the western border of the site. The current view and the predicted view are shown in **Plate 14**.

Currently, existing turbines are visible on the horizon with cleared agricultural land interspersed with patches of native vegetation and scattered trees in the background on rolling hills (and the turbines extend further to the right of the photo from a panoramic experience). The cleared agricultural land continues into the midground before it is broken by a dominant patch of vegetation in a valley. Cleared paddocks, existing powerlines and a farm fence are present in the foreground and runs across the view.

The viewpoint is angled slightly to the left of the photo captured by GHD (to focus better on the project), so only a small portion of the existing turbines to the west are visible in the photo frame. However, existing turbines are a prominent feature in the landscape, particularly at distance on the horizon and extend further to the south and west (when compared to the site). The project would extend the turbine visibility to the north (left of the photo) but would not significantly change the current viewer experience or associated LCU with consideration to the existing turbines present. Difference in views experienced between the addition of Stage 2 turbines in comparison to Stage 1 turbines only is not considered to make a significant difference from this viewpoint.



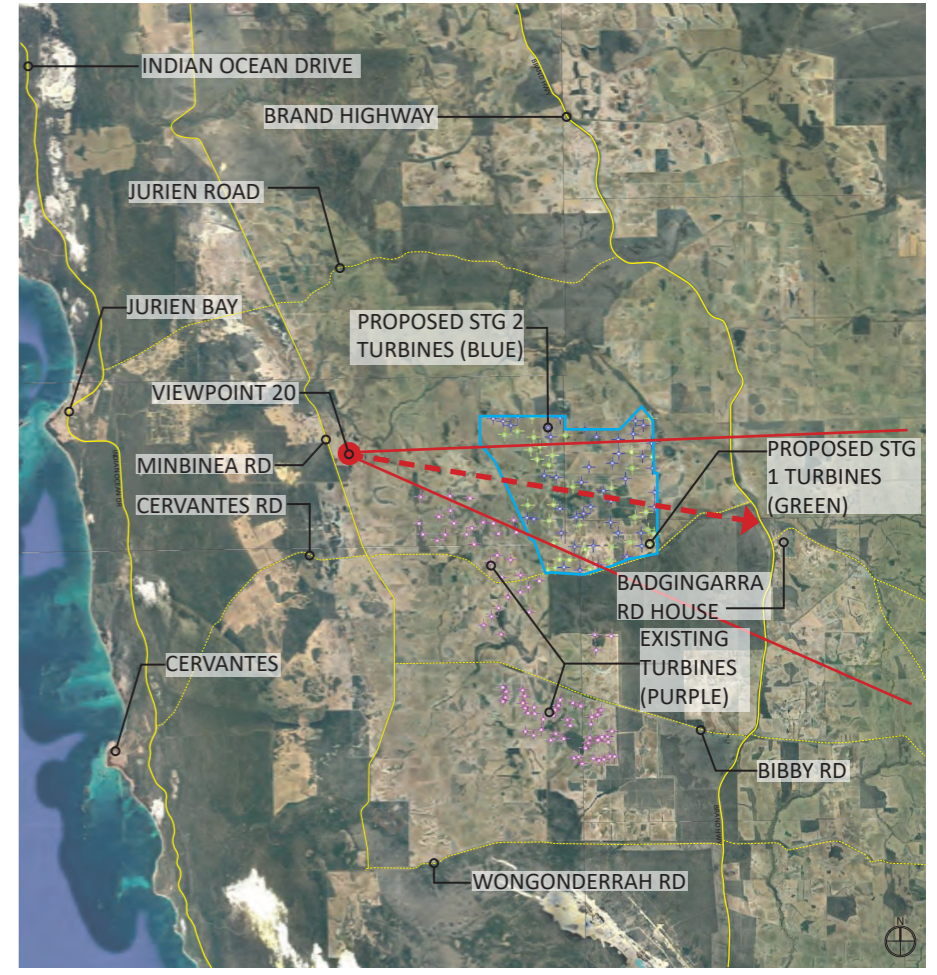
IMAGE 1: ORIGINAL PHOTO JUNE 2024 (Emerge Associates)



IMAGE 2: SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



IMAGE 3: SUPERIMPOSED VIA MODEL - SHOWN WHITE TO MATCH PROPOSED COLOUR (SAME AS EXISTING)



LOCATION PLAN - NOT TO SCALE

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 6.4.6 Viewpoint 25 (GHD3) – Nylagarda Road

This viewpoint replicates GHD viewpoint 3 (GHD 3) and is located on the roadside of Nylagarda Road, facing southwest. Nylagarda Road connects from Jurien Road and runs south to join with Cantabilling Road. The current view and the predicted view are shown in **Plate 15**.

The turbines from Badgingarra Wind Farm assessed by GHD (2008) are currently visible in the distance on the horizon, with 132 KV and 330 KV powerlines present in the midground to background. Rolling hills of cleared agriculture land with patches of native vegetation are present in distance. The powerlines provide a strong linear feature across the view that is fairly prominent, from the midground to the distant views. To the right of the view (west), Nylagarda Road runs from the foreground to the midground. Otherwise, the remaining view is natural and captures native vegetation from Coomalloo Nature Reserve, which extends across most of the frame and extends further east (left) and west (right).

The proposed turbines will extend turbine views further to the east (left of photo) than the existing turbines on the horizon and will be closer to a viewer at this location, but do not significantly change the viewer experience or rural LCU, particularly given the power lines that are visible in the midground and travel to the distant drawing a viewers eye. The differences between the Stage 1 turbines only and the inclusion of Stage 2 turbines is considered marginal.

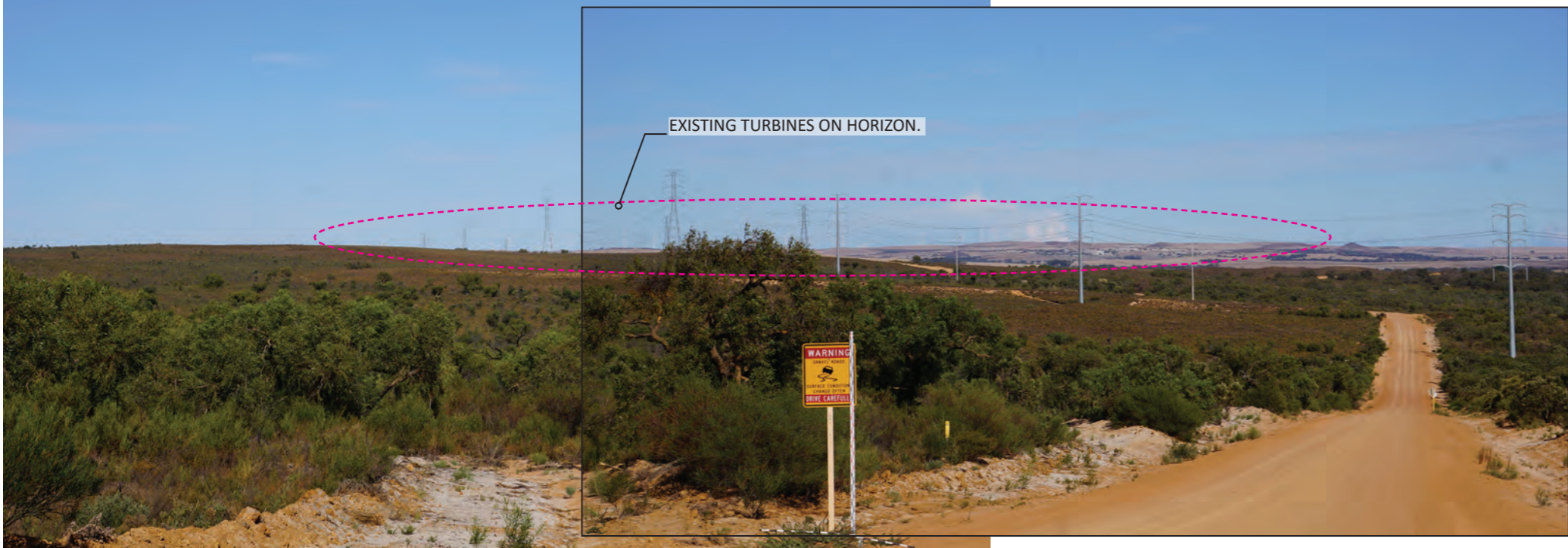
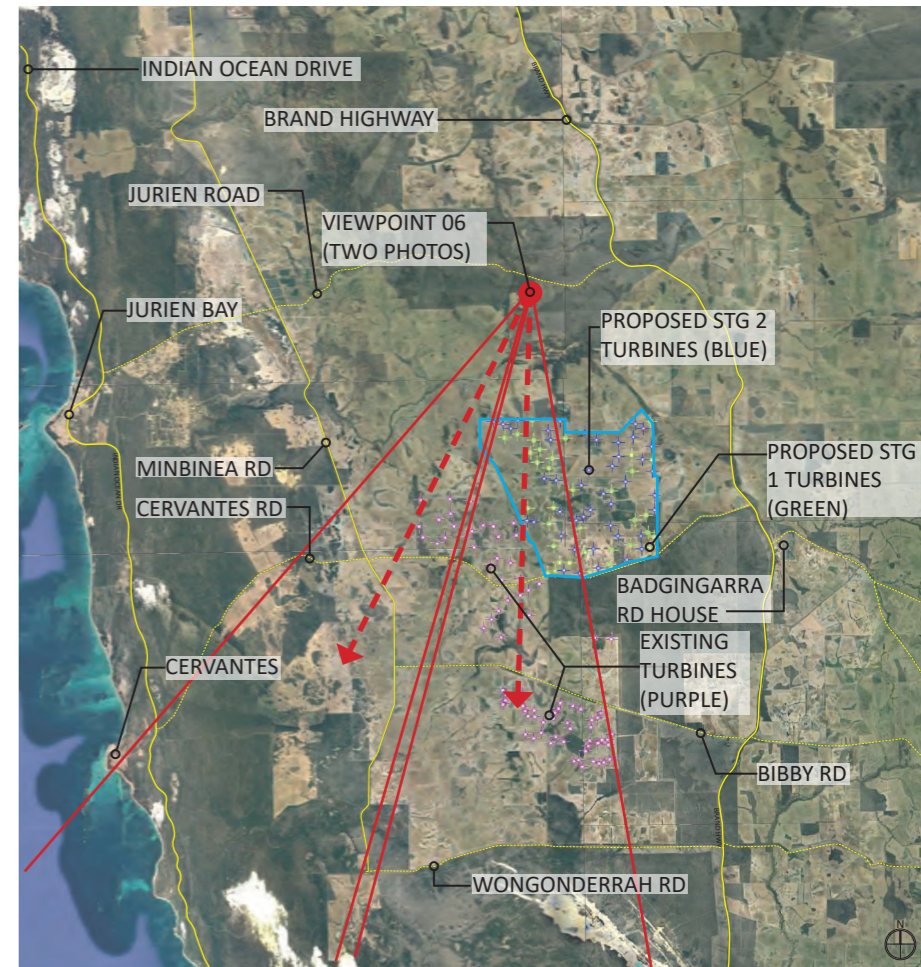


IMAGE 1: ORIGINAL PHOTOS JUNE 2024 (Emerge Associates)



LOCATION PLAN - NOT TO SCALE



IMAGE 2: SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



IMAGE 3: SUPERIMPOSED VIA MODEL - SHOWN WHITE TO MATCH PROPOSED COLOUR (SAME AS EXISTING)

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 6.4.7 Viewpoint 28 – Cantabilling Road

This viewpoint is located on the roadside of Cantabilling Road and faces southwest. Cantabilling Road connects Munbinea Road in the west to Brand Highway in the east and largely follows Hill River. This view represents the likely visibility of turbines by travellers using this road as well as locals. An existing residence is located to the north of this viewpoint further up the nearby hill, but is a reasonable publicly accessible location for an assessment of potential visual impact. The current view and the predicted view are shown in **Plate 16**.

This view currently has limited evidence of human infrastructure, outside rural fence lines and cleared paddocks. No turbines or powerlines are currently visible due to the existing ridgeline in the midground. Scattered patches of vegetation and agricultural paddocks are present in the background. Shrubs of variable height (some up to 2 m-high) along the roadside are present and encompass the foreground.

The proposed turbines will be partially visible (predominantly portions of the blade) in the midground, breaking the horizon line and changing current views. The turbines will be largely screened by the natural ridge (e.g. are behind the ridge in the midground). Although not fully captured in the images, proposed turbines will be visible further to the south-east (left of photo) where the views across paddocks open up, but the Emu Downs Wind Farm is visible on the horizon in the far distance when a viewer is looking in a more southerly direction.

While the predicted visibility of the proposed turbines would change the current outlook for travellers on Cantabilling Road and potentially for residences to the north-east (the height of the residences, which is greater than the assessed viewpoint, may mean they see existing wind turbines and power lines on the distant horizon already), the existing ridge is likely to screen large portions of the turbines. The addition of Stage 2 turbines results in increased visibility of the turbine hub due to their position further east and closer to the viewpoint in the landscape. The rural LCU is expected to be able to be maintained with the addition of turbines to the current views from the project, resulting in similar views to that in other areas with existing turbines currently.



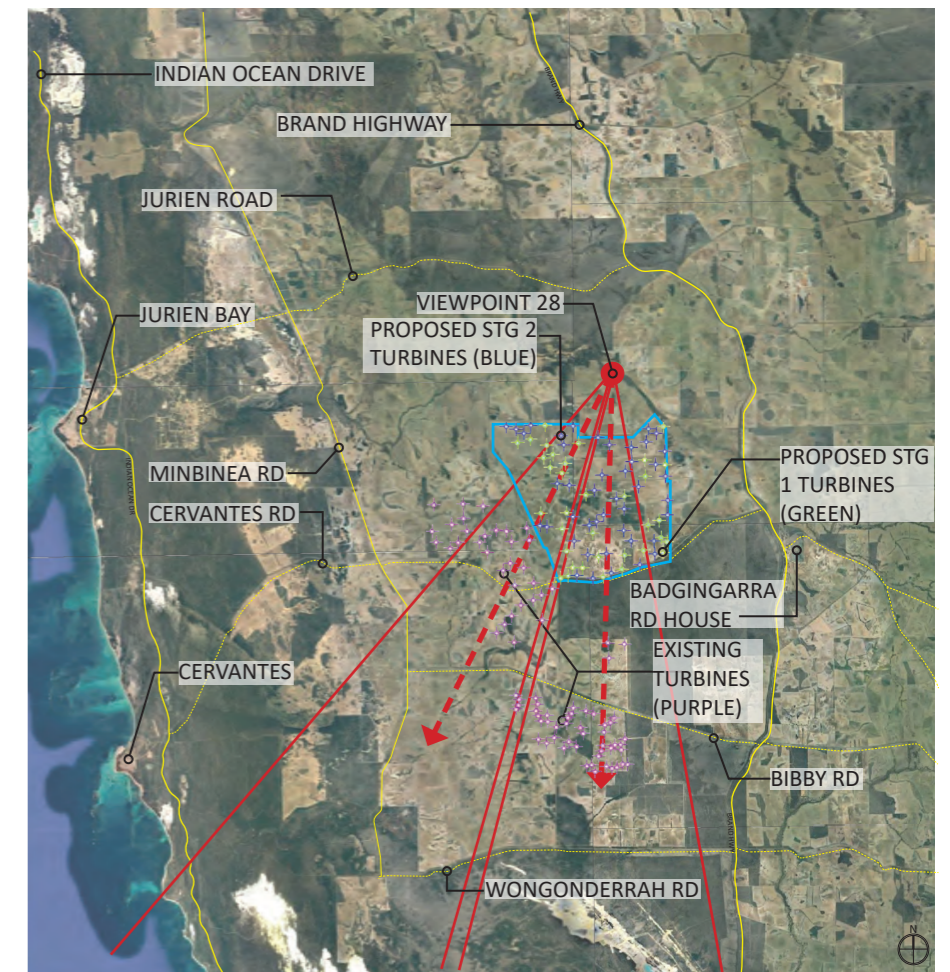
IMAGE 1: ORIGINAL PHOTOS JUNE 2024 (Emerge Associates)



IMAGE 2: SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



IMAGE 3: SUPERIMPOSED VIA MODEL - SHOWN WHITE TO MATCH PROPOSED COLOUR (SAME AS EXISTING)



LOCATION PLAN - NOT TO SCALE



## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 6.4.8 Viewpoint 30 - Brand Highway

This viewpoint is located on the roadside along Brand Highway, near the intersection with Watheroo Road. Brand Highway is a main road with high traffic used by travellers, locals and workers. The current view of the site and the predicted view are shown in **Plate 17**.

Currently, existing turbines are just visible as they 'peep' over the horizon line in the immediate view, but are not seen fully, with additional turbines visible to the south (left) of the viewpoint. Vegetation of 1- 2 m high heath is present in the foreground and cleared paddocks interspersed with linear lines of remnant vegetation in the mid ground. The project area is visible in the distance, on the ridgeline along the horizon.

The project would increase the number of turbines fully visible at this location along Brand Highway. They would be more prominent compared to the current turbines visible at this location. The natural ridgeline will screen some of the turbines, but not all.

These views are not uncommon in the rural LCU in the area, particularly to the south and along other roads, and as such it is expected that with the additional turbines visible from this viewpoint, the rural LCU can be maintained.



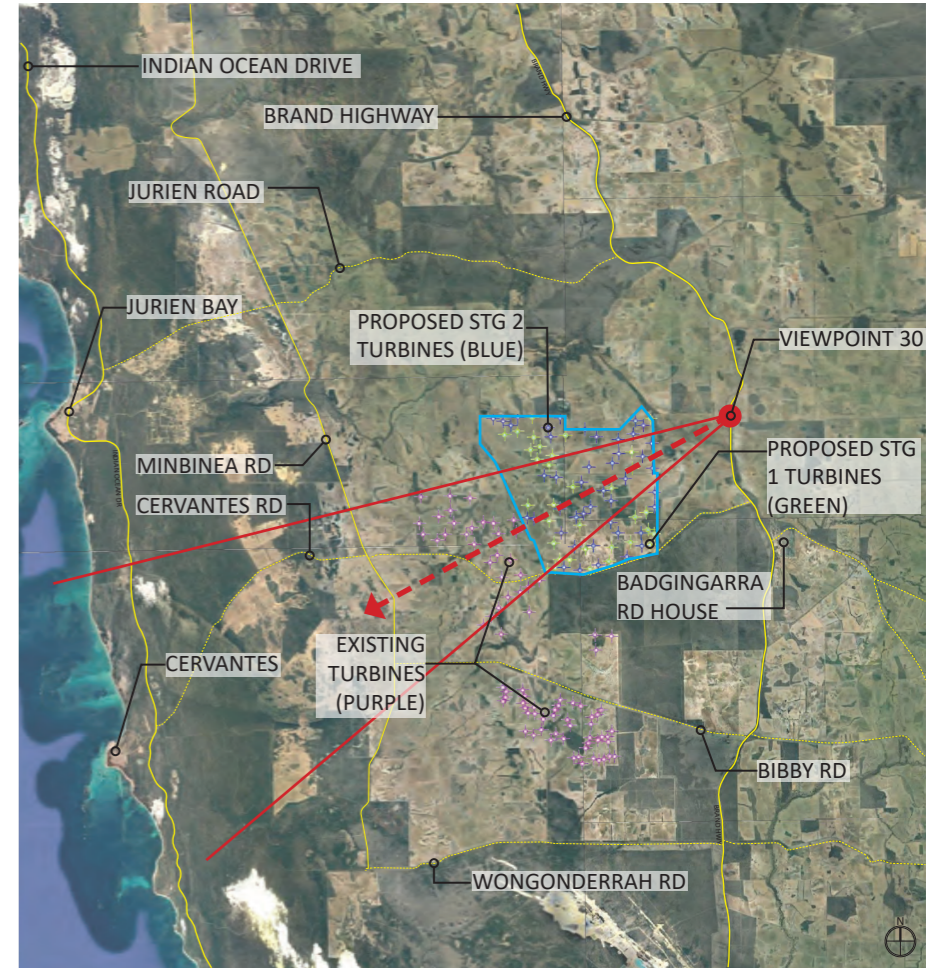
IMAGE 1: ORIGINAL PHOTO JUNE 2024 (Emerge Associates)



IMAGE 2: SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



IMAGE 3: SUPERIMPOSED VIA MODEL - SHOWN WHITE TO MATCH PROPOSED COLOUR (SAME AS EXISTING)



LOCATION PLAN - NOT TO SCALE

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 6.4.9 Viewpoint 34 – White Drive, Badgingarra

This viewpoint is located on White Drive, Badgingarra, to the east of the main travellers stop (Badgingarra roadhouse). Due to the topography, Badgingarra roadhouse itself was predicted to have limited visibility of turbines, given it is situated at a low point in the landscape, and tall vegetation is present in front of the roadhouse blocking views to the north-west and there is also a ridge within Badgingarra National Park that is predicted to blocks most views of the proposed turbines. As such, a high point near Badgingarra roadhouse was selected to test visibility. Viewpoint 34 is approximately 500 m east of Brand Highway. The current view and the predicted view are shown in **Plate 18**.

Currently, no turbines or other existing power line or similar infrastructure are visible in the distant views, with Brand Highway and town buildings and facilities interspersed by vegetation present in the foreground and midground, and Badgingarra National Park prominent in the midground and horizon. Cleared agricultural land from the site is visible on the horizon in the distance.

The proposed turbines will change current views from this viewpoint. The project will result in turbines being visible in the distance on the horizon however, the location where the photo was taken is not likely to be visited by travellers to any great extent. Views from existing residences will change compared to the existing conditions from this viewpoint, with turbines aligning with light poles in the foreground to midground (e.g. aligning vertically and sometimes appearing like a continuation). For travellers, they will have views of existing turbines and powerlines over long distances (along Brand Highway, both in northerly and southerly directions) as strong linear or grouped features, and therefore the project will not substantially change the scale or intensity of turbine visible for travellers.

The visibility of proposed turbines would change for residences to the east of the site. This view spans across natural LCU (associated with Badgingarra National Park) and the rural LCU in the far distance rolling hills. The turbines are located within the rural LCU and fit in well in the landscape due to the distance of the turbines.



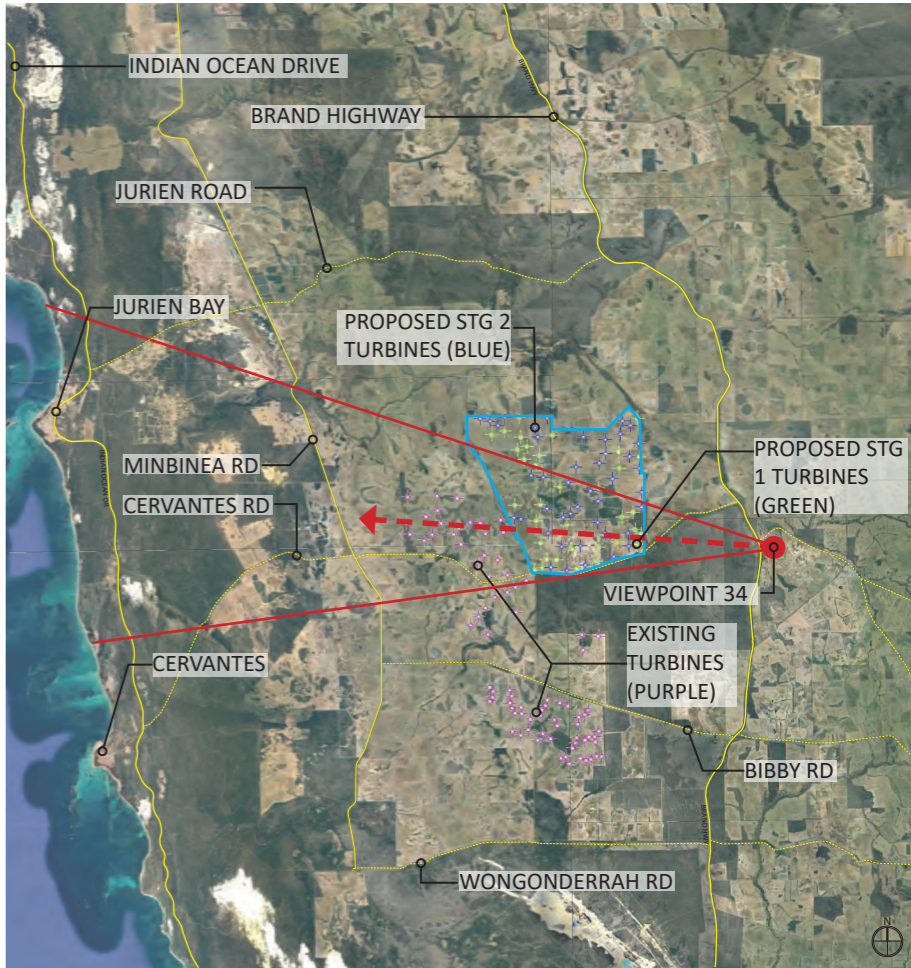
IMAGE 1: ORIGINAL PHOTO JUNE 2024 (Emerge Associates)



IMAGE 2: SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



IMAGE 3: SUPERIMPOSED VIA MODEL - SHOWN WHITE TO MATCH PROPOSED COLOUR (SAME AS EXISTING)



LOCATION PLAN - NOT TO SCALE

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 6.4.10 Viewpoint 35 - Bibby Road (east)

This viewpoint is taken from the roadside on Bibby Road and is facing north (so a view a passenger would have from the window of a vehicle). The current view and the predicted view are shown in **Plate 19**.

The current view is dominated by existing native low heath vegetation from Badgingarra National Park in the foreground and midground and cleared agricultural land visible in the distance. Existing turbines are present on the horizon to the west (left) of the view. The viewpoint is angled slightly to the right of the existing turbines (to capture the site better), so only a small portion of the existing turbines (from Emu Downs Wind Farm and Badgingarra Wind Farm) to the west are visible in the photo frame. However, existing turbines are a prominent feature in the landscape and extend to the west (left of the photo) in the landscape as well as south of Bibby Road, close to this viewpoint location facing the opposite direction to that shown in the photo. Travellers moving west would travel towards closer turbines that appear much larger. The 132 KV and 330 KV powerlines are also visible in the distance to the west of this viewpoint location.

The project would extend the views of the turbines further to the north and east (right in the photo) compared to the existing extent. Travellers traversing in both a westerly and easterly direction would experience existing turbines, some in close proximity, and therefore the project would not significantly change viewer experience in consideration of the existing turbines present. This viewpoint, similar to Viewpoint 34, spans across a natural LCU (associated with Badgingarra National Park), with the turbines situated within the rural LCU (and appear small on the horizon). The natural LCU is expected to be maintained with the implementation of the project. Differences between the addition of Stage 2 turbines is considered marginal, particularly given existing prominent turbines that travellers would move towards or away from, and would be much closer from a viewer experience perspective.

EXISTING TURBINES ON HORIZON.  
NOTE: EXISTING TURBINES ALSO  
VISIBLE SOUTH SIDE OF BIBBY ROAD

EXISTING TURBINES  
ON HORIZON OUT OF  
FRAME TO LEFT



IMAGE 1: ORIGINAL PHOTO JUNE 2024 (Emerge Associates)

PROPOSED STAGE 1 TURBINES - SHOWN RED

PROPOSED STAGE 2 TURBINES - SHOWN IN BLUE

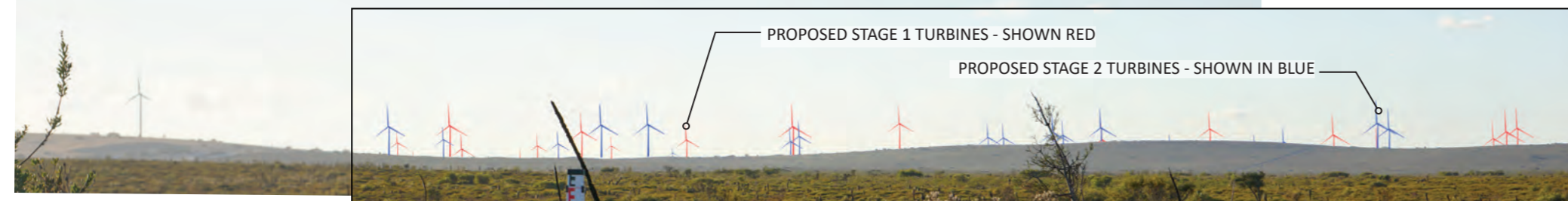
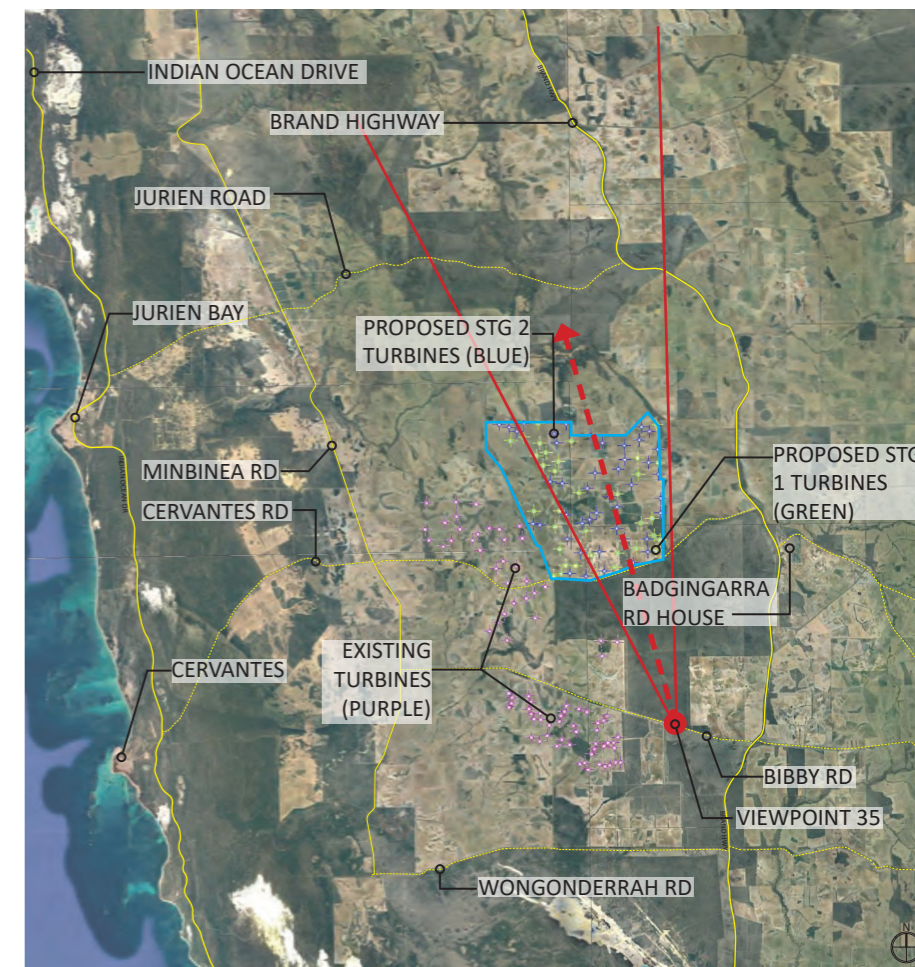


IMAGE 2: SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



IMAGE 3: SUPERIMPOSED VIA MODEL - SHOWN WHITE TO MATCH PROPOSED COLOUR (SAME AS EXISTING)



LOCATION PLAN - NOT TO SCALE



## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



#### 6.5 Cross-sections

Two cross-sections have been prepared, spanning across the site and broader assessment area, connecting two of the viewpoints. The cross-sections represent the contour data as a cut through the landscape, showing existing and proposed turbines in the context of the landforms, and giving an understanding of what the assessment is showing when it discusses the landform as screening all or parts of the turbine based on viewer location.

The cross-sections illustrating the topography only 'seen areas' are presented in **Plate 20** and **Plate 21**. From these, it can be seen that the turbines are visible at different viewpoints to different extent, but also that the topography shields the proposed turbines partially or completely at some locations.

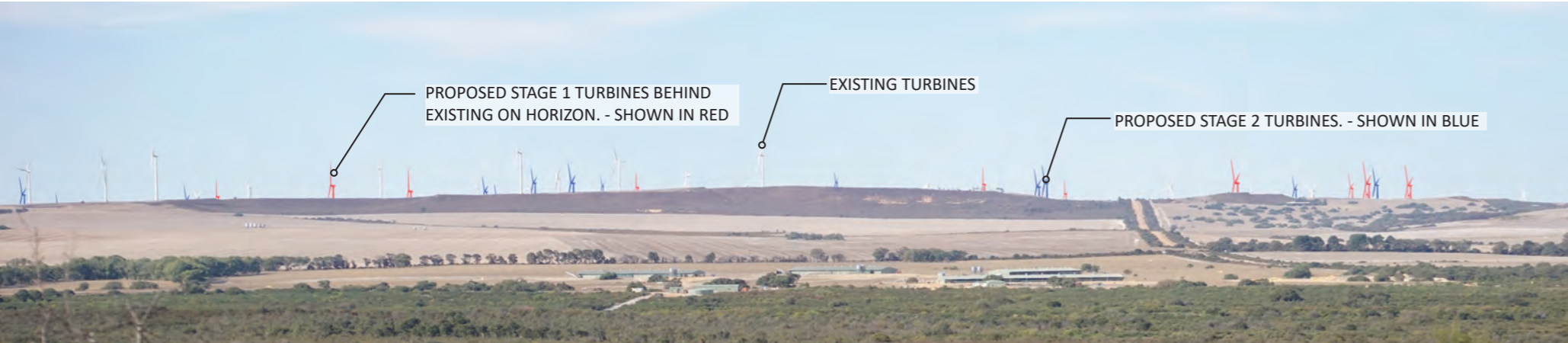
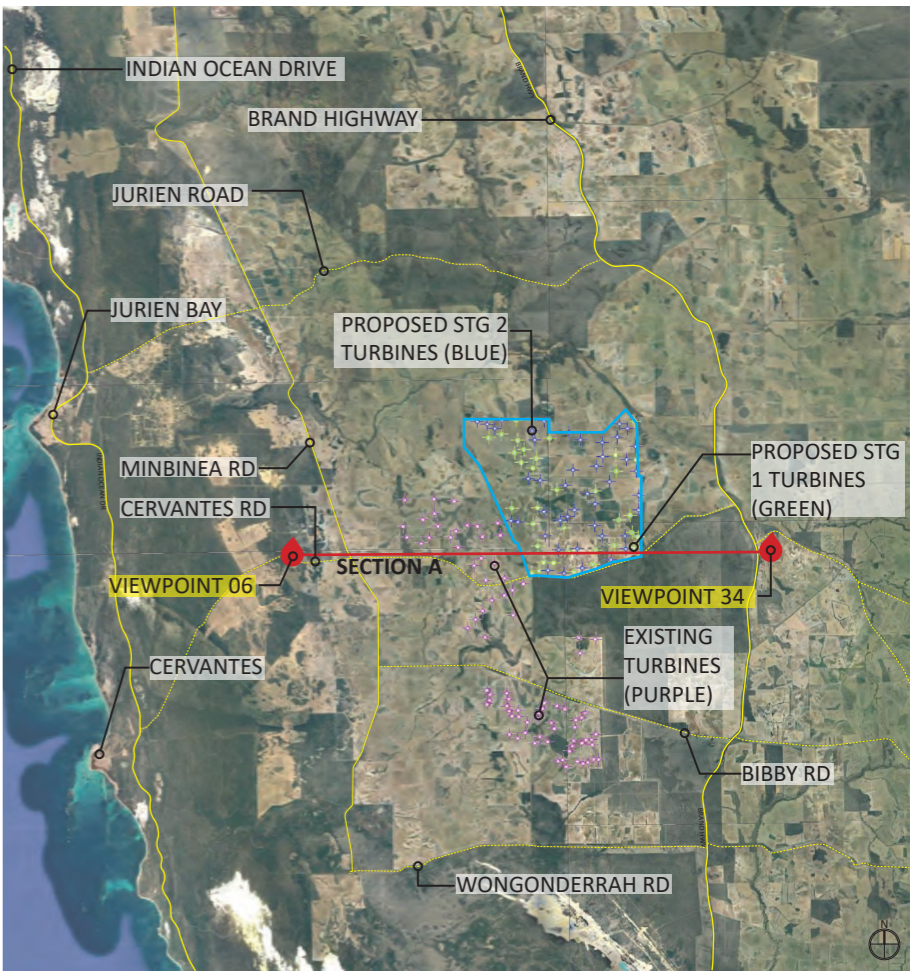


IMAGE 1: VIEW POINT 6 - SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



IMAGE 2: VIEW POINT 34 - SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



LOCATION PLAN - NOT TO SCALE

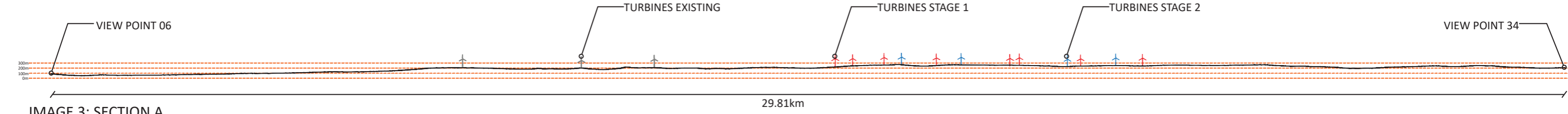


IMAGE 3: SECTION A  
NOTE: TURBINES SHOWN 150m HIGH TO HUB. APPROX 230m HIGH TO TOP OF BLADE

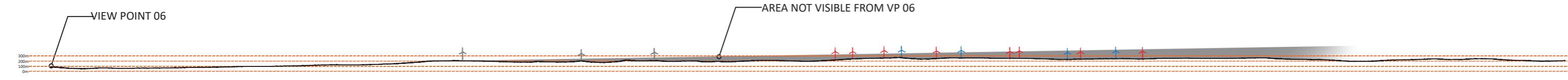


IMAGE 4: SECTION A (VIEWSHED FROM VIEWPOINT 06)

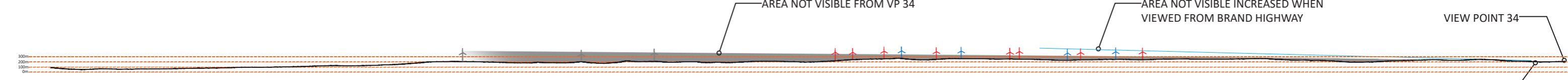


IMAGE 5: SECTION A (VIEWSHED FROM VIEWPOINT 34)

NOTE: BADGINGARRA RD HOUSE AND BRAND HWY ARE LOCATED LOWER IN THE LANDSCAPE COMPARED TO VIEWPOINT 34. VIEWS OF NEW TURBINES FROM THESE LOCATIONS WILL BE FURTHER RESTRICTED BY ADJACENT HILL

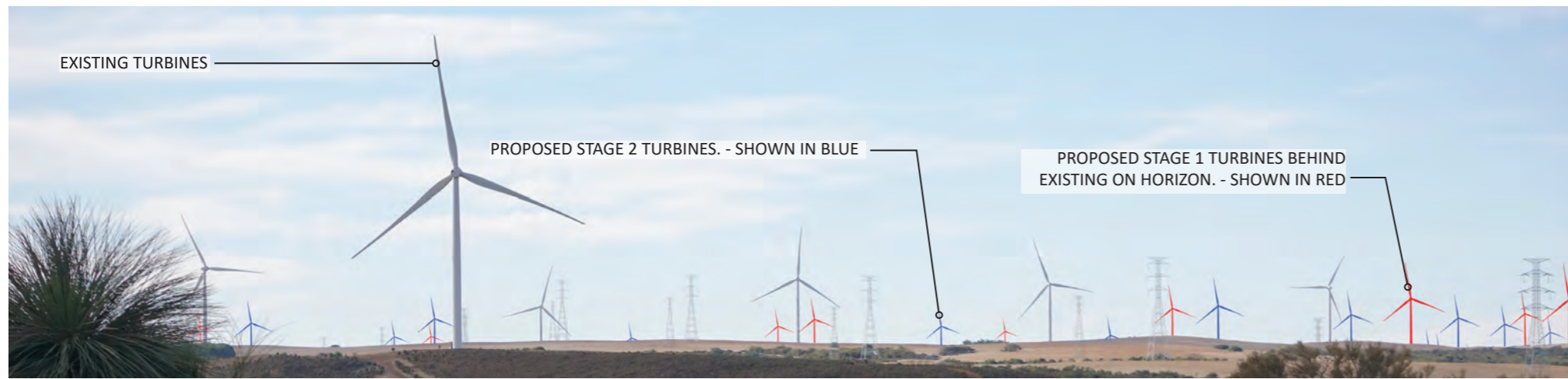


IMAGE 1: VIEW POINT 09 - SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)

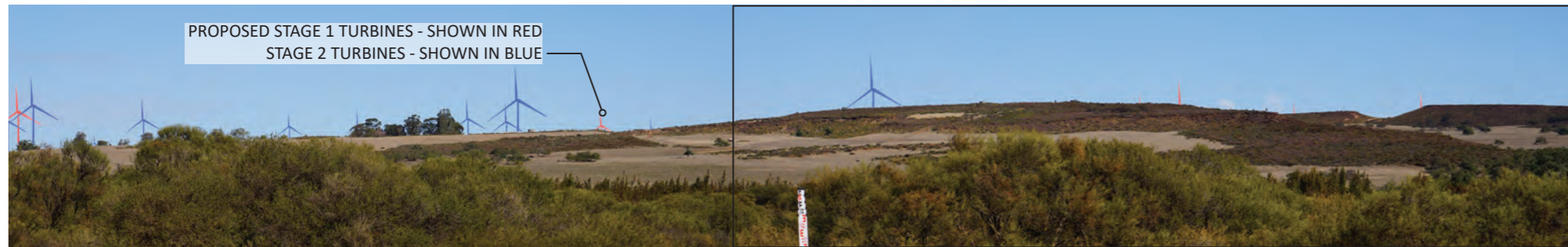
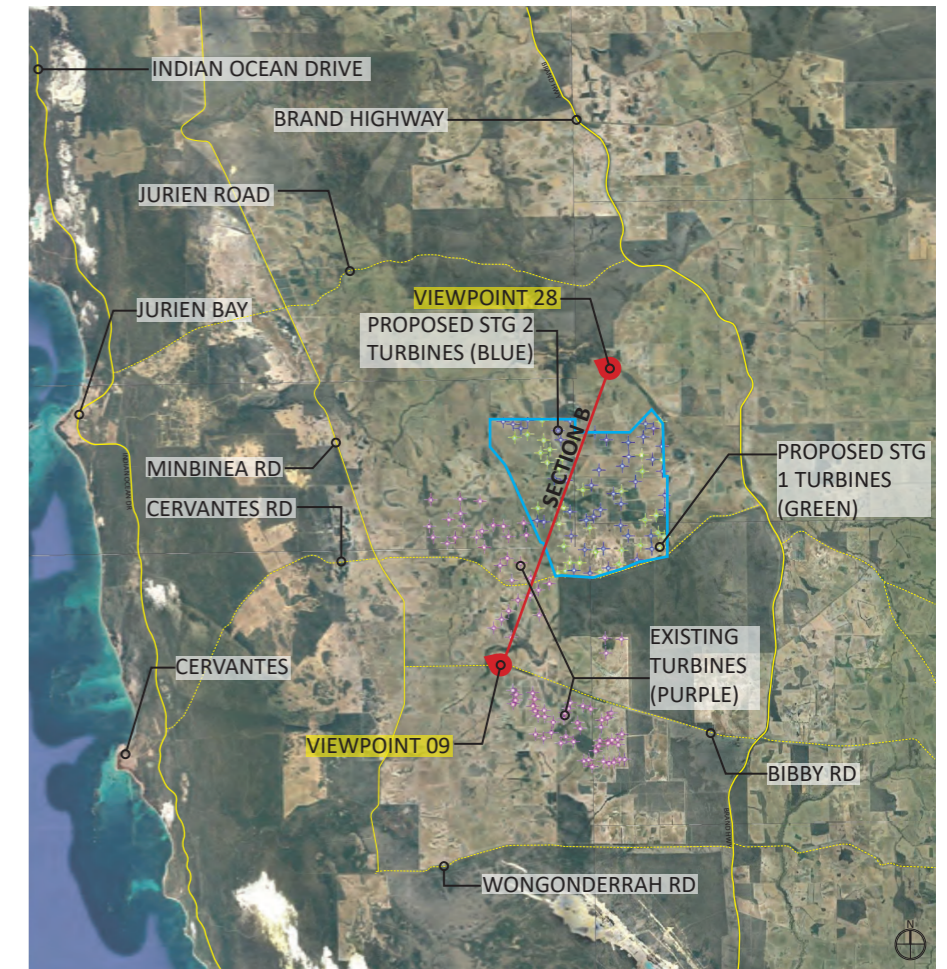


IMAGE 2: VIEW POINT 28 - SUPERIMPOSED VIA MODEL (PROPOSED TURBINES SHOWN COLOURED FOR CLARITY)



LOCATION PLAN - NOT TO SCALE

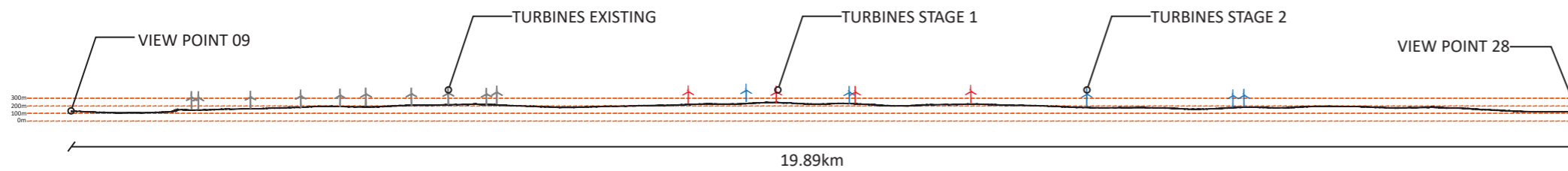


IMAGE 3: SECTION B

NOTE: TURBINES SHOWN 150m HIGH TO HUB. APPROX 230m HIGH TO TOP OF BLADE

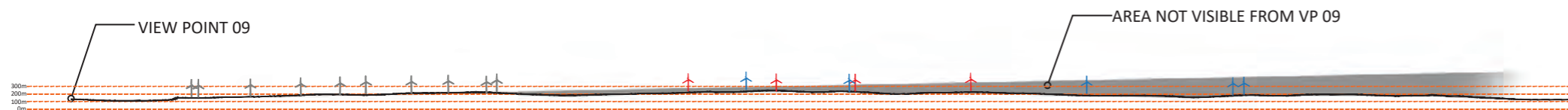


IMAGE 4: SECTION B (VIEWSHED FROM VIEWPOINT 09)

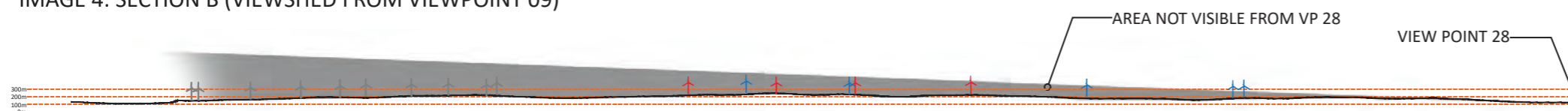


IMAGE 5: SECTION B (VIEWSHED FROM VIEWPOINT 28)



## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



## 6.6 Other considerations

### 6.6.1 Shadow flicker

A shadow flicker assessment has been completed for the project by Aurecon (2024a). This has been provided separately as part of the DA. It assesses the fluctuation of light levels from the intermittent blocking of the sun. Shadow flicker will occur under circumstances where the turbine location and orientation are such that the sun's rays pass through the swept area of the rotating blades, obstructing the sun's rays, casting a moving shadow (Aurecon 2024a). Shadow flicker effects are limited in time and location, given the sun moves across the sky.

The turbines are close enough that shadow flicker could affect a number of nearby residential buildings between 5 years and 25 hours per year. The assessment notes that this is within the allowable limits based on draft national guidelines (Aurecon 2024a).

Given the short duration, shadow flicker is not expected to significantly affect visual amenity compared to current conditions, with some of the affected buildings within closer proximity to existing turbines.

The shadow flicker assessment can be referred to for more detail.

### 6.6.2 Blade glint

As part of the shadow flicker assessment (Aurecon 2024a), blade glint was also considered and refers to the intermittent reflection of the sun's light from the surface of turbine blades. The reflectivity of the surface of the blades, which is influenced by the colour and age of the blade, as well as the orientation of the nacelle, angle of the blade, and the angle of the sun, all influence blade glint. Blade glint can be a temporary effect at any particular location.

Blade glint will not present a significant issue for the project given the low reflectivity finish that is utilised for all modern turbine's blades. This prevents glinting from the surface of the blades and the possibility of a strobing reflection when the blades are turning. Glinting is not anticipated to impact the visual amenity of residents or travellers in the area.

The shadow flicker assessment can be referred to for more detail.

## Stage 2 Visual Impact Assessment

### Parron Wind Farm Development



## 7 Conclusion

The outcomes of this assessment indicate that the proposed turbines will be visible to different extents from various locations. However, turbines ‘fit’ well in the landscape and are common in the rural LCU within the Shire of Dandaragan, and in particular at/near this location. Landscape character objectives and the visual quality of the rural LCU and natural LCU can be maintained with implementation of the project.

The existing landscape provides high and low ridges which screen or display individual turbines at different points in the landscape. The turbines will be most visible in high points of the landscape where natural screening from the hills is reduced. Visual impacts (changes to viewer experience at the landscape level) are expected to be marginal. Existing turbines from the adjacent Emu Downs Wind Farm and Badgingarra Wind Farm are currently visible and interspersed with the natural LCU and rural LCU of the area, and the project will largely be an extension of this.

The predicted outcomes from the project were similar to that predicted in the GHD (2008) and Emerge Associates (2024) assessments. It is difficult to assess the potential difference for views from the east given these were not assessed by GHD (2008) with no photomontages prepared as part of that assessment. The GHD (2008) assessment represents the current approved extent of wind farm development, with only the turbines in the site not yet constructed.

While views will change at Viewpoint 19, Viewpoint 28 and Viewpoint 34 compared to the existing conditions, travellers using both Cantabilling Road and Brand Highway will have views of existing turbines and powerlines over longer distances (up to at least 15 km away in some locations) as strong linear or grouped features and the project will not substantially change the scale or intensity of human infrastructure compared to the existing infrastructure visible throughout the rural and natural landscape characters. Residents along Cantabilling Road will see turbines closer than current conditions. Residents within Badgingarra townsite (e.g. above the roadhouse) will likely experience different views to current, with turbines predicted to be visible on the distant horizon, although this is considered consistent with the broader rural LCU experience, rolling cleared hills interspersed with human-related infrastructure and large scale turbines and poles, and would not be different to that under the GHD (2008) assessment if photomontages for views from the east had been included.

Wind turbines are generally not able to be screened from within the site due to their height and scale, and while a prominent feature, can be compatible with existing visual experiences for travellers and locals, particularly given existing views of wind turbines. Mitigation (such as screening planting) would be required at the receptor to have any chance of minimising the visibility of the turbines, but is not proposed at this point in time. Based on the existing landform (rolling hills) and interspersed nature of native vegetation and cleared agricultural land, the predominantly rural LCU and urban LCU can be maintained.

## Stage 2 Visual Impact Assessment Parron Wind Farm Development



### 8 References

Aurecon Australasia Pty Ltd (Aurecon) 2024a, *Parron Wind Farm - Shadow Flicker Assessment*.

Aurecon Australasia Pty Ltd (Aurecon) 2024b, *Parron Wind Farm Layout*.

Department of Conservation and Land Management (CALM) 1994, *Reading the Remote - Landscape Characters of Western Australia*.

Department of Primary Industries and Regional Development (DPIRD) 2018, *Soil Landscape Mapping - Systems (DPIRD-064)*, Data WA, <<https://catalogue.data.wa.gov.au/dataset/soil-landscape-mapping-systems>>.

Emerge Associates 2024, *Stage 1 Visual Impact Assessment - Parron Wind Farm Development*, EP23-085(09)—019 EKB, 1.

GHD 2008, *Badgingarra Wind Farm Landscape and Visual Impact Study -Vestas V90 3MW Turbines*.

Shire of Dandaragan 2020, *Local Planning Strategy*, <<https://www.wa.gov.au/system/files/2021-11/LST-Shire-of-Dandaragan-Local-Planning-Strategy.pdf>>.

Western Australian Planning Commission (WAPC) 2007, *Visual Landscape Planning in Western Australia - a manual for evaluation, assessment, siting and design*, Perth.

Western Australian Planning Commission (WAPC) 2016, *State Planning Policy 2.5 Rural Planning*, Perth.

W. A. P. Commission (WAPC) 2020, *Position Statement: Renewable energy facilities*, Perth, WA.

# Figures



*Figure 1: Site Location and Proposed Development Layout*

*Figure 2: Landscape Character Types and Soil Landscape Systems*

*Figure 3: Landscape Character Units*

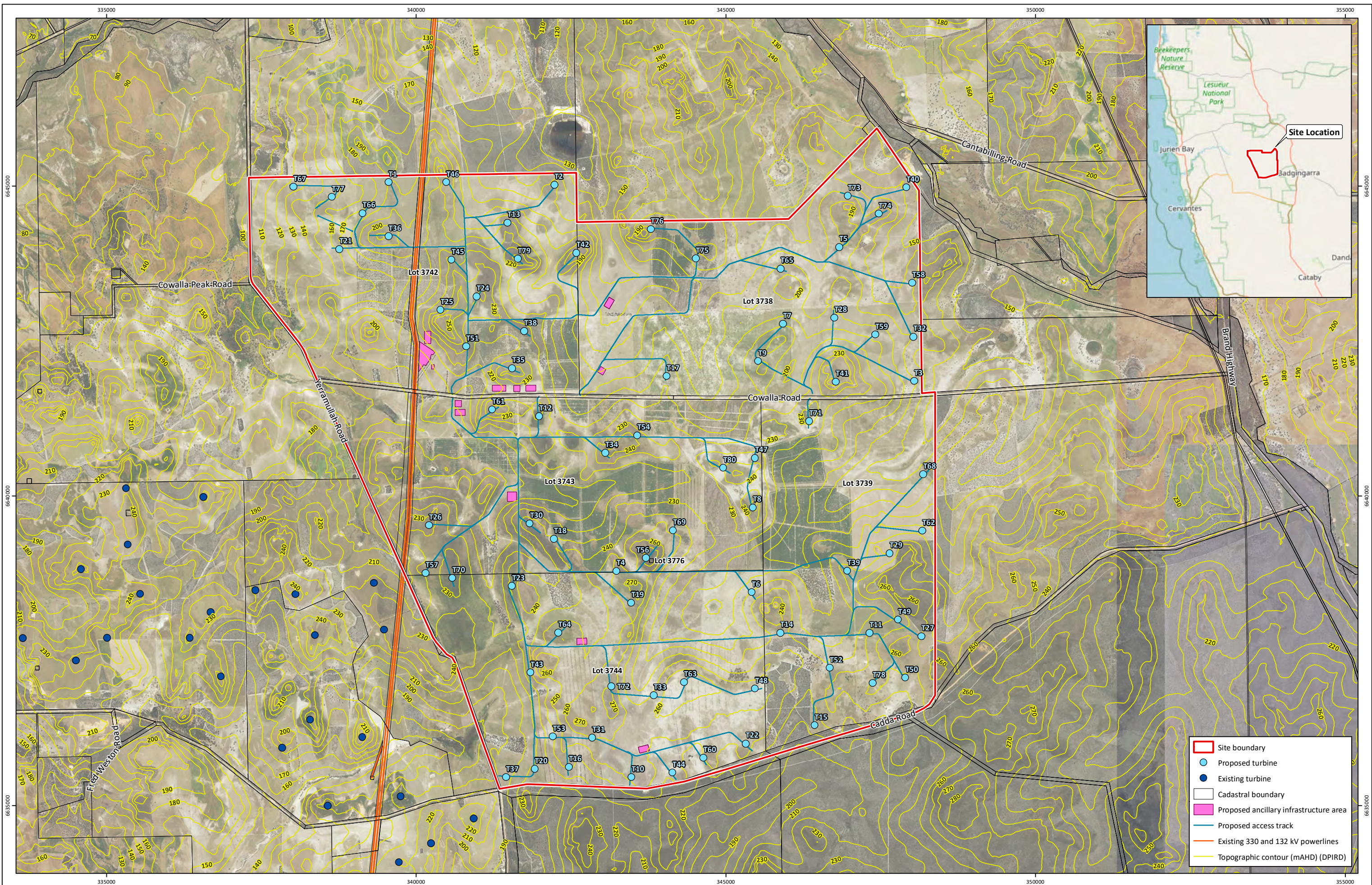
*Figure 4: Viewshed analysis - Visible and Non-Visible based on 230 m Top of Blade Height*

*Figure 5: Viewshed Analysis - Predicted Number of Visible Turbines based on 150 m Hub Height*

*Figure 6: Viewshed Analysis - Predicted Number of Visible Turbines based on 170 m Hub Height*

*Figure 7: Viewshed Analysis - Predicted Number of Visible Turbines based on 230 m Top of Blade Height*

*Figure 8: Viewshed Analysis - Predicted Number of Visible Turbines based on 250 m Top of Blade Height*



- Site boundary
- Proposed turbine
- Existing turbine
- Cadastral boundary
- Proposed ancillary infrastructure area
- Proposed access track
- Existing 330 and 132 kV powerlines
- Topographic contour (mAHD) (DPIRD)

**Figure 1: Site Location**

**Project:** Stage 2 Visual Impact Assessment  
Parron Wind Farm Development  
**Client:** Zephyr Energy Pty Ltd

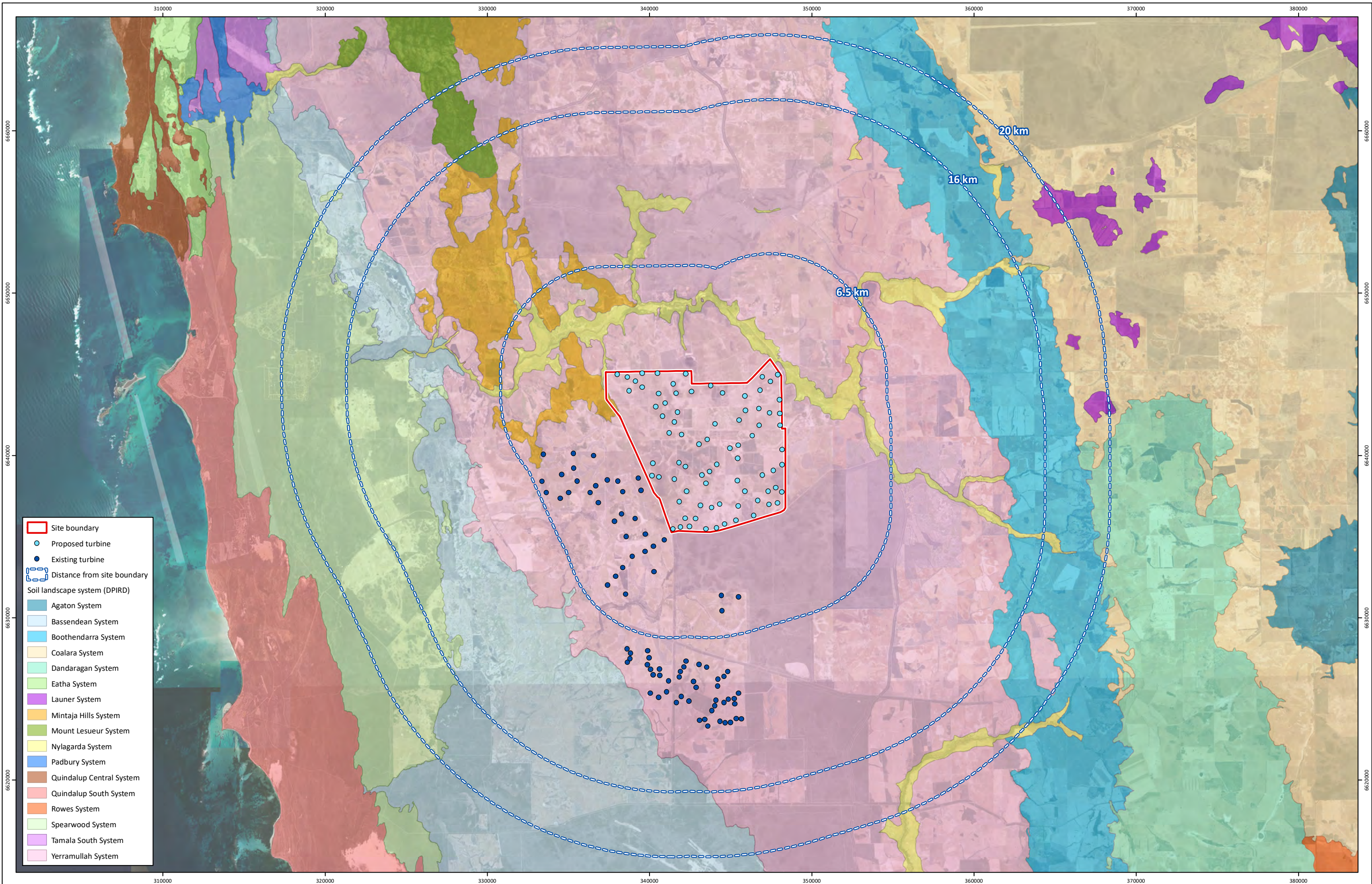
**Plan Number:**  
EP23-085(14)-F88  
**Drawn:** WJC  
**Date:** 05/09/2024  
**Checked:** EKB  
**Approved:** KK  
**Date:** 27/09/2024



0 500 1,000 1,500  
Metres  
Scale: 1:55,000@A3  
GDA2020 MGA Zone 50



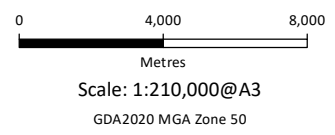
While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used ©Landgate (2024).



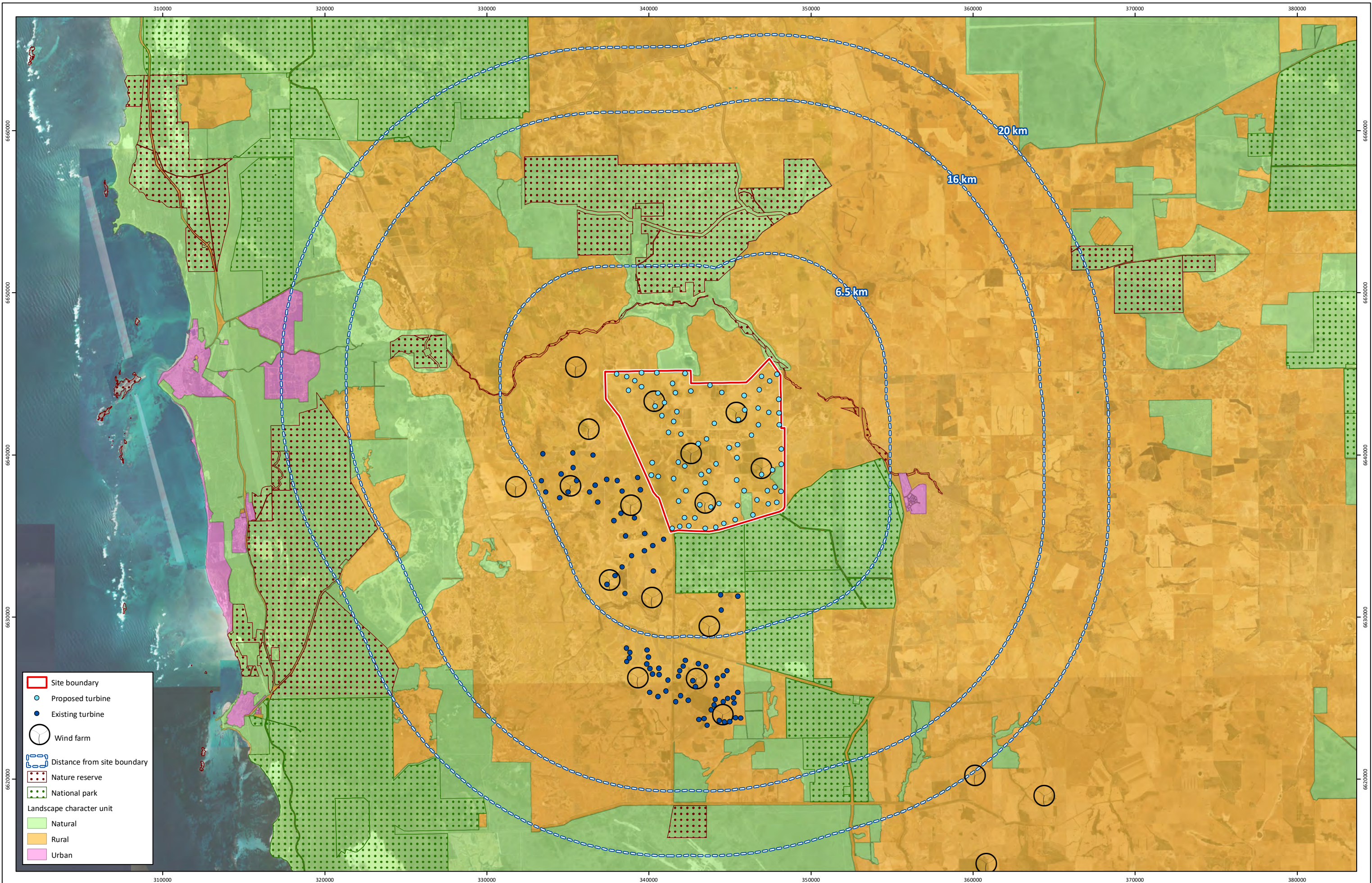
**Figure 2: Landscape Character Types and Soil Landscape Systems**

**Project:** Stage 2 Visual Impact Assessment  
Parron Wind Farm Development  
**Client:** Zephyr Energy Pty Ltd

**Plan Number:**  
EP23-085(14)-F89  
**Drawn:** WJC  
**Date:** 06/09/2024  
**Checked:** EKB  
**Approved:** KK  
**Date:** 27/09/2024



While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used ©Landgate (2024).



- Site boundary
- Proposed turbine
- Existing turbine
- Wind farm
- Distance from site boundary
- Nature reserve
- National park
- Landscape character unit
- Natural
- Rural
- Urban

**Figure 3: Landscape Character Units**

**Project:** Stage 2 Visual Impact Assessment  
Parron Wind Farm Development  
**Client:** Zephyr Energy Pty Ltd

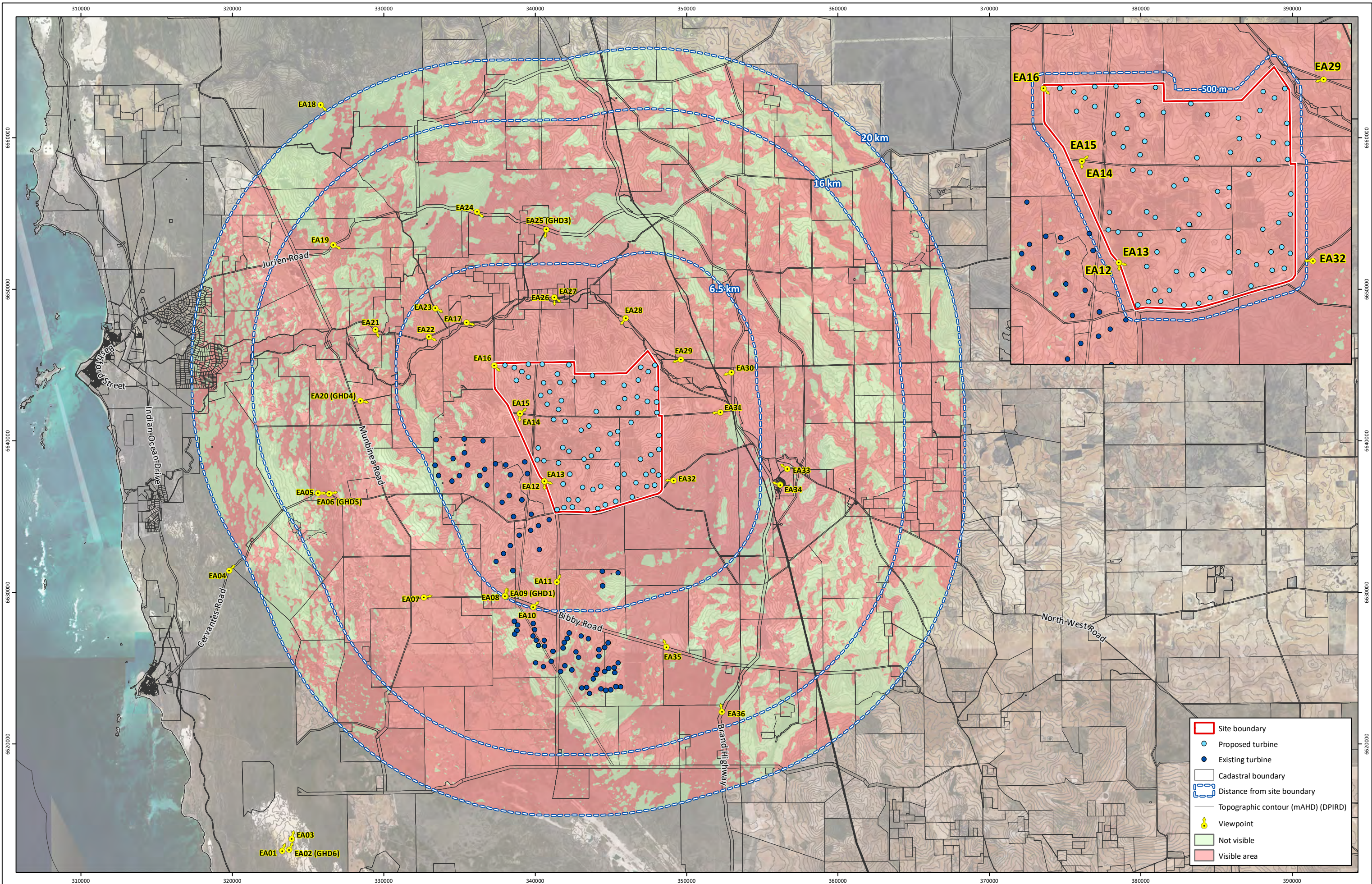
**Plan Number:**  
EP23-085(14)-F131  
**Drawn:** WJC  
**Date:** 06/09/2024  
**Checked:** EKB  
**Approved:** KK  
**Date:** 27/09/2024



0 4,000 8,000  
Metres  
Scale: 1:210,000@A3  
GDA2020 MGA Zone 50



While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used ©Landgate (2024).



**Figure 4: Viewshed Analysis - Visible and Non-Visible based on 230 m Top of Blade Height**

**Project:** Stage 2 Visual Impact Assessment  
Parron Wind Farm Development  
**Client:** Zephyr Energy Pty Ltd

**Plan Number:**  
EP23-085(14)-F90  
**Drawn:** WJC  
**Date:** 05/09/2024  
**Checked:** EKB  
**Approved:** KK  
**Date:** 27/09/2024



0 2,500 5,000 7,500  
Metres  
Scale: 1:225,000@A3  
GDA2020 MGA Zone 50



While Emmerge Associates makes every attempt to ensure the accuracy and completeness of data, Emmerge accepts no responsibility for externally sourced data used ©Landgate (2024).

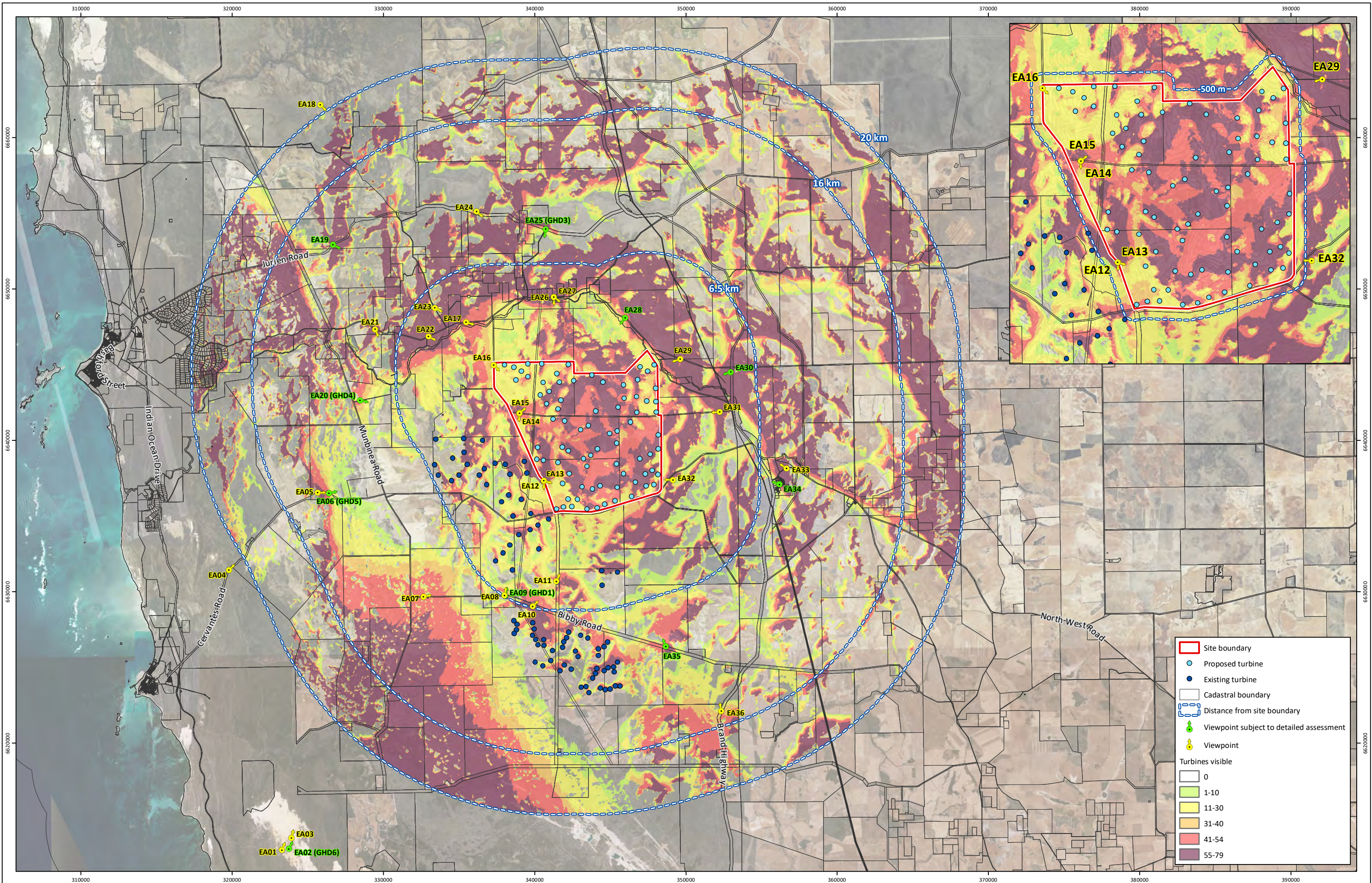
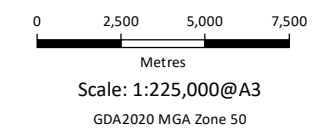


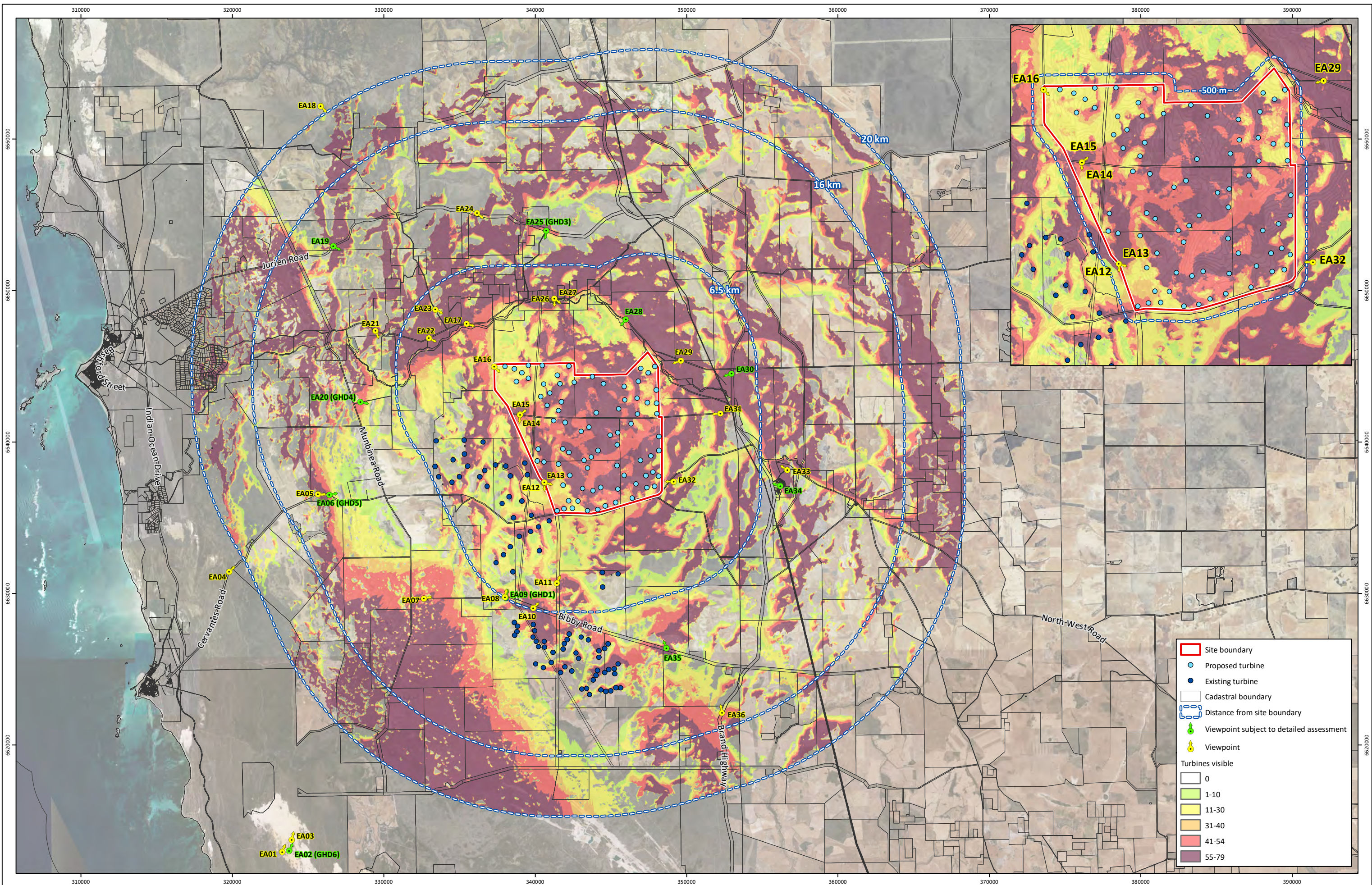
Figure 5: Viewshed Analysis - Predicted Number of Visible Turbines based on 150 m Hub Height

Project: Stage 2 Visual Impact Assessment  
Parron Wind Farm Development  
Client: Zephyr Energy Pty Ltd

Plan Number: EP23-085(14)-F91  
Drawn: WJC  
Date: 05/09/2024  
Checked: EKB  
Approved: KK  
Date: 27/09/2024



While Emmerge Associates makes every attempt to ensure the accuracy and completeness of data, Emmerge accepts no responsibility for externally sourced data used ©Landgate (2024).



**Figure 6: Viewshed Analysis - Predicted Number of Visible Turbines based on 170 m Hub Height**

**Project:** Stage 2 Visual Impact Assessment  
Parron Wind Farm Development  
**Client:** Zephyr Energy Pty Ltd

**Plan Number:**  
EP23-085(14)-F92  
**Drawn:** WJC  
**Date:** 05/09/2024  
**Checked:** EKB  
**Approved:** KK  
**Date:** 27/09/2024



0 2,500 5,000 7,500  
Metres  
Scale: 1:225,000@A3  
GDA2020 MGA Zone 50



While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used ©Landgate (2024).

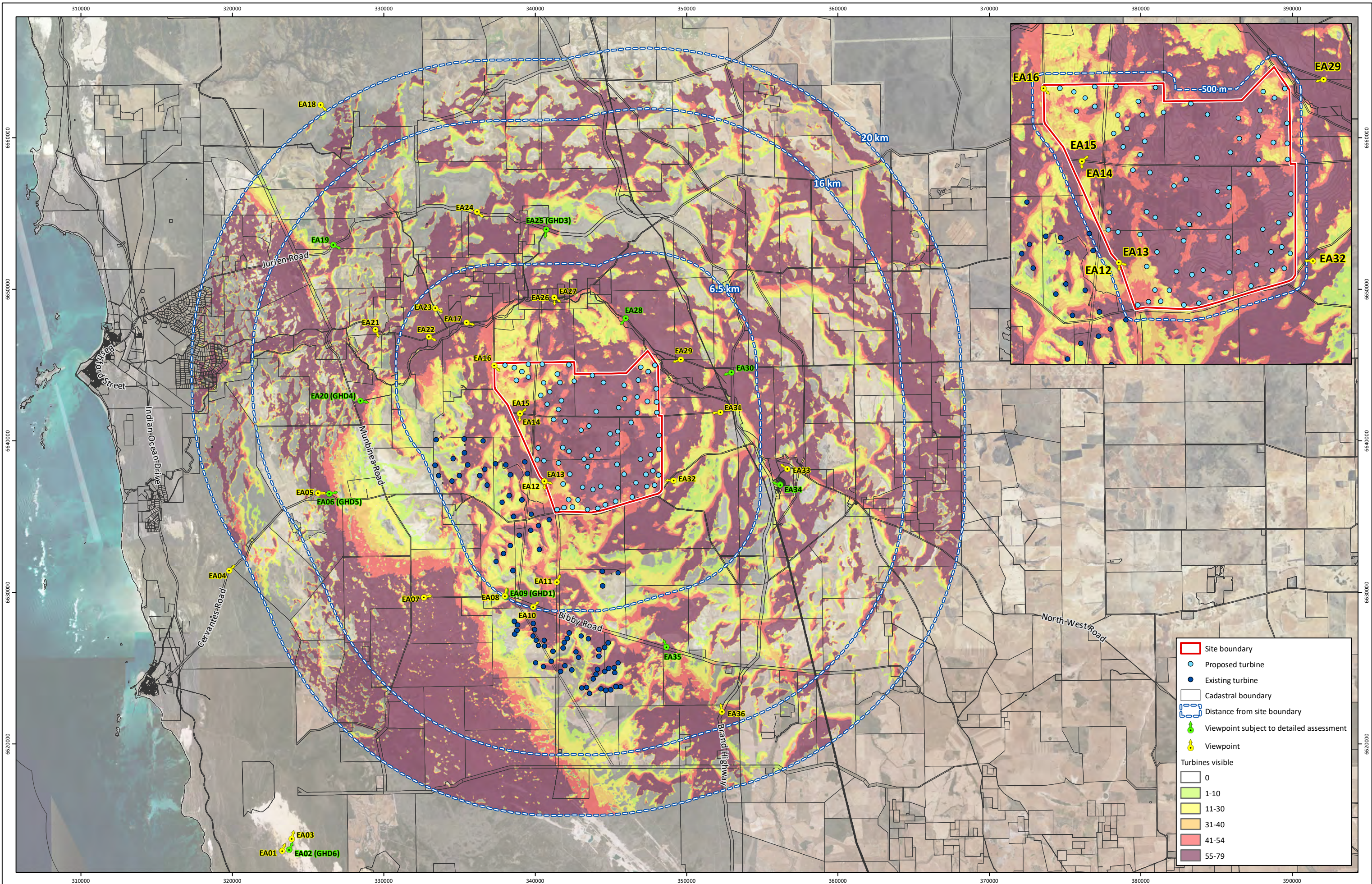


Figure 7: Viewshed Analysis - Predicted Number of Visible Turbines based on 230 m Top of Blade Height

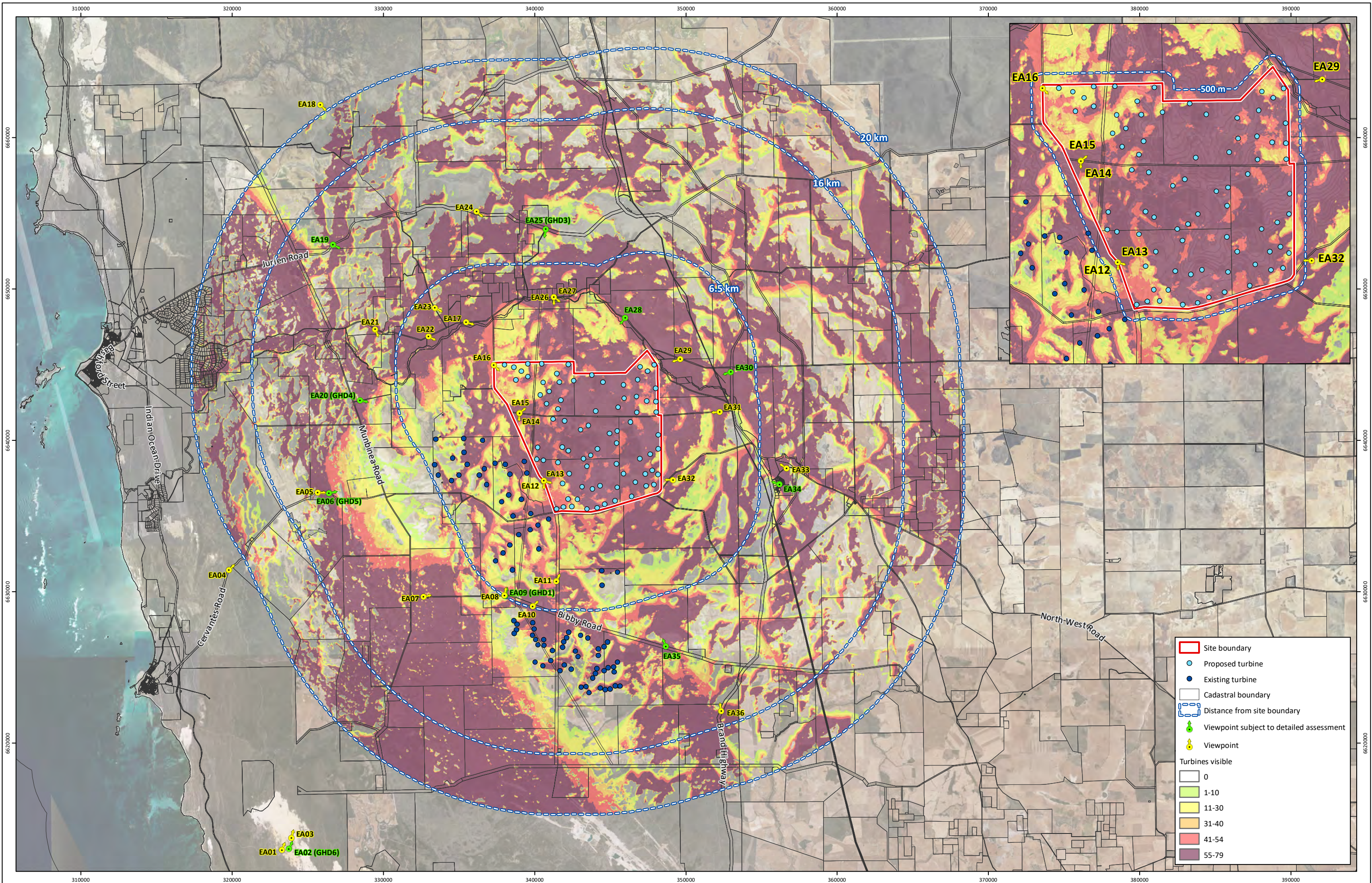
Project: Stage 2 Visual Impact Assessment  
Parron Wind Farm Development  
Client: Zephyr Energy Pty Ltd

Plan Number:  
EP23-085(14)-F93  
Drawn: WJC  
Date: 05/09/2024  
Checked: EKB  
Approved: KK  
Date: 27/09/2024



0 2,500 5,000 7,500  
Metres  
Scale: 1:225,000@A3  
GDA2020 MGA Zone 50

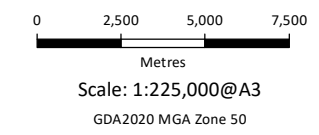




**Figure 8: Viewshed Analysis - Predicted Number of Visible Turbines based on 250 m Top of Blade Height**

**Project:** Stage 2 Visual Impact Assessment  
Parron Wind Farm Development  
**Client:** Zephyr Energy Pty Ltd

**Plan Number:**  
EP23-085(14)-F94  
**Drawn:** WJC  
**Date:** 05/09/2024  
**Checked:** EKB  
**Approved:** KK  
**Date:** 27/09/2024



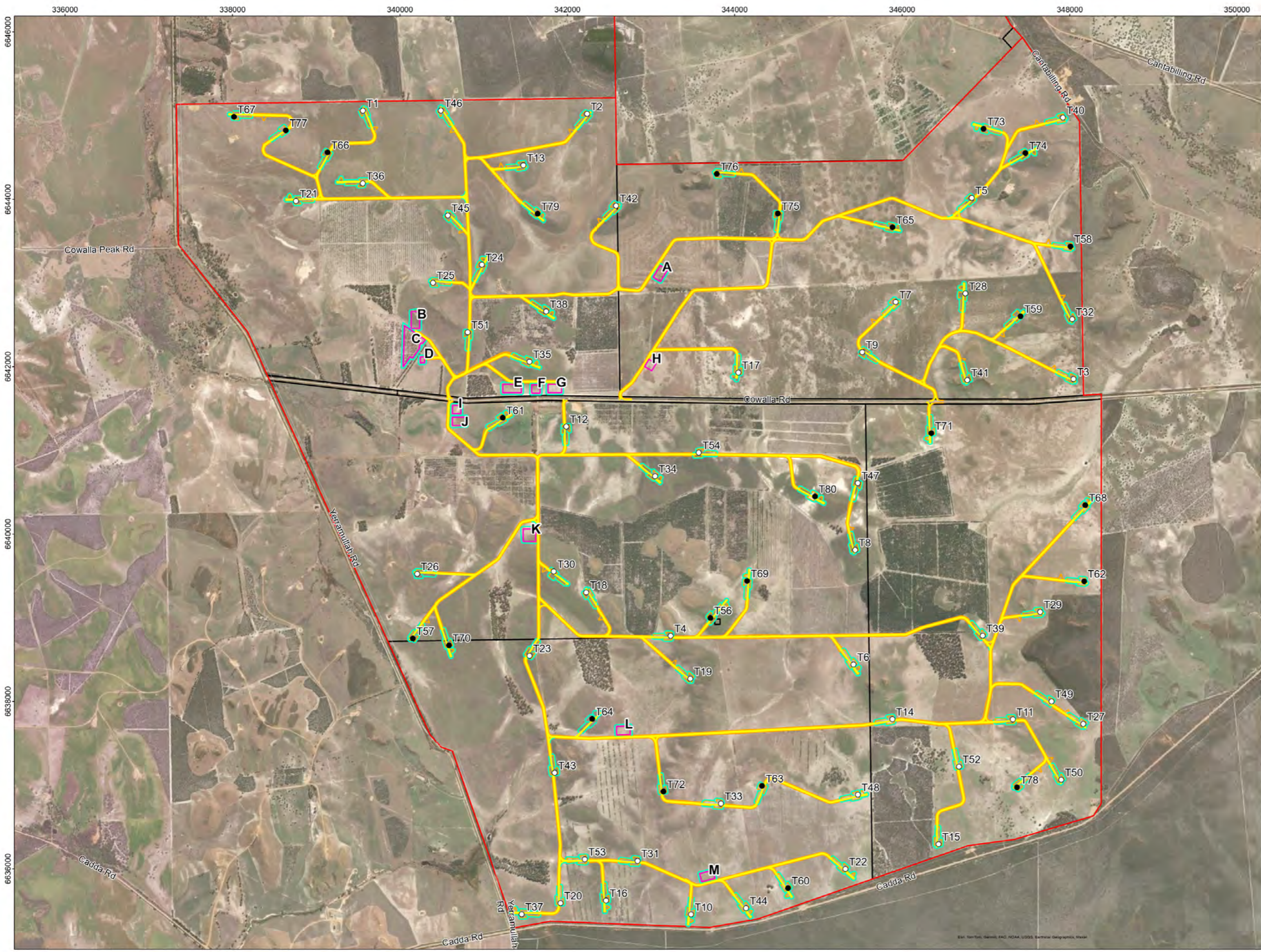
While Emmerge Associates makes every attempt to ensure the accuracy and completeness of data, Emmerge accepts no responsibility for externally sourced data used ©Landgate (2024).

This page has been left blank intentionally.

# Appendix A

Proposed Development Layout (Aurecon 2024b)





**Parron Wind Farm development and ancillary infrastructure**

- Project boundary
- Wind turbines (54 WTG layout)
- Wind turbines (79 WTG layout)
- Ancillary area
- Edge of carriageway (6 m width)
- Lot boundary

**Disturbance area**

- Total disturbance footprint area: 4.91 km<sup>2</sup>
- 20 m disturbance area
- 10 m disturbance area

**Ancillary infrastructure dimensions (excl. buffer)**

A - General laydown area	162 m x 100 m
B - BESS	100 m x 200 m
C - Substation/switchyard	1,260 m <sup>2</sup>
D - O&M building	70 m x 50 m
E - Site compound bench	100 m x 220 m
F - Concrete batching plant	100 m x 100 m
G - General laydown area	162 m x 100 m
H - Temp. worker accommodation	100 m x 100 m
I - Concrete batching plant	100 m x 100 m
J - General laydown area	162 m x 100 m
K - Substation	150 m x 150 m
L - General laydown area	162 m x 100 m
M - General laydown area	162 m x 100 m

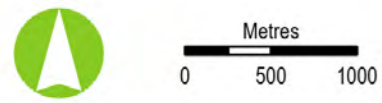
Wind turbine hardstand disturbance area (per WTG): 0.0251 km<sup>2</sup>

**Notes**

1. Cables are to be sited within the road layout where possible.
2. Indicative concept plan only, turbine and ancillary infrastructure locations are subject to change through detailed design.

Revision: 0

Date: 4/07/2024



# Appendix B

GHD (2008) Figures Excerpt





- LEGEND**
- Preliminary Monitoring Tower - 200704
  - Proposed 3MW Turbine Locations - 20080414
  - Existing 1.65MW Turbine Locations - 200704
  - Proposed Badgingarra Wind Farm (BWF) - GHD - 20080512
  - Existing Emu Downs Wind Farm (EDWF) - 200705

1:250,000 (at A3)  
 0 1 2 4 6 8 10  
 Kilometres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: Geocentric Datum of Australia 1994  
 Grid: Map Grid of Australia, Zone 50



**GHD**  
 Stanwell Corporation &  
 Griffin Windfarm 2



Proposed Badgingarra Wind Farm  
 Job Number | 6122333  
 Revision | 1  
 Date | 12 May 2008  
**3MW Vestas V90 Option**  
**Location Map**  
**Figure 1**

239 Adelaide Terrace Perth WA 6004 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com.au W www.ghd.com.au  
 © 2008. While GHD has taken care to ensure the accuracy of this product, GHD and DATA SUPPLIER(S) make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. GHD and DATA SUPPLIER(S) cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason. Dataset names include published date where available. All data sourced from Griffin Windfarm 2 Pty Ltd and Stanwell Corporation unless otherwise indicated. Background taken from Travelers Atlas 2004 Edition, produced 2003. Created by: SL/ML



**LEGEND**



Photo Montage Location, Direction and Indicative Field of View - Environmental GIS - 20080501

1:200,000 (at A3)

0 1 2 4 6 8 10

Kilometres

Map Projection: Transverse Mercator  
Horizontal Datum: Geocentric Datum of Australia 1994  
Grid: Map Grid of Australia, Zone 50



Stanwell Corporation & Griffin Windfarm 2



Proposed Badgingarra Wind Farm

Job Number 6122333  
Revision 1  
Date 12 May 2008

3MW Vestas V90 Option  
Photo Montage Locations

Figure 8



**Proposed Badgingarra Wind Farm**

**Stanwell Corporation &  
Griffin Windfarm 2**



**2MW REpower MM82 Option  
Bibby Road Photo Montage**

Job Number	6122333
Revision	1
Date	5 May 2008

**Site 1**

© 2008. While GHD has taken care to ensure the accuracy of this product, GHD and DATA SUPPLIER(S) make no representations or warranties about the accuracy, completeness or suitability for any particular purpose. GHD and DATA SUPPLIER(S) cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unreliable in any way and for any reason. All Data used in this montage sourced from Stanwell Corporation unless otherwise stated. Created by: ML / BL

G:\6122333\GIS\6122333-G020\_rev1.MXD



## Proposed Badgingarra Wind Farm

**Stanwell Corporation &  
Griffin Windfarm 2**



**3MW Vestas V90 Option  
Yerramullah Road Photo Montage**

Job Number	6122333
Revision	1
Date	5 May 2008

**Site 2**

© 2008. While GHD has taken care to ensure the accuracy of this product, GHD and DATA SUPPLIER(S) make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. GHD and DATA SUPPLIER(S) cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unusable in any way and for any reason. All Data used in Photomontage sourced from Stanwell Corporation unless otherwise stated. Created by: ML / SL

G:\6122333\GHS\6122333-026\_rev1.mxd



## Proposed Badgingarra Wind Farm

**Stanwell Corporation &  
Griffin Windfarm 2**



**3MW Vestas V90 Option  
Jurien Road Photo Montage**

Job Number | 6122333  
Revision | 1  
Date | 5 May 2008

**Site 3**

© 2008. While GHD has taken care to ensure the accuracy of this product, GHD and DATA SUPPLIER(S) make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. GHD and DATA SUPPLIER(S) cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damages) which are or may be incurred as a result of the product being inaccurate, incomplete or unusable in any way and for any reason. All Data used in Photo Montage sourced from Stanwell Corporation unless otherwise stated. Created by: ML / BL

©:6122333\G:\6122333-0027\_rvt.MXD



## Proposed Badgingarra Wind Farm

**Stanwell Corporation &  
Griffin Windfarm 2**



**3MW Vestas V90 Option  
Munbinea Road Photo Montage**

Job Number | 6122333  
Revision | 1  
Date | 5 May 2006

**Site 4**

© 2006. While GHD has taken care to ensure the accuracy of this product, GHD and DATA SUPPLIER(S) make no representation or warranty about its accuracy, completeness or suitability for any particular purpose. GHD and DATA SUPPLIER(S) cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason. All Data used in Photomontage sourced from Stanwell Corporation unless otherwise stated. Created by: M. / B.

G:\6122333\GIS\6122333-0326\_rev1.MXD



## Proposed Badgingarra Wind Farm

**Stanwell Corporation &  
Griffin Windfarm 2**



**3MW Vestas V90 Option  
Verne Hill Photo Montage**

Job Number	6122333
Revision	1
Date	5 May 2008

**Site 5**

© 2008. While GHD has taken care to ensure the accuracy of this product, GHD and DATA SUPPLIER(S) make no representations or warranties about the accuracy, completeness or suitability for any particular purpose. GHD and DATA SUPPLIER(S) accept no liability of any kind whatsoever in contract, tort or otherwise for any expenses, losses, damage or other costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unreliable in any way and for any reason. All Data used in PhotoMontage sourced from Stanwell Corporation unless otherwise stated. Created by: ML / BL.

G:\6122333\GHD\6122333-G129\_rev1.MXD



## Proposed Badgingarra Wind Farm

**Stanwell Corporation &  
Griffin Windfarm 2**



**3MW Vestas V90 Option  
The Pinnacles Photo**

Job Number	8122333
Revision	0
Date	13 May 2008

**Site 6**

© 2008. While GHD has taken care to ensure the accuracy of this product, GHD and DATA SUPPLIER(S) make no representation or warranty about its accuracy, completeness or suitability for any particular purpose. GHD and DATA SUPPLIER(S) accept no liability of any kind (whether or not caused, but or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unreliable in any way and for any reason.

This view point was assessed using visualised analysis and it was concluded that no habitats are visible. All Data used in Photographs sourced from Stanwell Corporation unless otherwise stated. Created by: M. / B.

G:\8122333\GHD\8122333-0201.MXD

This page has been left blank intentionally.

# Appendix C

Viewpoint Data



Stage 2 Visual Impact Assessment  
Parron Wind Farm Development



Viewpoint Number

1

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

NA (viewpoint not within the range of viewshed analysis output)

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Potentially

Description of view characteristics

- View from the Pinnacles Desert facing northeast towards the site.
- Shrub vegetation to 2 m in the foreground and open sandy expanse with scattered Pinnacles, walk paths and vehicles in the midground.
- Gentle rolling hill with low shrub vegetation in the background and existing turbines visible on the horizon line in the far distance.
- Unlikely that the proposed turbines will be visible, as the site is located behind the existing turbines and because of the distance of the viewer to the turbines.

Viewpoint Number

2

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

NA (viewpoint not within the range of viewshed analysis output)

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Potentially

Description of view characteristics

- View from the Pinnacles Desert facing northeast towards the site.
- Tourist board walk lookout in the centre vertical midline of the view.
- Dark green shrub vegetation from 1-3 m tall in the foreground and vegetation in the background on gently rolling hills. Scattered cleared agricultural land present in the far distance in the background.
- Existing turbines present on the horizon line in the far distance.
- Unlikely that the proposed turbines will be visible, as the site is located behind the existing turbines and because of the distance of the viewer to the turbines.

**Stage 2 Visual Impact Assessment**  
Parron Wind Farm Development



Viewpoint Number
3
Representative photograph
Predicted number of turbines visible based on 230 m average turbine height viewshed
NA (viewpoint not within the range of viewshed analysis output)
Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)
Potentially
Description of view characteristics
<ul style="list-style-type: none"> <li>• View from the Pinnacles Desert facing northeast towards the site.</li> <li>• Sandy expanse with pinnacles and sporadic, isolated shrubs in the foreground and midground.</li> <li>• Shrub vegetation in the midground with rolling hills in the background with layers of vegetation and cleared paddocks.</li> <li>• Although not pictured here, existing turbines are visible from the road in the far distance, east of this viewpoint.</li> <li>• Unlikely that the proposed turbines will be visible, as the site is located behind the existing turbines and because of the distance of the viewer to the turbines.</li> </ul>

Viewpoint Number
4
Representative photograph
Predicted number of turbines visible based on 230 m average turbine height viewshed
62
Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)
Yes
Description of view characteristics
<ul style="list-style-type: none"> <li>• View from roadside of Cervantes Road facing northeast.</li> <li>• Cervantes Road flows down the vertical centreline with low shrubs on either side in the foreground to midground.</li> <li>• Cleared agricultural land with scattered vegetation and isolated pockets of trees in the background on gently rolling hills. Buildings are visible.</li> <li>• Existing turbines visible on the horizon to the right of this view (which is towards the east).</li> </ul>

**Stage 2 Visual Impact Assessment**  
Parron Wind Farm Development



**Viewpoint Number**

5

**Representative photograph**



**Predicted number of turbines visible based on 230 m average turbine height viewshed**

78

**Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)**

Yes

**Description of view characteristics**

- View from roadside of Cervantes Road facing east.
- Cervantes Road with shrubs 1-4 m high on either side of the road in the foreground to midground.
- Rolling hills in the background with cleared paddock and a distinct line where the top of the hill is covered in vegetation.
- Road visible in the background extending over the rolling hills.
- Large sheds in a dip in the landscape in the midground and existing turbines visible in the background and horizon.

**Viewpoint Number**

6

**Representative photograph**



**Predicted number of turbines visible based on 230 m average turbine height viewshed**

61

**Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)**

Yes

**Description of view characteristics**

- View from roadside of Cervantes Road facing east.
- Shrubs to 2 m in the foreground and flowing into the midground.
- Large sheds in the valley in the landscape in the midground and existing turbines visible in the background and on the horizon.
- Cleared agricultural land with a tree line cutting through the open land in the background. Native shrub vegetation on the top of the rolling hills in the background and horizon.
- Cadda Road visible in the background extending over the rolling hills.

**Stage 2 Visual Impact Assessment**  
Parron Wind Farm Development



**Viewpoint Number**

7

**Representative photograph**



Predicted number of turbines visible based on 230 m average turbine height viewshed

72

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

**Description of view characteristics**

- View from roadside of Bibby Road facing northeast.
- Roadside shrub vegetation in the foreground comprising weeds and grasstrees with vertical linear spikes of the grass trees protruding. Cleared agricultural land with isolated patches of trees and shrubs in the foreground and midground.
- Domestic powerline in the midground (extending east (right) and west (left)) and existing turbines along the horizon, with mostly blades visible over the trees.
- Slight view of a hill where it rises over the trees in the midground.

**Viewpoint Number**

8

**Representative photograph**



Predicted number of turbines visible based on 230 m average turbine height viewshed

73

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

**Description of view characteristics**

- View from the roadside of Bibby Road facing northeast.
- Roadside shrub vegetation to 1.5 m tall in the foreground with open views of cleared agricultural land across the foreground and into the background.
- Isolated large patch of tall tree plantation and patch of vegetation in the midground and background.
- Existing turbines prominent in the mid-background on rolling hills at the horizon. Plantation area provides limited screen of the turbines at the base.

**Stage 2 Visual Impact Assessment**  
Parron Wind Farm Development



**Viewpoint Number**

9

**Representative photograph**



**Predicted number of turbines visible based on 230 m average turbine height viewshed**

75

**Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)**

Yes

**Description of view characteristics**

- View from the roadside of Bibby Road facing northeast.
- Roadside shrub vegetation to 1.5 m tall in the foreground with cleared agricultural land in foreground and into the background.
- Isolated large patches of tall tree plantation and native shrub vegetation in midground and background.
- Existing turbines prominent and large powerlines in the mid-background on the ridge of rolling hills.

**Viewpoint Number**

10

**Representative photograph**



**Predicted number of turbines visible based on 230 m average turbine height viewshed**

77

**Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)**

Yes

**Description of view characteristics**

- Views from the Hakea Reserve rest area/ car park to the south of the site.
- Shrubs to 2 m in foreground with cleared agricultural land in the midground with scattered isolated trees and native vegetation from Badgingarra National Park on rolling hills in the background.
- Existing turbines not visible in this view, however, are present to the northwest (left) and east (right) in midground to background. Proposed turbines will fill in where no turbines are currently present.

Stage 2 Visual Impact Assessment  
Parron Wind Farm Development



Viewpoint Number

11

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

70

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

Description of view characteristics

- View facing north from the roadside of Yerramullah Road.
- Undulating road running through vertical centreline of the view with vegetated verges of shrubs and low trees scattered and slightly emerging over the shrubs. Shrubs are generally 1-3 m in height, with trees 5-10 m where emerging.
- Badgingarra National Park and rolling hills with a slight peak in mid to background.
- Cleared agricultural paddock in mid ground and background to the west (left) of the view, with the site the cleared paddocks on the far horizon to the right of the photo.
- Existing powerlines on horizon and existing turbines to the west and east of this view.

Viewpoint Number

12

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

75

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Potentially

Description of view characteristics

- View facing southeast from the roadside of Yerramullah Road.
- Undulating road through the vertical centreline of the view with vegetated road verges. Tall trees in the foreground, which will likely block most, if not all, views of the proposed turbines.
- Glimpses of Badgingarra National Park in the mid-background with cleared agricultural land in the background on gently rolling hills.
- Existing turbines (Emu Downs) visible in the background on the horizon.

Stage 2 Visual Impact Assessment  
Parron Wind Farm Development



Viewpoint Number

13

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

77

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

Description of view characteristics

- View facing southeast from the roadside of Yerramullah Road.
- Roadside vegetation comprised of weeds and small shrubs.
- Open, expansive views of cleared agricultural land, that forms part of the site, in the foreground and midground on gently undulating hills with isolated patches and rows of trees in the background.
- A row of domestic powerlines span across the view in the midground to the horizon.
- No turbines are visible to the east. Turbines are visible directly behind the viewer at this location, to the west.

Viewpoint Number

14

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

67

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

Description of view characteristics

- View facing southwest from the roadside of Cowalla Road.
- Shrub vegetation to 1.5 m tall along the roadside in the foreground with cleared agricultural land in the middleground and background.
- Scattered pockets of vegetation (shrubs and taller trees) are dispersed through the paddocks in the mid-background.
- Existing turbines and powerlines are present along the horizon line of the rolling hills.

Stage 2 Visual Impact Assessment  
Parron Wind Farm Development



Viewpoint Number

15

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

68

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

Description of view characteristics

- View facing north from the roadside of Cowalla Road.
- Shrub vegetation 1-4 m tall along the roadside (with intermittent taller trees) in the foreground with cleared agricultural land in the mid-background on rolling hills.
- No turbines are visible to the north. Turbines are visible behind the viewer at this location, to the southwest.
- Roadside vegetation will not be tall enough to screen all views of the turbines.

Viewpoint Number

16

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

39

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

Description of view characteristics

- View facing southeast of the site from Yerramullah Road.
- Shrub vegetation to 2 m tall along the roadside in the foreground with cleared agricultural land in the mid-background on rolling hills.
- Existing powerlines are visible in the background on the ridgeline with scattered vegetation also in the background.
- The shrub vegetation may obstruct the view of proposed turbines in the background (as road is lower in the landscape than the site), however it will not be tall enough to block views of proposed turbines that will be in close proximity to this viewpoint.
- No turbines are visible to the southeast. Turbines are visible behind the viewer at this location, to the southwest.

Stage 2 Visual Impact Assessment  
Parron Wind Farm Development



Viewpoint Number

17

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

72

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

No

Description of view characteristics

- Views facing south from the roadside of Cantabilling Road.
- Tall shrubs up to 4-5 m tall in the foreground with glimpse of cleared agricultural land in the midground. Roadside shrubs are blocking any further views for large portions of the road at this location.

Viewpoint Number

18

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

55

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

No

Description of view characteristics

- Views from Lesueur National Park facing southeast.
- Trail Drive weaves across the view with surrounding shrub vegetation (generally 2-3 m in height) and scattered eering mallees up to 5-7 m tall.
- Natural vegetated hill in the midground to background.
- A natural feel to this area and no existing turbines visible.
- Taller vegetation at this location will screen views of the site. Turbines would be on the far horizon if visible.

**Stage 2 Visual Impact Assessment**  
Parron Wind Farm Development



**Viewpoint Number**

19

**Representative photograph**



**Predicted number of turbines visible based on 230 m average turbine height viewshed**

79

**Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)**

Yes

**Description of view characteristics**

- Views from the roadside on a crest of Jurien Road, facing southeast towards the site.
- Remnant vegetation is prominent in the foreground with cleared paddocks interspersed with scattered trees in the midground to background.
- Views are open and expansive overlooking the landscape with rolling hills along the horizon line.
- Although not pictured here, existing turbines are present to the west (right) along the horizon at the top of the far ridge/hill line. Turbines in the site would be at a similar location.

**Viewpoint Number**

20

**Representative photograph**



**Predicted number of turbines visible based on 230 m average turbine height viewshed**

69

**Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)**

Yes

**Description of view characteristics**

- Views from the roadside of Spring Hill Road facing east towards the site.
- Weedy roadside vegetation with cleared agricultural paddocks in the midground and background. A line of vegetation flows horizontally across the view and breaks through the paddock.
- Undulating hills with pointed peaks in the background with scattered patches of vegetation interspersed with cleared agricultural land.
- Turbines are present on the horizon (right of photo) to the southwest. Domestic powerlines are present in the midground cutting across the view, while domestic agricultural fences form linear lines along the roadside in the foreground.

**Stage 2 Visual Impact Assessment**  
Parron Wind Farm Development



**Viewpoint Number**

21

**Representative photograph**



**Predicted number of turbines visible based on 230 m average turbine height viewshed**

79

**Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)**

No

**Description of view characteristics**

- Views facing southeast from the roadside of Cantabilling Road.
- Tall roadside trees up to approximately 10 m tall in the foreground which block any further views to the southeast, towards the surrounding land and the site in the distance..

**Viewpoint Number**

22

**Representative photograph**



**Predicted number of turbines visible based on 230 m average turbine height viewshed**

79

**Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)**

Yes

**Description of view characteristics**

- View from roadside of Cantabilling Road facing southeast.
- Weedy roadside shrub vegetation to 2 m with cleared agricultural paddocks in the midground and background.
- A line of vegetation flows horizontally across the view and breaks through the paddock and as associated with Hill River.
- Undulating hills in the background with minimal patches of vegetation.
- Existing powerlines are present on the horizon line, with turbines visible to the west (right of the photo location).
- Domestic agricultural fences form linear lines along the roadside in the foreground.

**Stage 2 Visual Impact Assessment**  
Parron Wind Farm Development



**Viewpoint Number**

23

**Representative photograph**



**Predicted number of turbines visible based on 230 m average turbine height viewshed**

79

**Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)**

Yes

**Description of view characteristics**

- Views from the roadside of Black Arrow Road facing south.
- Fenceline prominent in the foreground flowing to the right of the view into the midground. The fence forms strong linear lines along the roadside.
- Cleared agricultural land spans across the view with minimal scattered trees in the midground and background.
- Rolling hills flow along the background along the horizon with isolated patches of trees on the horizon line.
- Existing powerlines are visible on the horizon line across the view and sheds/houses are visible to the right (west) of the view in the background.
- Although not captured in this view, 27 existing turbines are visible in the surrounding area from this viewpoint to the southwest (right of the photo).

**Viewpoint Number**

24

**Representative photograph**



**Predicted number of turbines visible based on 230 m average turbine height viewshed**

79

**Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)**

Yes

**Description of view characteristics**

- View from the Smoke Bush Reserve rest area off Jurien Road facing south.
- Edge of the gravel carpark in the foreground with scattered native shrubs of variable height, but generally 1-2 m high.
- Extensive views of native shrub vegetation with emergent grass trees and eucalypts in the midground and background.
- Existing large powerlines run horizontally across the view in the background as well as rolling hills with cleared land and scattered patches of vegetation.
- Cleared agricultural land is visible on the horizon.
- Turbines are just visible on the far horizon (to the right).

Stage 2 Visual Impact Assessment  
Parron Wind Farm Development



Viewpoint Number

25

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

79

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

Description of view characteristics

- Views from the roadside on the corner of Nylagarda Road and Jurien Road facing south.
- Nylagarda Road roadside with road sign visible in the foreground and native shrub vegetation (2-3 m in height) flowing into the background.
- Rolling hills in the background with extensive areas of native vegetation to the left (east) of the view and patches of cleared agricultural land to the right (southwest) of the view.
- Existing large powerlines are prominent, cutting across the view horizontally in the midground and background, where they become distant over the hills.
- Existing turbines are present on the horizon in the far distance, behind the existing powerlines and on the horizon where cleared agricultural land is visible.

Viewpoint Number

26

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

79

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

No

Description of view characteristics

- Views from the roadside of Cantabilling Road facing south.
- Fence runs parallel to the road in the foreground with tall roadside vegetation up to approximately 8 m tall in the foreground which block any further views.
- Although not visible in this image, powerlines are present to the west and residences are close by to this viewpoint, nestled behind/in the vegetation.
- The site and proposed turbines are more than 5 km from the viewer at this location, and the existing vegetation is predicted to screen the turbines at this location and/or where the vegetation is present.

Stage 2 Visual Impact Assessment  
Parron Wind Farm Development



Viewpoint Number

27

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

79

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Potentially

Description of view characteristics

- Views from the roadside of Cantabilling Road facing east-southeast.
- Cantabilling Road on the left (north) of the view with fenceline and shrub vegetation to approximately 8 m in the foreground to background.
- The site and proposed turbines are more than 5 km from the viewer at this location, and the existing vegetation is predicted to screen the turbines at this location and/or where the vegetation is present. Glimpses may be possible, and therefore has potential to be viewed.

Viewpoint Number

28

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

66

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

Description of view characteristics

- View facing south from the roadside of Cantabilling Road.
- Shrub vegetation to 2 m tall along the roadside in the foreground with cleared agricultural land in the midground and background.
- Scattered pockets of shrub vegetation and isolated trees are dispersed through the paddocks in the mid-background.
- Rolling hills flow across the background with subtle water tanks and a prominent stand of trees on the horizon line.
- Although not captured in the image, domestic powerlines are visible to the south (left) of this location, otherwise no existing turbines are visible.

**Stage 2 Visual Impact Assessment**  
Parron Wind Farm Development



Viewpoint Number
29
Representative photograph
Predicted number of turbines visible based on 230 m average turbine height viewshed
79
Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)
Yes
Description of view characteristics
<ul style="list-style-type: none"> <li>• Views from the roadside of Cantabilling Road facing south west.</li> <li>• Fenceline and firebreak visible in the foreground with paddocks and scattered patches of vegetation and isolated trees in the foreground and into the background.</li> <li>• Hill River is associated with the line of vegetation through the midground and abuts the site boundary.</li> <li>• Rolling hills in the background with a circular mesa to the right of the view and existing turbines and powerlines are slightly visible along the horizon.</li> <li>• From this viewpoint, but not pictured there are houses/sheds on the hills to the northwest (right). Turbines are visible to the south (left of the photo).</li> </ul>

Viewpoint Number
30
Representative photograph
Predicted number of turbines visible based on 230 m average turbine height viewshed
79
Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)
Yes
Description of view characteristics
<ul style="list-style-type: none"> <li>• Views from the roadside of Brand Highway facing west.</li> <li>• Roadside shrub vegetation to 1.5 m in the foreground and cleared agricultural land with a horizontal row of trees across the view in the midground, associated with Hill River.</li> <li>• Cleared agricultural land continues to the background with rolling hills and a slight peak of the hill from a mesa.</li> <li>• Existing turbine blades are just visible along the horizon line, behind the rolling hills. More turbines are visible to the south (left of the photo).</li> </ul>

Stage 2 Visual Impact Assessment  
Parron Wind Farm Development



Viewpoint Number

31

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

78

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

Description of view characteristics

- Views from roadside of Cowalla Road facing west.
- Cowalla Road is prominent and undulates through the midline of the view with vegetated road verges of shrubs 2-4 m tall.
- Cleared agricultural land with scattered trees in the midground to background and existing turbine blades are just visible over the hills on the horizon line.
- Although not pictured in this view, from this viewpoint a radio tower is present to the southwest (left) on the horizon and sheds/buildings are present in the midground.

Viewpoint Number

32

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

79

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

Description of view characteristics

- Views from the roadside of Cadda Road facing west.
- Part of Cadda Road is visible in the foreground with shrub vegetation (1-3 m high) extending from the foreground to background.
- Cleared agricultural land is visible in the background as well, but is otherwise a mostly natural view particularly to the south-southwest of the view location, looking over Badgingarra National Park.
- Existing turbines protrude from behind the vegetation and hills with mostly blades visible and a radio/mobile tower is present on the horizon to the left (south) of the view. Turbines in the site will be closer to the viewer than the turbines currently visible in the background.
- Although not pictured here, additional existing turbines are present to the northwest and Badgingarra National Park is to the southwest, comprised of Kwongan health vegetation.

**Stage 2 Visual Impact Assessment**  
Parron Wind Farm Development



**Viewpoint Number**

33

**Representative photograph**



**Predicted number of turbines visible based on 230 m average turbine height viewshed**

79

**Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)**

Yes

**Description of view characteristics**

- Views from near NW Road, behind the Badgingarra roadhouse and town, facing northwest.
- Low shrub vegetation (less than 1 m in height) and road in the foreground with uncleared areas adjacent to the golf course.
- Row of tall trees strike horizontally across the midground of the view, associated with planted vegetation within the golf course, and rolling hills with cleared agricultural land and scattered vegetation in the background. Badgingarra national Park is visible to the south (left) of the viewer location on the horizon.
- No existing turbines are visible. Domestic powerlines are visible to the north (right) of this viewpoint, although not pictured above.

**Viewpoint Number**

34

**Representative photograph**



**Predicted number of turbines visible based on 230 m average turbine height viewshed**

62

**Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)**

Yes

**Description of view characteristics**

- View from White Drive in Badgingarra facing northwest.
- Low shrub vegetation with emergent scattered trees flows across the view from the foreground to background with rolling hills. Vegetation in the foreground is uncleared land within Badgingarra, in front of existing dwellings.
- The vegetation in the mid-background is mostly part of Badgingarra National Park, extending further south (left) of the viewpoint.
- To the right (north) of the view is cleared agricultural land on the rolling hills with scattered pockets of vegetation. The site is associated with cleared paddocks on the far horizon.
- The roof of the recreation centre, sport field lights and domestic powerlines are visible in the midground (with Brand Highway behind and below these features). No existing turbines are visible from this location.

Stage 2 Visual Impact Assessment  
Parron Wind Farm Development



Viewpoint Number

35

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

74

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

Description of view characteristics

- Views from the roadside of Bibby Road facing northwest.
- Badgingarra National Park shrubland extends across the entire view with rolling (vegetated) hills in the background.
- Rolling hills span across the background and horizon.
- To the west (left), and to both the north and south, existing turbines and a mobile tower are visible on the horizon as well as a glimpse of cleared agricultural land.

Viewpoint Number

36

Representative photograph



Predicted number of turbines visible based on 230 m average turbine height viewshed

59

Predicted visibility based on viewshed considered the same based on field assessment (yes, no, potentially)

Yes

Description of view characteristics

- Views from the roadside of Brand Highway facing northwest.
- Badgingarra National Park shrubland extends across the foreground to background and is composed of kwongan heath 1-3 m high. Cleared agricultural land with rolling hills is visible from glimpses in the far background, with a clump of taller trees visible, breaking the horizon.
- Although not pictured, existing turbines are present on the horizon to the west-southwest (left), with some 'peeping' over the hills and others more obvious.

This page has been left blank intentionally.