

Piambong wind farm

Stage 1 scoping report

Preliminary landscape and visual impact assessment

Prepared for Vestas | 12 September 2023



GBD is a leading specialist in renewable energy landscape and visual impact assessment, setting a course that others follow.

Servicing the renewable energy industry for over 15 years, GBD has gathered a wealth of unrivalled project experience in a variety of landscapes.

GBD has applied knowledge across multiple state planning authorities addressing specific regulatory requirements for renewable energy developments.

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DOCUMENT CONTROL

Project Name

Piambong Wind Farm

Report Title

Stage 1 Scoping Report, Preliminary Landscape and Visual Impact Assessment

Project Number

21-301

Version Number:

V8

Status

Final

Release approval

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AECOM Australia Pty Ltd

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Date

12 September 2023

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Section 1. Report structure

1.1 Report structure

This Preliminary Landscape Visual Impact Assessment (Preliminary LVIA) report has been structured as follows:

Table 1 – Report structure

REPORT SECTION	DESCRIPTION
1 Report structure	This section outlines the content and structure of the Preliminary LVIA report.
2 Introduction	This section provides an introductory section that describes the intent and purpose of the Preliminary LVIA.
3 Methodology	This section sets out the structure and methodology employed in the LVIA preparation.
4 Wind energy visual assessment bulletin	This section sets out the objectives, stages and key steps described in the Visual Bulletin as applicable to the Preliminary LVIA.
5 Community consultation	This section describes the community consultation activities undertaken by the Proponent and feedback received from the community relevant to this Preliminary LVIA.
6 Visual magnitude	This section provides an analysis of the preliminary assessment tool for visual magnitude as set out in the Visual Bulletin.
7 Multiple wind turbine tool	This section provides an analysis of the preliminary assessment tool for the multiple wind turbine tool as set out in the Visual Bulletin.
8 Summary	This section provides a summary of the Preliminary LVIA.

Section 2. Introduction

2.1 Introduction

Green Bean Design Pty Ltd (GBD) has been commissioned by AECOM Australia Pty Ltd (on behalf of Wind Power Development Australia Pty Ltd [Vestas]) to undertake a Preliminary LVIA report for the Piambong Wind Farm (the project).

This Preliminary LVIA has been prepared as required by the New South Wales Government, Department of Planning and Environment (DPE) in order to meet the objectives of the NSW Government - *Wind Energy: Visual Assessment Bulletin – for State Significant Wind Energy Development (DP&E, 2016)*, dated December 2016 (the Visual Bulletin). This Preliminary LVIA supports the Scoping Report (a preliminary environmental assessment) and has been prepared to specifically address the Visual Bulletin requirements applicable to a new wind farm development application for a State Significant Development (SSD) through the Secretary's Environmental Assessment Requirements (SEARs).

This Preliminary LVIA has been prepared to consider a layout including up to 81 wind turbine generator (turbine/s) locations, with a maximum tip height of up to 230 metres (m). The wind turbine layout has been subject to several iterations and should be considered as a draft layout for the purposes of this Preliminary LVIA. This Preliminary LVIA has not considered the location or extent of some ancillary infrastructure commonly associated with wind farm developments, including electrical infrastructure and access tracks. Ancillary infrastructure items will be detailed and included in the Stage 2 Environmental Impact Statement (EIS) Assessment and Determination process.

The Visual Bulletin requires consideration of dwellings and key public viewpoints within a defined study area. The study area for the Preliminary LVIA has identified non associated dwellings within an 8 kilometre (km) offset from the wind turbines for the Magnitude Tool assessment (refer Section 6 of this Preliminary LVIA). The study area also extends to 8km from representative dwellings for the application of the Multiple Wind Turbine Tool (refer Section 7 of this Preliminary LVIA).

The application of the Multiple Wind Turbine Tool has captured approved wind turbines within the Uungula Wind Farm to the west of the Piambong Wind Farm site. This Preliminary LVIA did not identify any other approved or operating wind farms that may be visible at 8km from dwellings surrounding the Piambong Wind Farm site.

A preliminary assessment of the landscape within 8km of the Piambong wind turbines did not identify viewpoints including:

- Residential areas and rural villages (defined as land zoned R1, R2, R3, R4 and RU5 in the Mid Western Regional Council LEP (2014).
- Cultural or scenic sites and viewpoints of National or State significance, and
- Any buildings, historic rural homesteads/residences on the State or local Government Heritage List.

The preliminary assessment identified viewpoints within 8km of the Piambong wind turbines including:

- R5 Large lot residential at Red Hill (Upper Piambong Road) and Two Mile Flat (Goomla Road)
- Recreation facilities (ABA Park archery centre),
- Rural dwellings within RU1 Primary Production, and
- Tourist and visitor accommodation (Sierra Escape).

The Piambong Wind Farm would be located beyond Visually Sensitive Land as identified in the Mid Western Regional Council LEP (2014).

The preliminary analysis has focused on dwellings within 8km of the Piambong wind turbines. A further and detailed analysis of key public viewpoints and dwellings surrounding the wind farm will be undertaken in the Stage 2 EIS report.

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

2.2 Professional assessment skills

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

GBD confirms that this Preliminary LVIA has been prepared by GBD Principal Landscape Architect Andrew Homewood. Andrew is a registered Landscape Architect and member of the Australian Institute of Landscape Architects and the Environmental Institute of Australia and New Zealand. Andrew holds tertiary qualifications in Landscape Management, Landscape Design, Archaeology and Horticulture and has over 30 years' experience in landscape consulting. Andrew has prepared multiple wind farm LVIA in New South Wales, Victoria, Queensland, South Australia and Tasmania, at preliminary and EIS stages. Andrew has also acted as an independent expert providing peer reviews for wind farm LVIA on behalf of the DPE.

2.3 Project overview

The project is situated approximately 20 kilometres (km) north west of Mudgee and 15km south west of Gulgong in the New South Wales Central West region. The wind turbines extend for approximately 19km in a north to south alignment across the Mid Western Regional Council Local Government Area (LGA) and approximately 8km east to west between the Upper Piambong Road and the Yarrabin Road.

The project boundary extends around an area of approximately 8,800 hectares and is at an elevation of approximately 550 to 700 metres above sea level (+/- 5m). The regional project locality is identified in **Figure 1**.

The project is proposed to consist of up to 81 wind turbine generator (turbine/s) locations with a maximum tip height of 230m is proposed.

The project would also include:

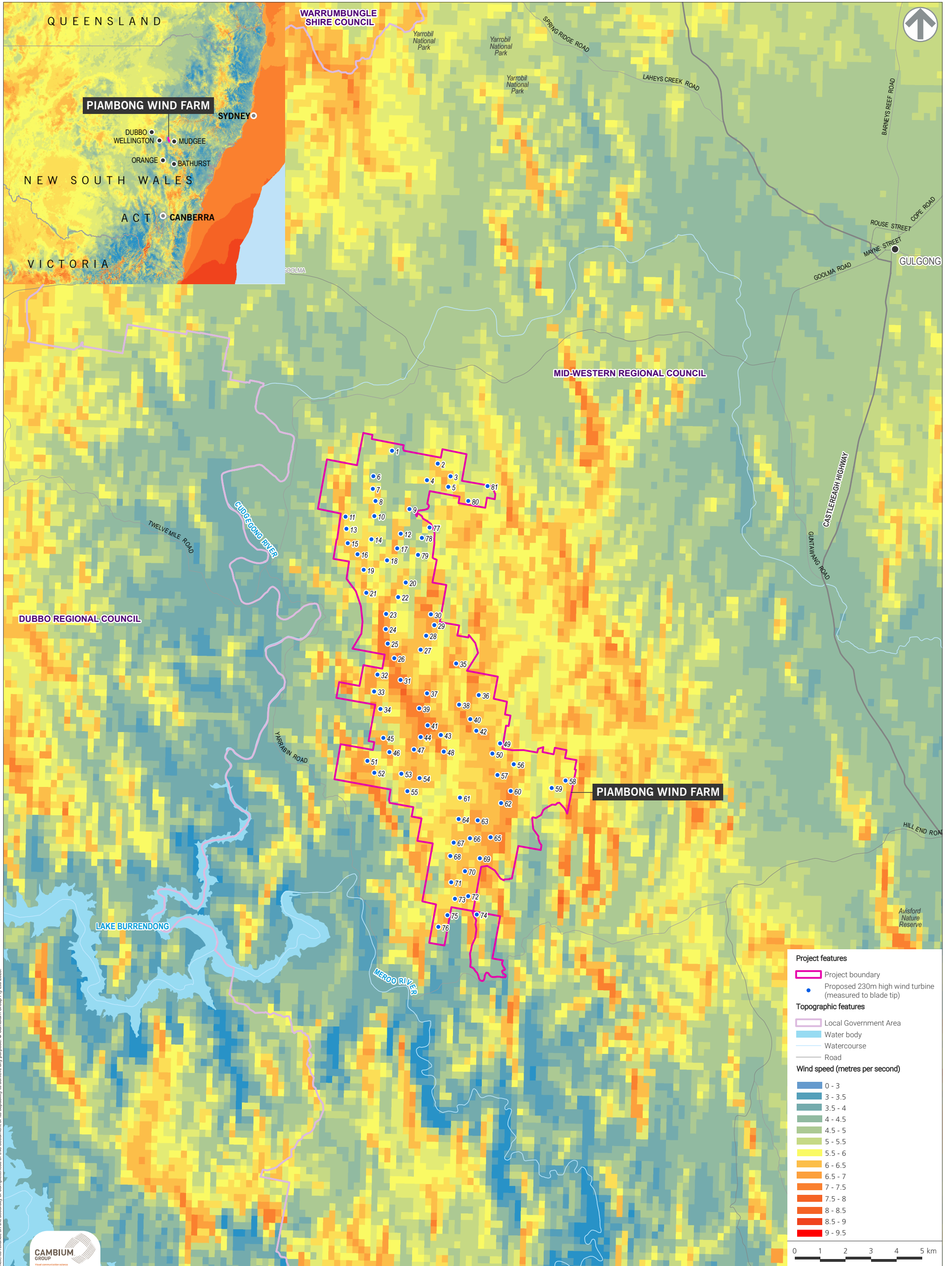
- an internal electrical reticulation network (both overhead and underground).
- up to 2 on-site collector substations.
- new and upgraded access roads.
- temporary construction facilities (including concrete batching plants) and
- operation and maintenance buildings.

The project would connect to an existing 330kV overhead transmission line extending to the north of the wind farm project site. There is also an opportunity to connect to the proposed TransGrid 500kV transmission line. An assessment of potential visual effects associated with an overhead transmission line connection will be included in the Stage 2 EIS.

The Visual Bulletin requires provision of an overlay of the wind resources (Issue of SEAR's, page 11). The wind resource is included in **Figure 2**.

Figure 2
Wind resource

PIAMBONG WIND FARM | PRELIMINARY LANDSCAPE AND VISUAL IMPACT ASSESSMENT



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Source: Global wind Atlas (2023), NSW Spatial Services, NSW Government (2023), Vestas (2023), Green Bean Design (2023), Cambium Group (2023).

Projected coordinate system GDA1994 MGA Zone 55 031228_PWF_PLVIA_V2_F2_Wind_resource_230802_v01

Section 3. Methodology

3.1 Introduction

This Preliminary LVIA has been prepared to address the Visual Bulletin through a range of tasks outlined in the Visual Bulletin and/or commonly associated activities applicable to landscape and visual assessment. This Preliminary LVIA included the following key tasks:

- Desktop studies
- Site photography
- Mapping and analysis

3.2 Desktop studies

A desktop study reviewed the preliminary wind turbine layout provided by the Proponent. The Proponent provided updated wind turbine layouts during the desktop review process to indicate adjustments to wind turbine locations following on-going landowner consultation by the Proponent.

The desktop study also reviewed dwelling locations against built form considered to be potential agricultural structures such as shearing sheds. The desktop study identified the location, extent and general boundaries between broad landscape character areas to be reviewed during the site inspection work. Desktop studies also identified key sensitive landscape elements and areas including Blue Mountain and adjoining National Parks.

3.3 Site photography

The landscape characteristics and elements within and surrounding the project site were captured in a series of ground and aerial images utilising a 35mm SLR full frame sensor digital camera (Nikon D850) and aerial drone (Mavic Pro2). The CASA registered drone was flown in strict accordance with CASA rules and regulations applicable to a sub 2kg drone operated for commercial purposes. Outputs from the site inspections included preparation of illustrated material to inform community consultation undertaken by the Proponent.

3.4 Mapping and analysis

A series of figures have been prepared to address the Visual Bulletin requirement to demonstrate the potential influence of visual magnitude and multiple wind turbines on dwellings. This was undertaken with ArcGIS software using the line-of-sight analysis. Inputs included wind turbine coordinates, tip of blade height, the regional digital elevation model and dwelling locations provided by AECOM.

Section 4. Wind energy visual assessment bulletin

4.1 Introduction

The Visual Bulletins stated objectives are to:

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

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

The Visual Bulletin breaks the visual assessment process into 2 main stages, refer **Figure 3**. These include:

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

This Preliminary LVIA has been prepared to address the requirements of the Stage 1 PEA, which is to be submitted in a Scoping Report to DPE as part of a request for SEAR's. Stage 1 is broken down into 3 steps which include:

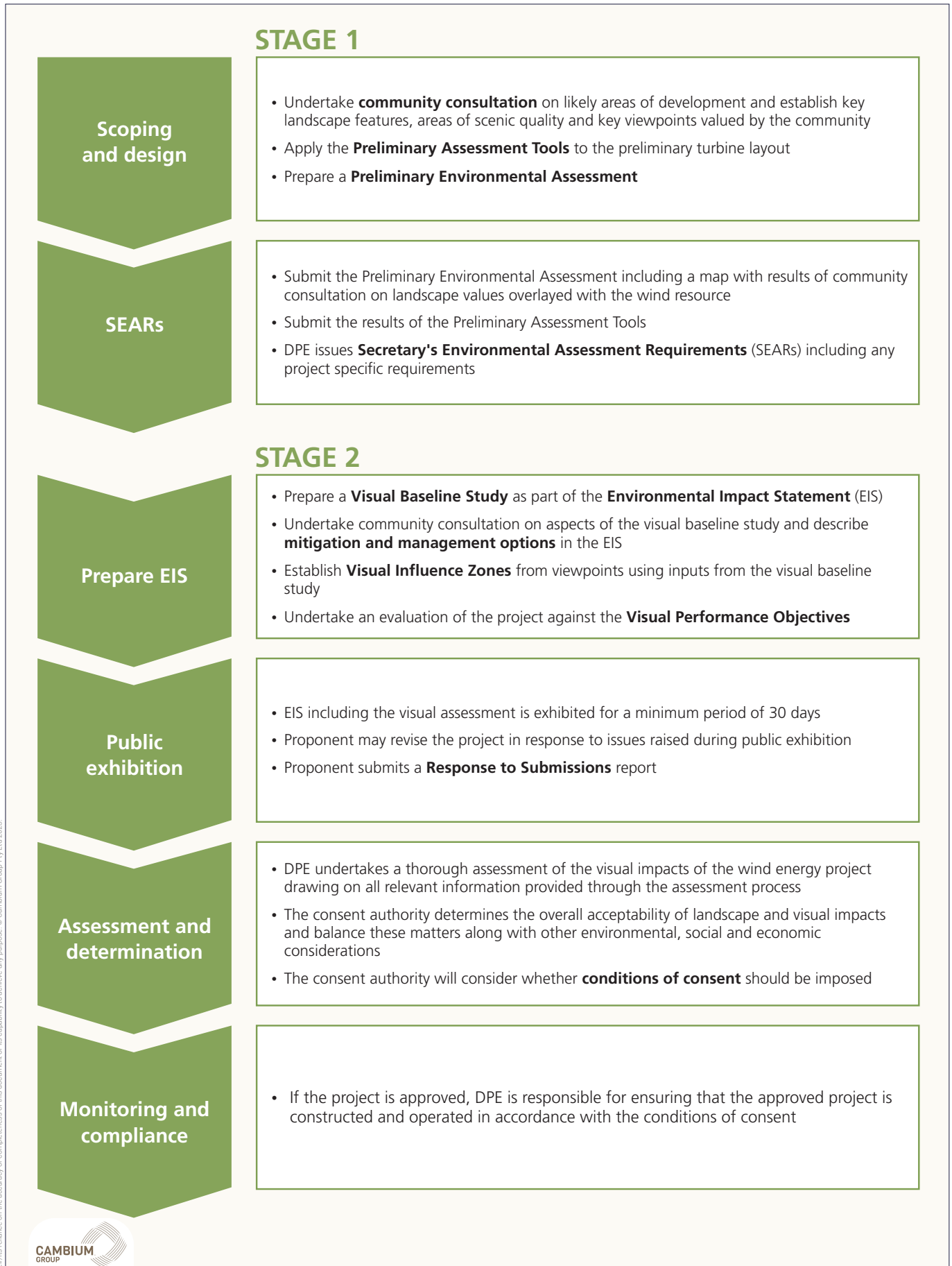
- *Undertake community consultation on likely areas of development and establish key landscape features, areas of scenic quality and key viewpoints valued by the community*
- *Apply the Preliminary Assessment Tools to the preliminary turbine layout and*
- *Prepare a Preliminary Environmental Assessment.*

The Visual Bulletin also states that Stage 1 must '*undertake a preliminary environmental assessment that considers the landscape in which a proposed wind energy project will be located. The analysis must include*':

- *undertaking community consultation to establish key landscape features valued by the community, key viewpoints in the area (both public and private) along with information about the relative scenic quality of the area*
- *production of a map detailing key landscape features (informed by community consultation and any ground-truthing undertaken), the preliminary wind turbine layout, the location of dwellings and key public viewpoints and an overlay of the wind resource; and*
- *results of the application of the preliminary assessment tools for both the visual magnitude and multiple wind turbine parameters.*

GBD confirms that this Preliminary LVIA has been prepared in accordance with the Visual Bulletin for Stage 1 PEA (pre-lodgement).

Figure 3
Visual bulletin - visual assessment stages 1 and 2



Section 5. Community consultation

5.1 Introduction

The Visual Bulletin notes that *'Consultation with the community at this early stage may be broad, but should include discussions about the proposed project area, likely corridors for development, or preliminary turbine layouts and must involve people from the visual catchment'*.

The Visual Bulletin describes the purpose of early communications is to:

- *Establish the key landscape features, areas of scenic quality and key public viewpoints valued by that community.*
- *Allow the community to have input into the ranking of those features and scenic quality into high, moderate or low visual significance.*
- *Inform landholders about the proposed project area, likely corridors for development, preliminary turbine layouts and access routes.*
- *Inform the community about the proposed project, listen to the community's concerns and suggestions for alternative siting and location designs, and discuss potential visual impacts.*

Key landscape features can include natural features of the landscape (for example, a distinctive mountain peak) as well as important cultural features (for example, an iconic church). Consideration of areas of scenic quality involves the identification of areas of the landscape that are of high scenic quality and those that are moderate or low. It is also important to establish which viewpoints are important to the community. An important source of information at this stage is likely to be the local council. A community survey or focus group could also be utilised to gather this information. Any surveys undertaken should reflect the population profile in the project area as indicated by the most up-to-date Census data available.

A detailed summary of consultation conducted for the project is provided in the overarching Scoping Report. Issues relevant to this assessment are described as follows.

In order to support the community consultation process, GBD prepared a number of figures to illustrate the results of preliminary site work. The figures outline landscape characteristics associated with Scenic Quality Areas (SQA's), which are generally defined by land use, land cover and topography. A preliminary landscape analysis identified six landscape character units (LCU) within and surrounding the project boundary, including:

- LCU 1 – Pasture, moderately inclined to steep landforms (ridges and spurs) with mid dense to sparse vegetation
- LCU 2 – Pasture/woodland, steep to very steep landforms (ridges and depressions) with mid dense to dense/closed vegetation
- LCU 3 – Pasture, waning lower slopes and flats adjacent to river corridors

- LCU 4 – Pasture, crests and simple slopes with mid dense to sparse vegetation
- LCU 5 – River corridors/creeks with mid dense to dense riparian vegetation
- LCU 6 – Road corridors.

Each landscape character area was photographed and described for the purposes of the broader project community consultation and stakeholder engagement. The Scenic Quality Areas and site photographs are illustrated in **Figure 4** and **Figures 5 to 7**.

5.2 Consultation activities

During the consultation process, maps were prepared showing the area of investigation, including elevated ridges that had the potential to host wind turbines. This was done to allow feedback to be incorporated into the design of the layout at the earliest stage. The community identified hills, ridgelines and rivers/creeks as having greater scenic values, with areas of urban development and townships ranking lower.

Key landscape features with, and surrounding the wind farm site were identified as:

- Untouched landscapes and uninhibited views of rolling hills
- Big old growth timber and rugged ridgelines
- Hills and ridgelines and
- Piambong Creek.

A number of key view locations were identified through consultation and include:

- The Drip viewing platform
- Mughorn Gap
- Mount Misery
- Views toward Cooees Mountain
- Hills around Piambong Creek and
- Red Hill and the Upper Piambong Road.

These areas and landscape elements will be considered in an assessment of visual impact during the EIS Assessment and Determination.

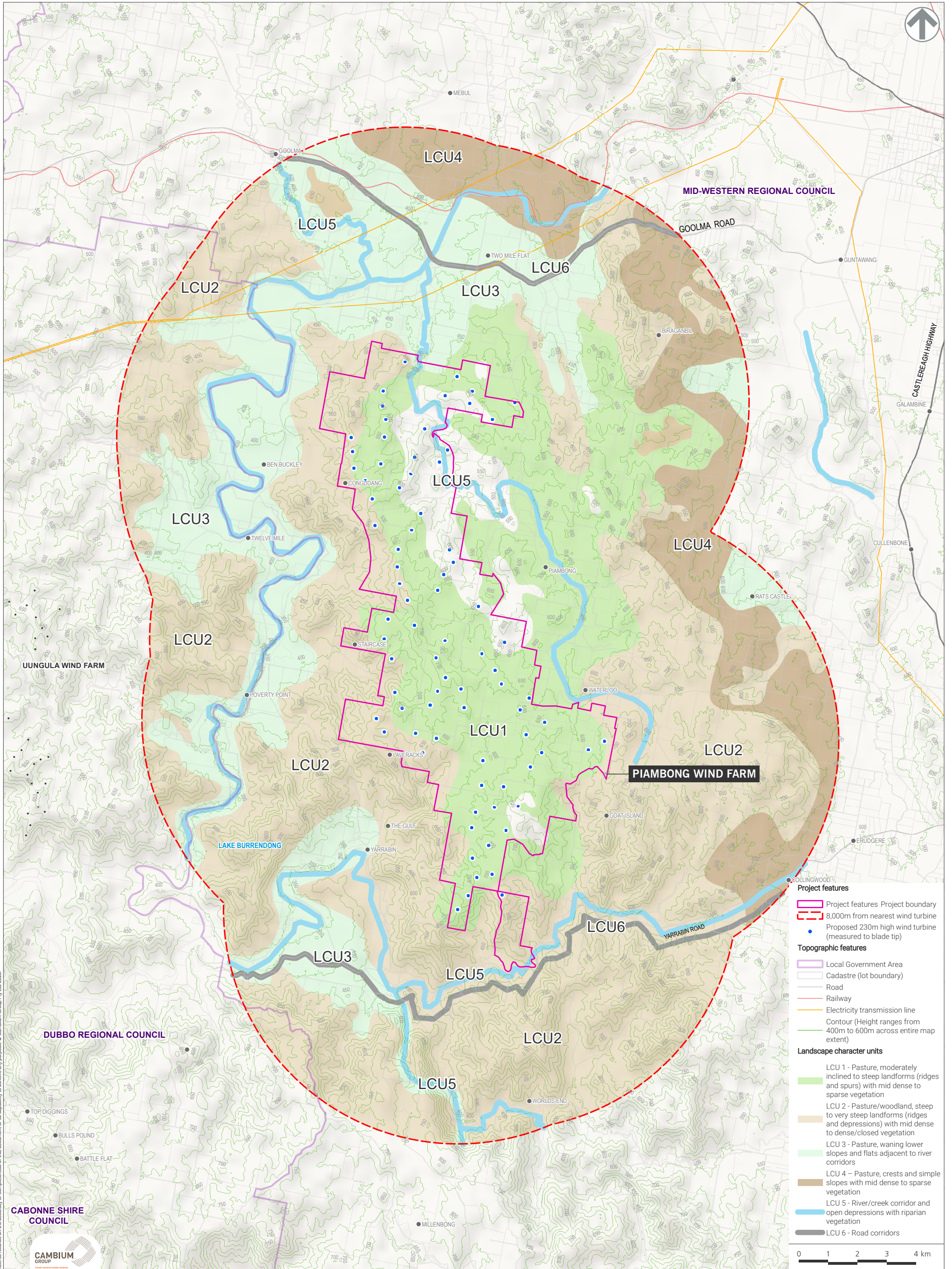
The Visual Bulletin notes that *'Where a regional survey or study of landscape values has been undertaken, it must be considered. Proponents should confirm with the Department if there is any such recognised study in place'*.

GBD is not aware of any regional surveys or study of landscape values that have been undertaken within or surrounding the project boundary. This will be confirmed with DPE prior to the commencement of the detailed assessment prepared for the EIS.

Consultation will be ongoing during the EIS Assessment and Determination process.

Figure 4
Scenic quality assessment - Landscape character units

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Figure 6
Scenic quality assessment photographs - Sheet 2

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LCU 3 - Pasture, waning lower slopes and flats adjacent to river corridors



Land adjoining river corridors combines low and gently undulating landforms sloping toward river flats and riparian corridors. These areas include an increased density in rural occupation with active irrigation to pastoral production and some limited agricultural cultivation. Human scale features and constructed elements provide some variation to observable landscape colour and textures. The overall landscape scale is moderate to small. These areas do not tend to form distinctive backdrops from surrounding view locations or appear within skyline views. Pasture across low slopes and flat landforms are considered to provide landscape elements of moderate landscape scenic quality.

LCU 4 - Pasture, crests and simple slopes with mid dense to sparse vegetation



Hillcrests and simple slopes are not overtly visually dominant within the landscape, and are generally located below more prominent distant wooded slopes and ridgelines to the south west and east of the project site. They introduce a degree of moderate topographical variety and are largely visually uniform in colour and texture. Scattered tree planting across simple slopes and crests introduces some degree of local visual interest. The low undulating hills can be viewed within close and distant views occasionally forming backdrops and skyline views. Hillcrests and simple slope landforms are considered to provide landscape elements of moderate landscape scenic quality.

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Figure 7
Scenic quality assessment photographs - Sheet 3

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LCU 5 - River corridors/creeks with mid dense to dense riparian vegetation



River corridors, creeks and smaller ephemeral drainage lines occur throughout the project site and within the surrounding landscape. Principal waterways include the Cudgong River to the west and north of the project site and the Meroo River extending south through Yarrabin. The Cudgong River flows to the Burrendong Dam, around 20km south west of the project site. Smaller creeks, including Piambong Creek, as well as numerous tributaries are common within the project site. The majority of river corridors include mid to dense vegetation stands extending along river banks, adjoining flats and low slopes. Smaller creeks located within pastoral land include occasional vegetation where grazing is excluded. River corridors are considered to provide landscape elements of moderate to high landscape scenic quality.

LCU 6 - Road corridors



Principal road corridors within 8km of the proposed wind turbines include Goomla Road which extends east to west between Guntawang and Goomla to the north of the project site. Nearest views from the road corridor toward wind turbines would extend between Two Mile Flat and the Yamble Bridge. Local unsealed roads extend through the east and west portions of the project site including Upper and Lower Piambong Road which passes through the north easter cluster of wind turbines. The Twelve Mile and Yarrabin Roads extend north to south to the west of the wind turbines following the Cudgong River corridor. The Yarrabin Road continues to the south of the project site connecting to Hill End Road and the Castlereagh Highway. The Castlereagh Highway extends north to south to the east, and beyond 8km, of the wind turbines between Mudgee and Gulgong.

Roads form small scale constructed elements within the landscape and provide a range of direct and indirect transitory views toward the project site as well as moderate to long views along road corridors. Road corridors are occasionally framed by tree and shrub vegetation screening and filtering views to the surrounding landscape. Road corridors are considered to provide landscape elements of moderate to low landscape scenic quality.

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Section 6. Preliminary assessment tool – Visual magnitude

6.1 Introduction

The Visual Bulletin states that *‘By mapping the dwellings, key public viewpoints and proposed turbines at scale, the potential visual magnitude of a turbine relative to that dwelling or public viewpoint can be established. This is based on the height of the proposed wind turbines to the tip of the blade and distance from dwellings or key public viewpoints shown in the graph at Figure 2’* (The Visual Bulletin, page 9). *‘The line depicted in the graph at Figure 2 provides an indication of where proponents should give detailed consideration to the visual impacts on dwellings or key public viewpoints from turbines located below the black line’.*

For the purpose of the Preliminary LVIA the proposed wind turbines are nominated at a 230m tip height (from base of tower to tip of blade at vertical position). In accordance with the Visual Bulletin, the black line intersects at a distance of 3.1km from a tip height of 230m. Refer **Figure 8** for black and blue line distances in accordance with the Visual Bulletin.

The Visual Bulletin states the *‘Proposed turbines below the black line must be identified, along with the dwellings or key public viewpoints as part of the request for SEARs’.*

The Visual Bulletin notes that *‘Further assessment and justification for placement of turbines located in these sensitive areas in the EIS will be required, along with a description of the mitigation and management measures being employed to reduce impacts. This assessment may identify those factors such as topography, relative distance and existing vegetation may minimise or eliminate the impacts of the project’.*

The Visual Bulletin also notes that *‘there may be circumstances where dwellings or key public viewpoints located above the line may require further consideration due to topography or other landscape features. The further detailed assessment and ground-truthing at the visual assessment stage must also consider impacts on these dwellings or key viewpoints’.*

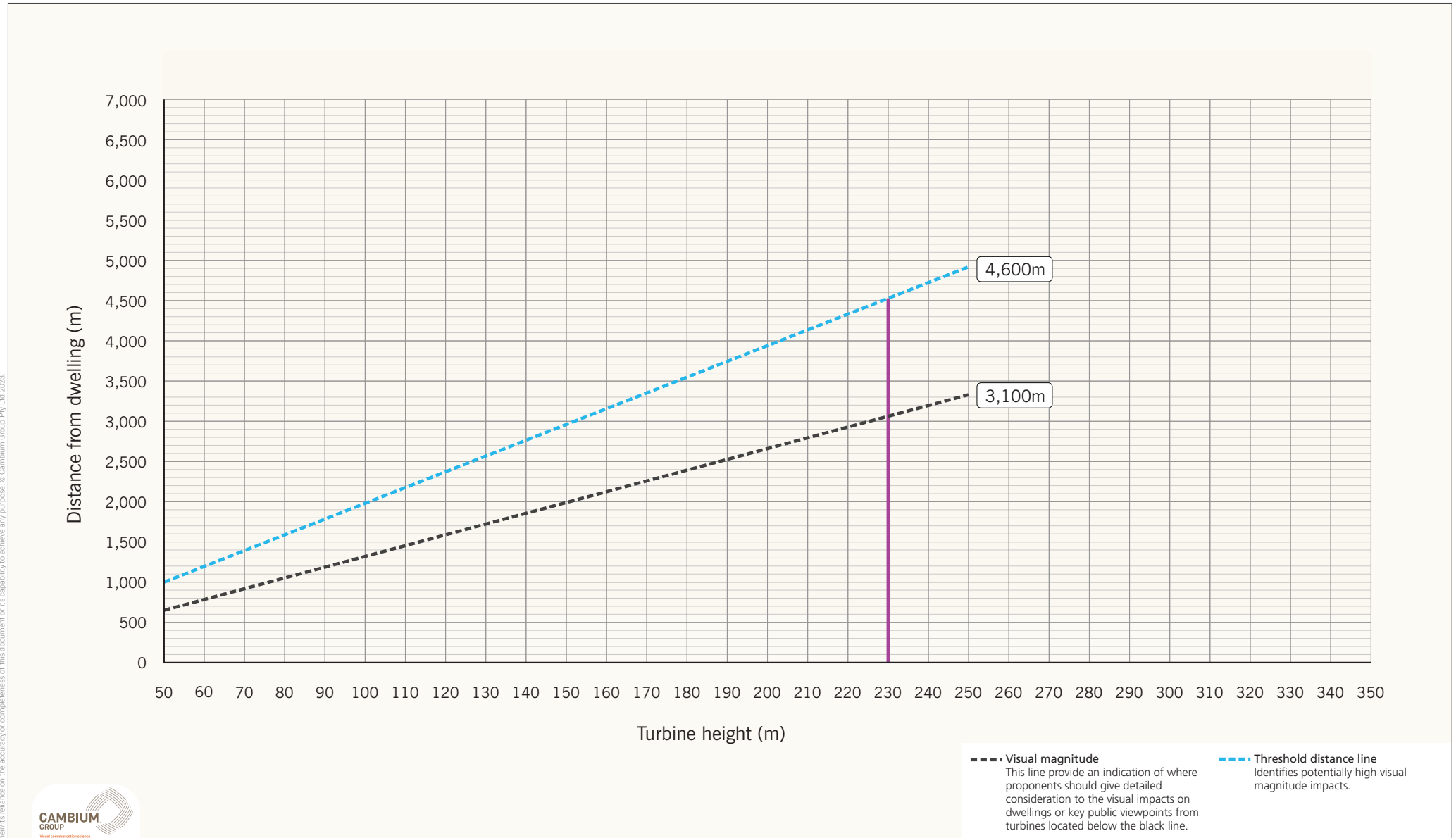
This Preliminary LVIA also illustrates dwellings located to 8km from the wind turbines which coincides with the threshold for multiple wind turbine tool analysis as indicated in **Figure 9**. Dwellings located between 3.1km and 4.6km have been identified and illustrated to provide a greater degree of context regarding the location and number of dwellings surrounding the proposed wind farm.

The EIS Assessment and Determination will undertake an assessment and justification for the placement of wind turbines in sensitive areas, including those located within and between the 3.1km and 4.6km thresholds from the wind turbine locations.

Non-associated dwellings located below the black line, as well as residential dwellings between the black and blue lines and those extending out to 8km from the wind turbines, are illustrated in **Figure 9**.

Figure 8
Visual magnitude thresholds

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Section 7. Preliminary assessment tool – Multiple wind turbines

7.1 Introduction

The Visual Bulletin states that *'This tool will provide a preliminary indication of potential cumulative impacts arising from the proposed wind energy project. To establish whether the degree to which dwellings or key public viewpoints may be impacted by multiple wind turbines, the proponent must map into six sectors of 60° any proposed turbines, and any existing or approved turbines within eight kilometres of each dwelling or key public viewpoint'*.

This Preliminary LVIA has identified 70 individual representative view locations which contain single or multiple viewpoints to 8km from the wind turbines. This Preliminary LVIA has incorporated multiple residential dwellings into a single view locations where other dwellings occur within a similar distance and likely extent of horizontal view. GBD consider that views from these locations would be similar or identical in most cases.

The Visual Bulletin (at Stage 2 EIS Assessment and Determination, page 12) permits representative view locations, and states *'where relatively close clustering of houses belonging to different landowners or occupants occur, representative viewpoints may be selected and assessed in lieu of every single dwelling in the following types of areas'*:

- rural residential clusters
- rural villages and
- urban residential and commercial areas.

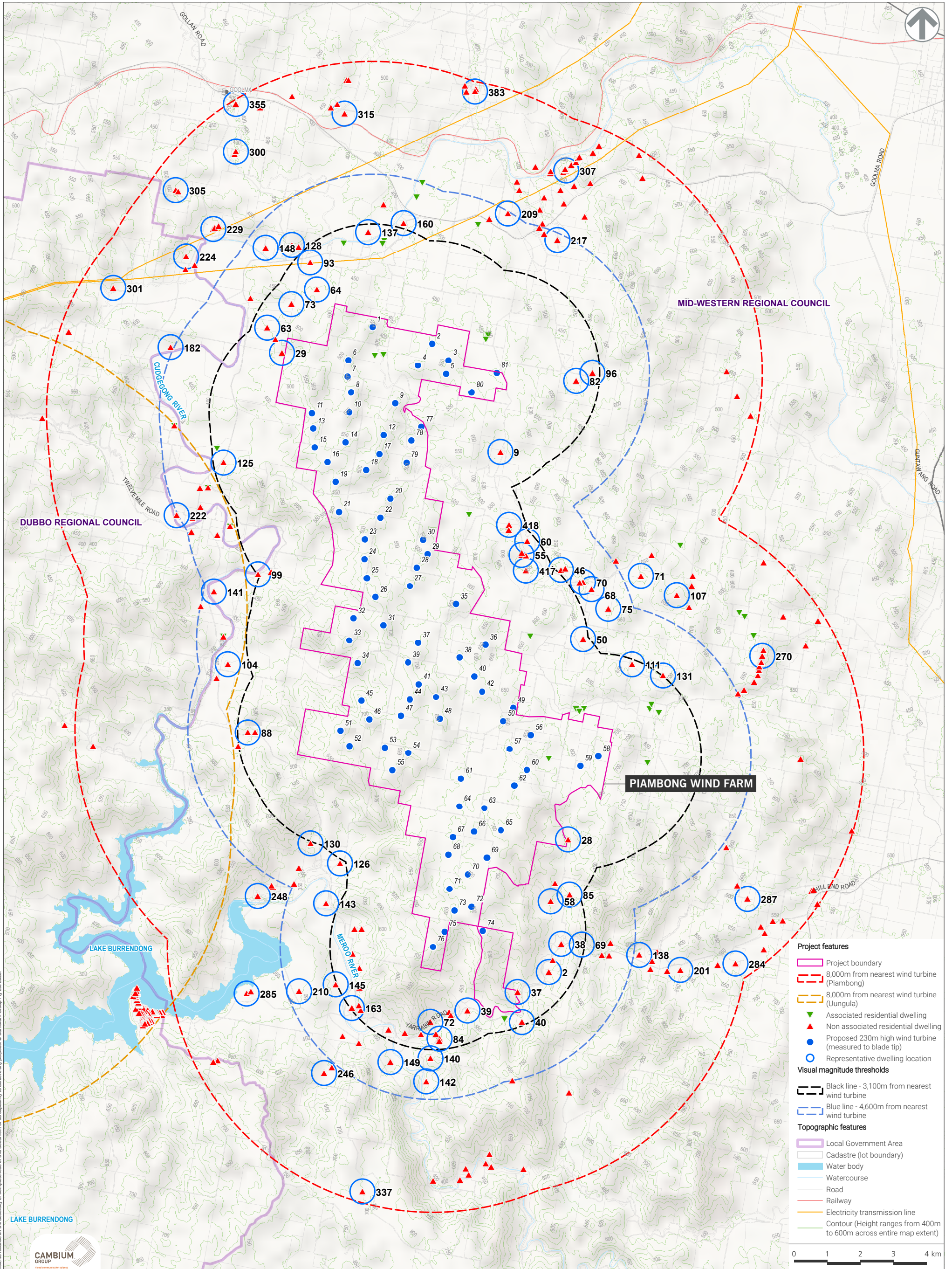
The 70 representative view locations and the multiple wind turbine analysis are presented in **Figure 9**.

Figure 10 illustrates a Zone of Visual Influence (ZVI) analysis, which indicates areas of the landscape from which wind turbines will be visible. The extent of screening illustrated in Figure 11 relates to screening by landform only and does not account for vegetation (tree cover) within the landscape or surrounding residential dwellings. The ZVI analysis has included wind turbines associated with the approved Uungula Wind Farm project located to the west of the Piambong project site.

Where wind turbines are visible within the horizontal views of the dwelling or key public viewpoints in three or more 60° sectors, the proponents must identify the turbines, relative dwelling and key public viewpoint, along with the relative distance and submit these to the Department as part of the request for SEARs. These turbines will become a focus for assessment in the EIS.

Figure 9
Multiple wind turbine tool - Representative dwelling locations

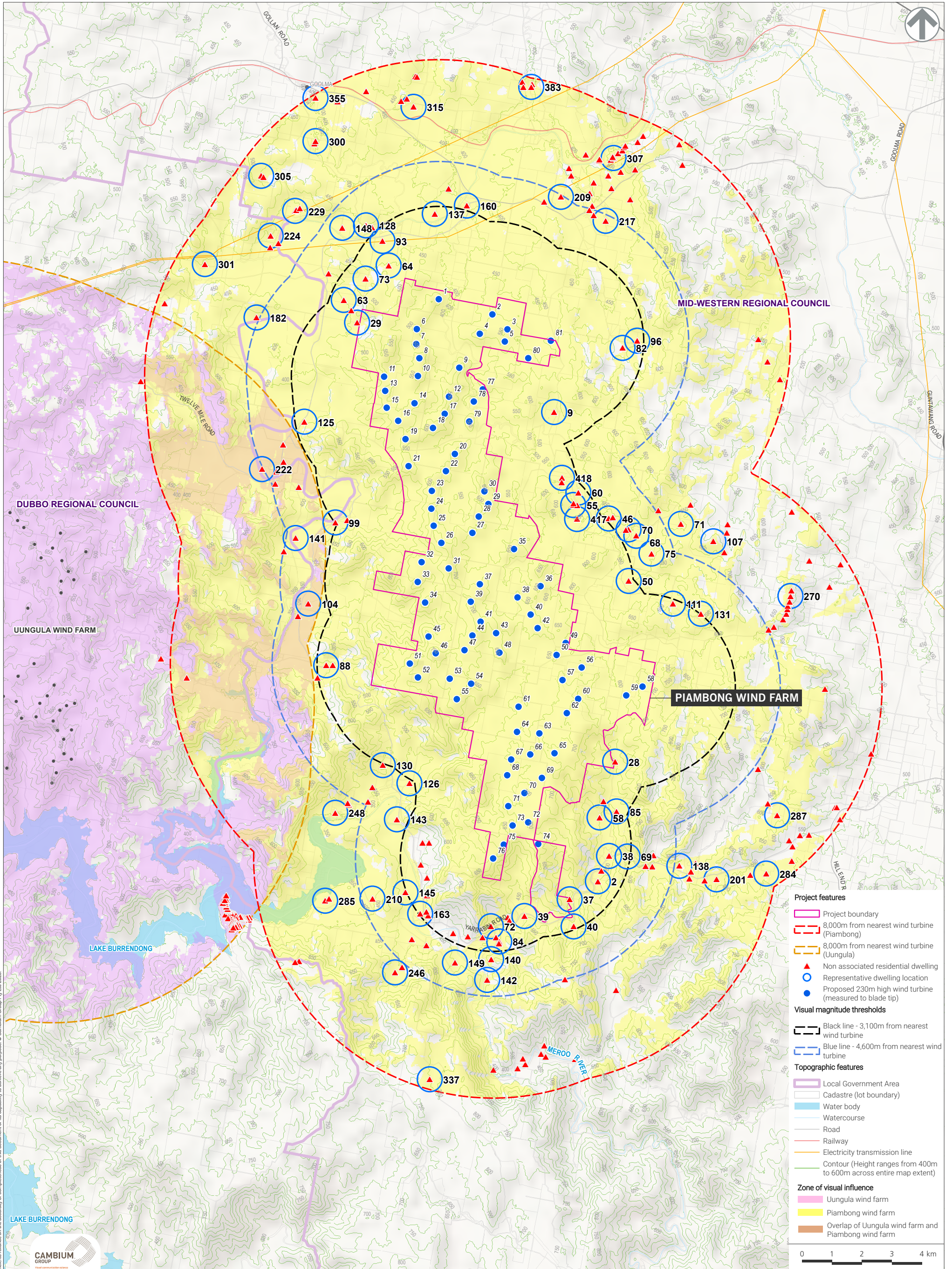
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Figure 10
Zone of visual influence

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Table 2 summarises the results of the multiple wind turbine tool analysis undertaken as part of the Preliminary LVIA. The results include the identification of non-involved residential dwellings and key public view locations within 8km of the wind turbines, the distance to the closest wind turbine (and wind turbine ID), the number of 60° sectors the wind turbines occur within out to a distance of 8 km from the view location, and the number of wind turbines visible within three or more 60° sectors out to a distance of 8 km from the view location.

Table 2 – Multiple wind turbine analysis results

Representative view location ID	Distance (km) from dwelling to closest wind turbine (and turbine ID)	Number of 60°sectors with wind turbines up to 8km from dwelling	Number of visible wind turbines within 3 or more 60° sectors up to 8km from dwelling	Representative view location ID	Distance (km) from dwelling to closest wind turbine (and turbine ID)	Number of 60°sectors with wind turbines up to 8km from dwelling	Number of visible wind turbines within 3 or more 60° sectors up to 8km from dwelling
2	2.35km (74)	2		131	3.12km (58)	2	
9	2km (80)	3	36	137	2.86km (1)	1	
28	2.04km (65)	3	8	138	4.77km (74)	1	
29	2.01km (6)	2		140	3.36km (76)	1	
37	2.12km (74)	1		141	4.28km (32)	2	
38	2.4km (74)	2		142	4.06km (76)	1	
39	2.19km (76)	1		143	3.47km (76)	1	
40	2.99km (74)	1		145	3.14km (76)	2	
46	3.21km (36)	3	56	148	4.01km (1)	1	
50	2.95km (36)	3	51	149	3.7km (76)	1	
55	2.47km (35)	3	31	160	3.27km (1)	1	
58	2.23km (74)	2		163	3.06km (76)	1	
60	2.86km (35)	4	52	182	4.7km (11)	1	
63	2.63km (6)	1		201	6.07km (74)	1	
64	2.02km (1)	1		209	4.54km (2)	1	
68	3.61km (36)	3	51	210	4.25km (76)	2	
69	3.01km (74)	1		217	4.4km (81)	1	
70	3.5km (36)	3	51	222	4.64km (15)	3	8 Piambong 10 Uungula
71	5.13km (36)	2		224	5.8km (6)	1	
72	2.26km (76)	1		229	5.63km (1)	1	
73	2.4km (6)	1		246	5.02km (76)	1	
75	3.86km (36)	3	48	248	5.3km (52)	2	
82	2.41km (81)	1		270	5.8km (58)	1	
84	2.78km (76)	1		284	7.49km (58)	1	
85	2.73km (69)	3	14	285	5.78km (76)	1	
88	2.79km (51)	1		287	6.22km (58)	1	
93	2.7km (1)	1		300	6.7km (1)	1	
96	2.88km (81)	1		301	7.07km (11)	1	
99	3.08km (21)	2		305	7.22km (1)	1	
104	3.73km (33)	3	31 Piambong 1 Uungula	307	6.45km (81)	1	
107	5.4km (58)	2		315	6.48km (1)	1	
111	2.95km (58)	0		337	7.67km (76)	1	
125	2.79km (15)	1		355	7.88km (1)	1	
126	3.22km (55)	3	17	383	7.71km (2)	1	
128	3.46km (1)	1		417	2.33km (35)	4	49
130	3.16km (52)	2		418	2.61km (29)	4	46

Of the 72 representative dwelling locations:

- 1 is predicted to have no view toward wind turbines
- 56 are predicted to have views toward wind turbines in either 1 or 2 of the 60° sectors
- 15 are predicted to have views toward wind turbines within 3 or more of the 60° sectors and
- 2 are predicted to have views toward the Piambong and Uungula wind turbines.

Further assessment and justification for placement of turbines in multiple sectors will be detailed in the EIS, along with a description of the mitigation and management measures being employed to reduce impacts. Such further assessment may identify factors such as relative distance and existing vegetation may minimise the impacts of the project on nearby involved and non-involved residences. The Visual Bulletin notes that *‘the relative position of the viewpoints in relation to a dwelling is also an important consideration that will be outlined in the EIS. For example, views to the turbines from the primary living areas of the dwelling would be considered more important than views*

from non-habitable areas’.

The Stage 2 EIS Assessment and Determination will provide further assessment and justification for the placement of wind turbines within three or more 60° sectors where necessary, and/or provide reasonable and feasible mitigation measures to reduce visual impacts.

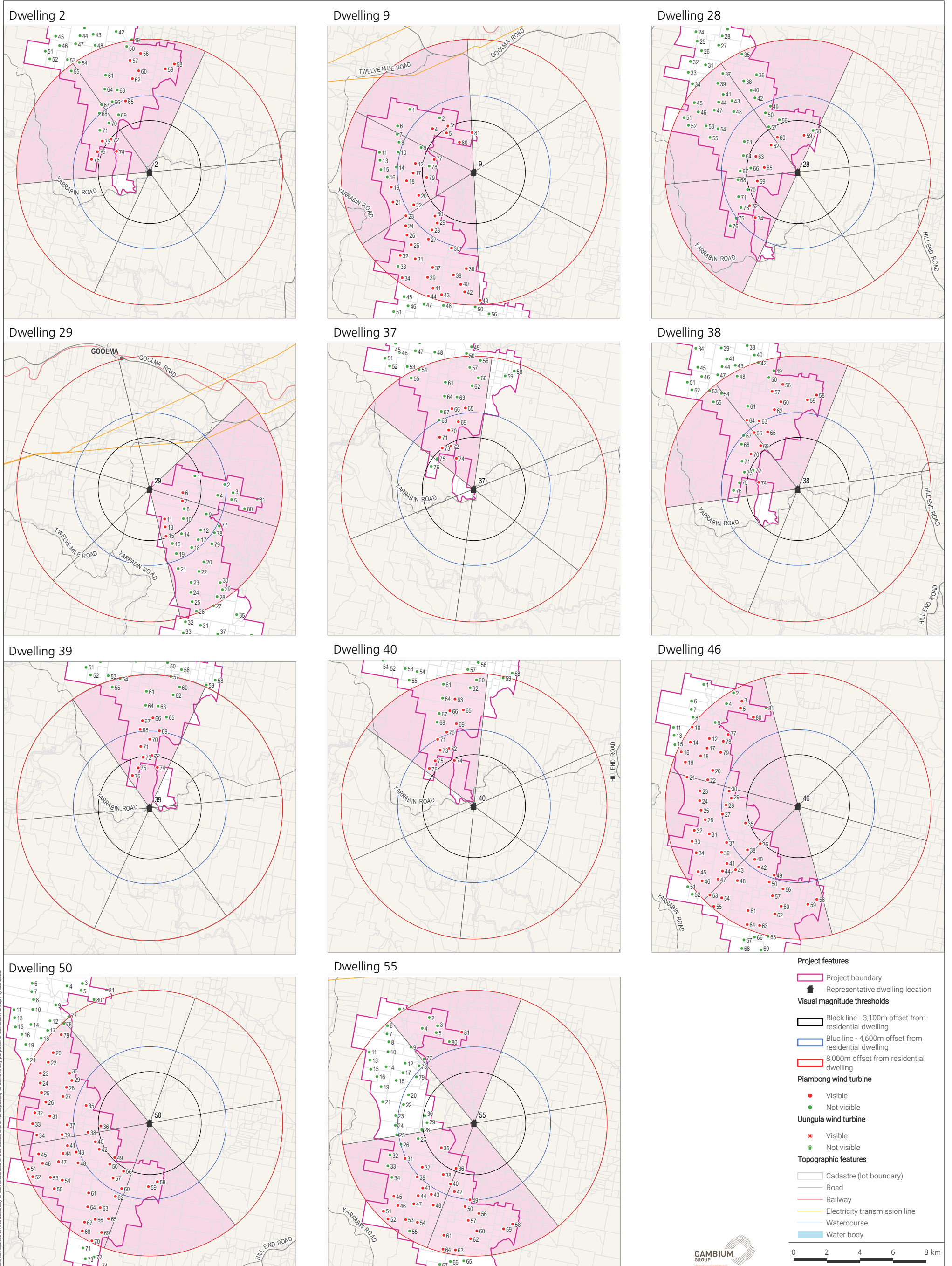
A comprehensive assessment of potential cumulative visual impacts will be carried out and included in the Stage 2 EIS Assessment and Determination report.

Multiple wind turbine tool diagrams for the representative view locations are included in **Figures 11 to 17**.

Figure 11

Representative location dwellings 2, 9, 28, 29, 37, 38, 39, 40, 46, 50 and 55
- Multiple wind turbine tool

PIAMBONG WIND FARM | PRELIMINARY LANDSCAPE AND VISUAL IMPACT ASSESSMENT

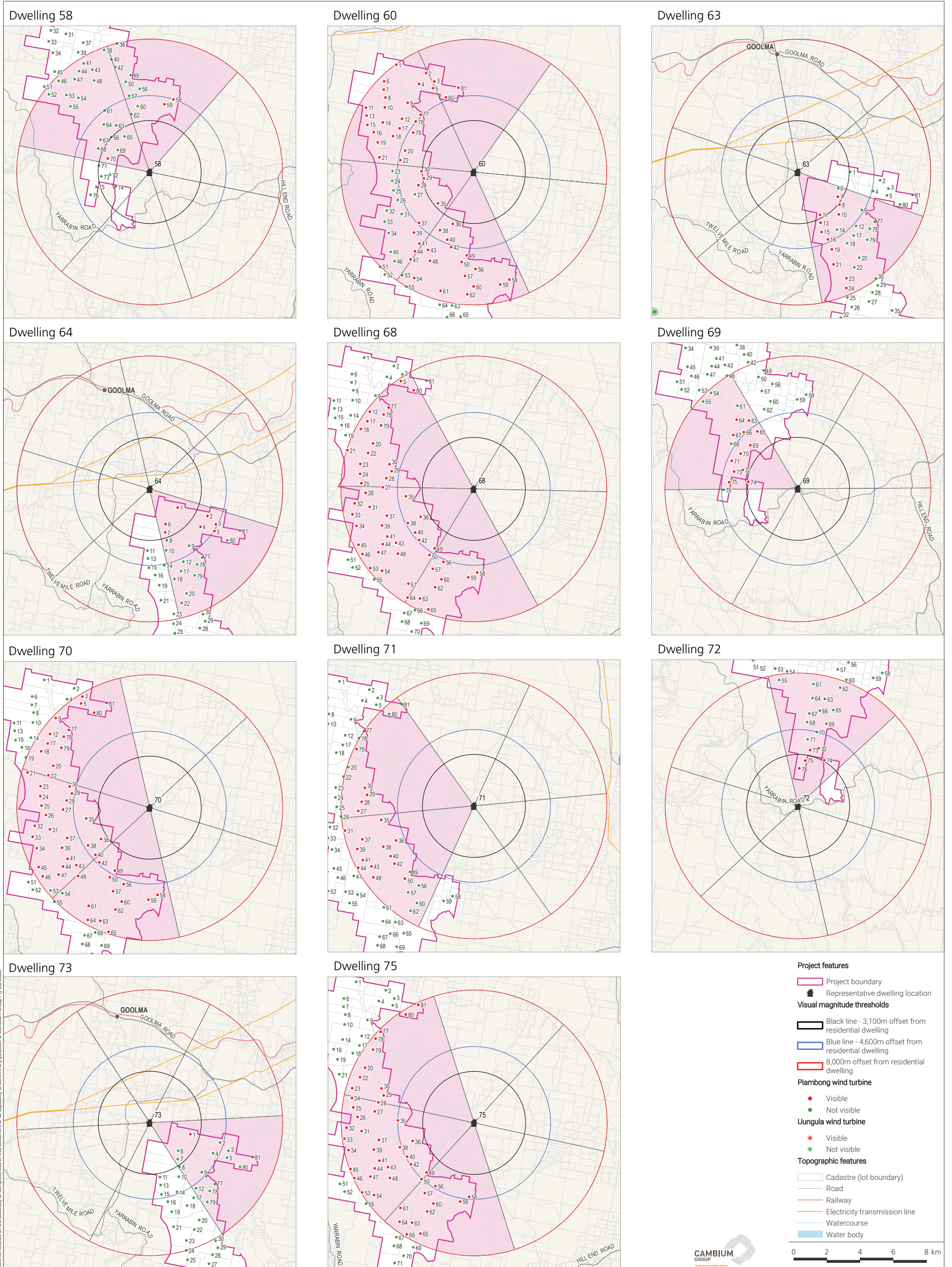


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Figure 12

Representative location dwellings 58, 60, 63, 64, 68, 69, 70, 71, 72, 73 and 75
- Multiple wind turbine tool

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Projected coordinate system GDA1994 MGA Zone 55 031236_PWF_PLVIA_V2_F12_Representative_location_dwelling_MWTT_230908_v03

Figure 13
 Representative location dwellings 82, 84, 85, 88, 93, 96, 99, 104, 107, 111 and 125
 - Multiple wind turbine tool

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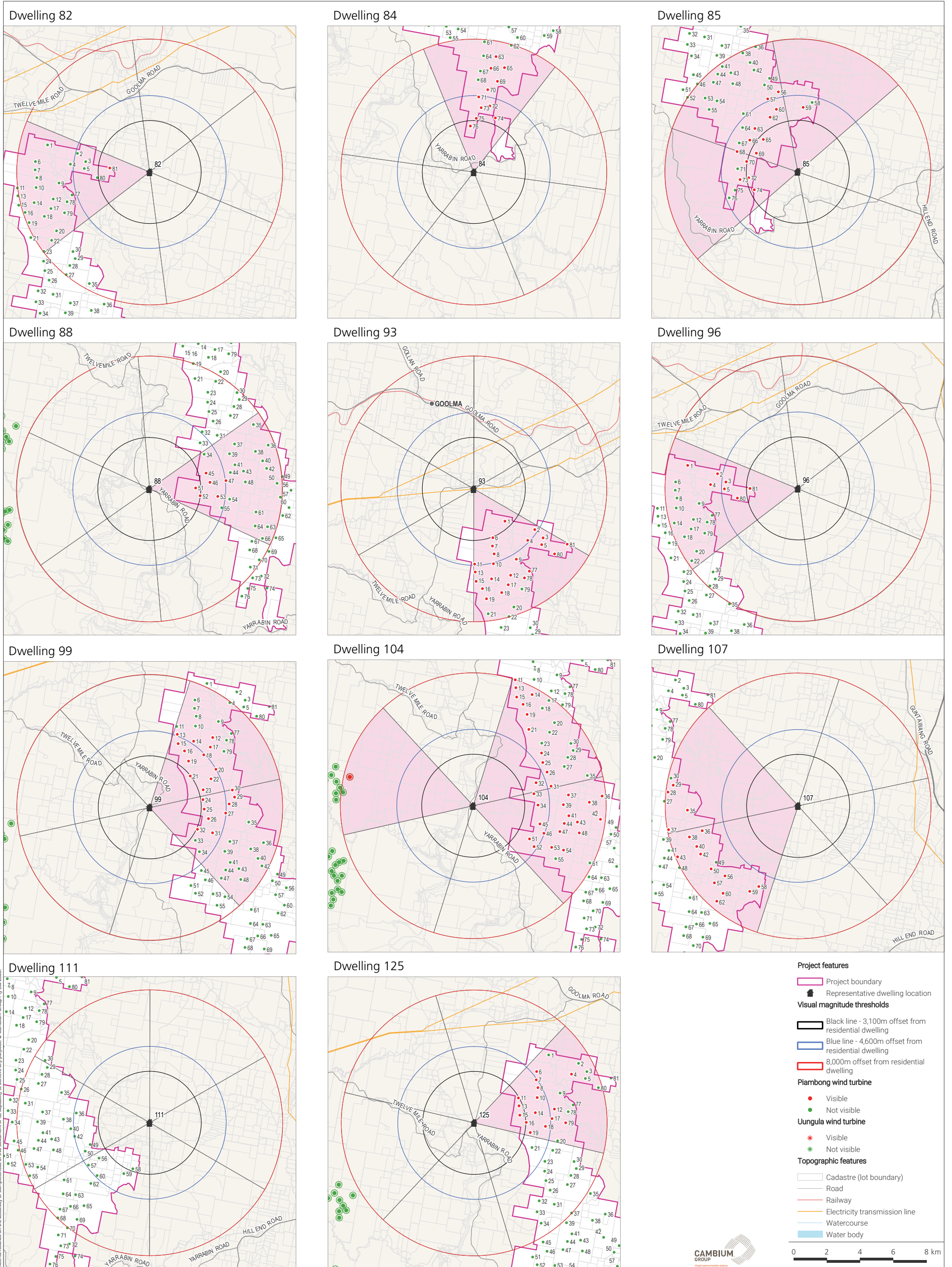
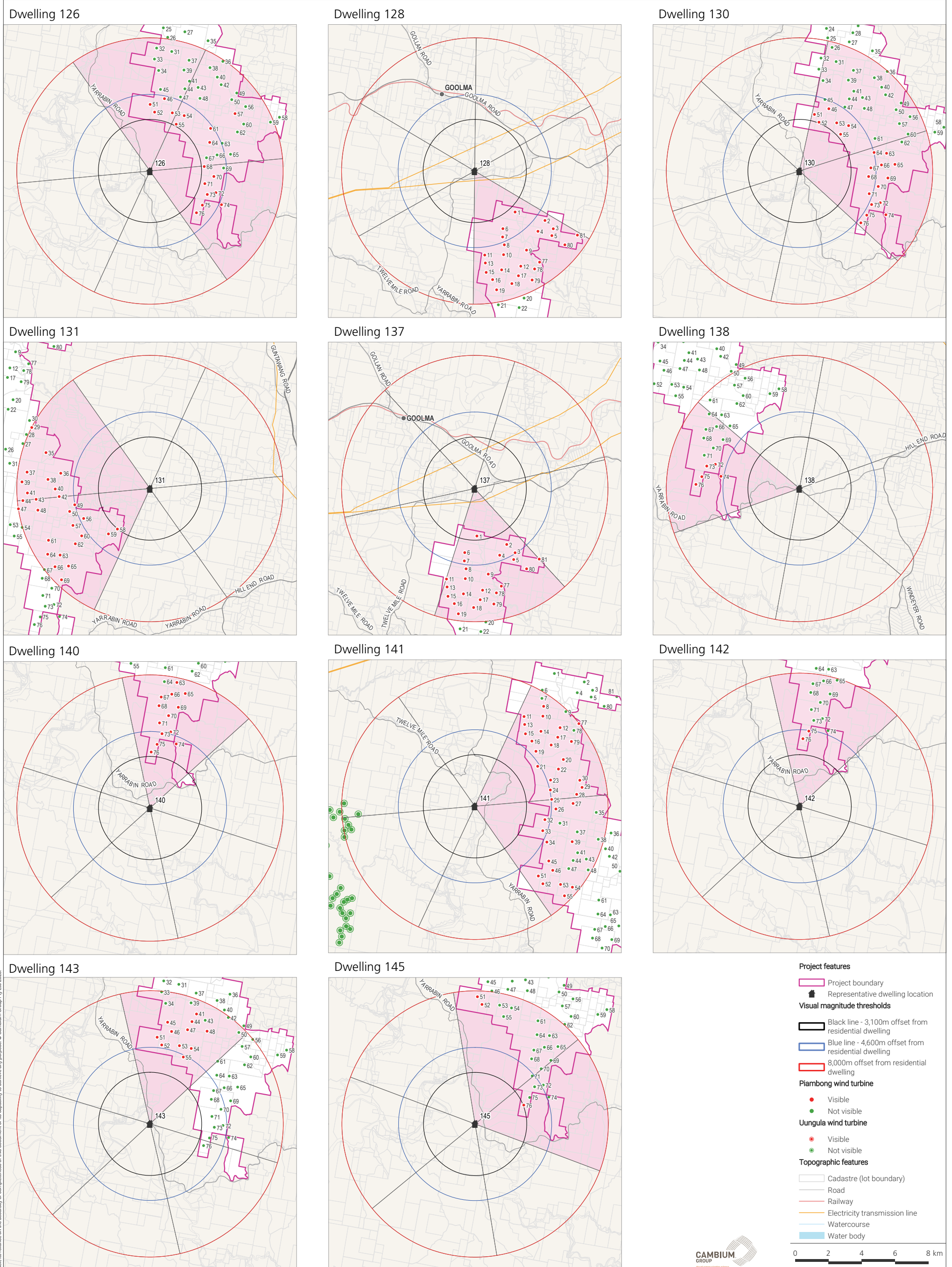


Figure 14

Representative location dwellings 126, 128, 130, 131, 137, 138, 140, 141, 142, 143 and 145 - Multiple wind turbine tool

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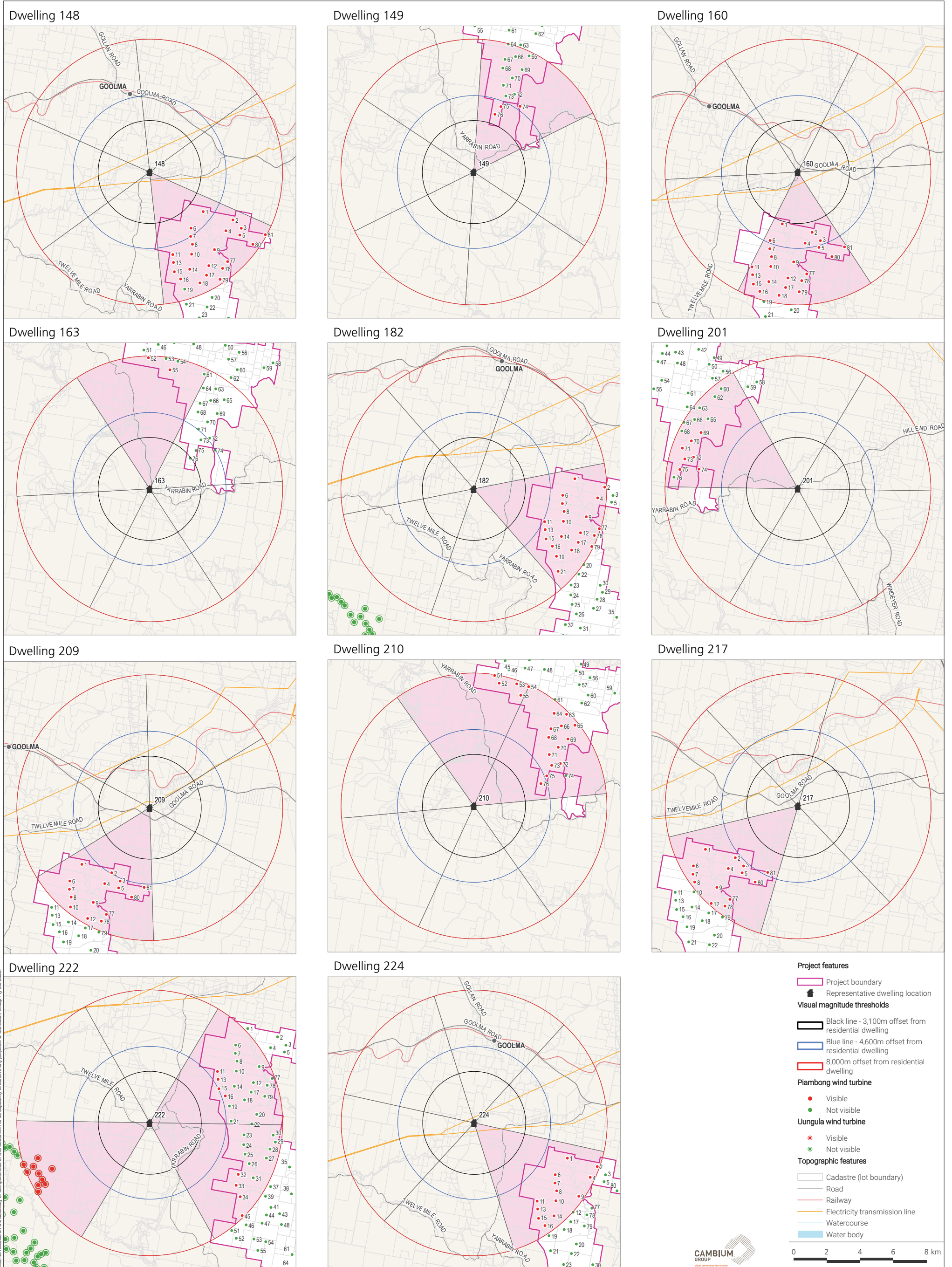


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Figure 15

Representative location dwellings 148, 149, 160, 163, 182, 201, 209, 210, 217, 222 and 224 - Multiple wind turbine tool

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Source: NSW Spatial Services, NSW Government (2023), ESRI, (2023), Vestas (2023), Cambium Group (2023).

Figure 16

Representative location dwellings 229, 246, 248, 270, 284, 285, 287, 300, 301, 305 and 307 - Multiple wind turbine tool

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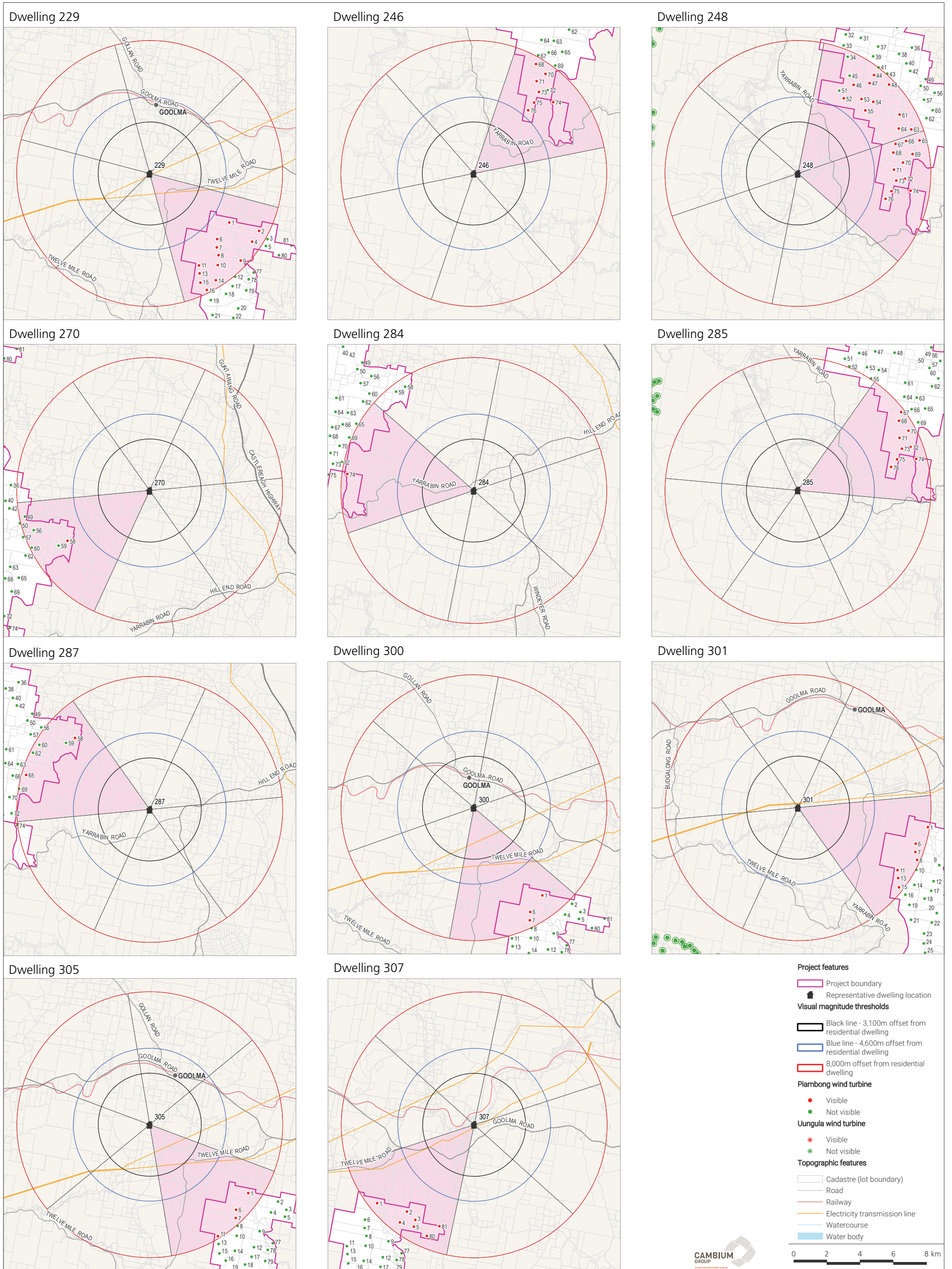
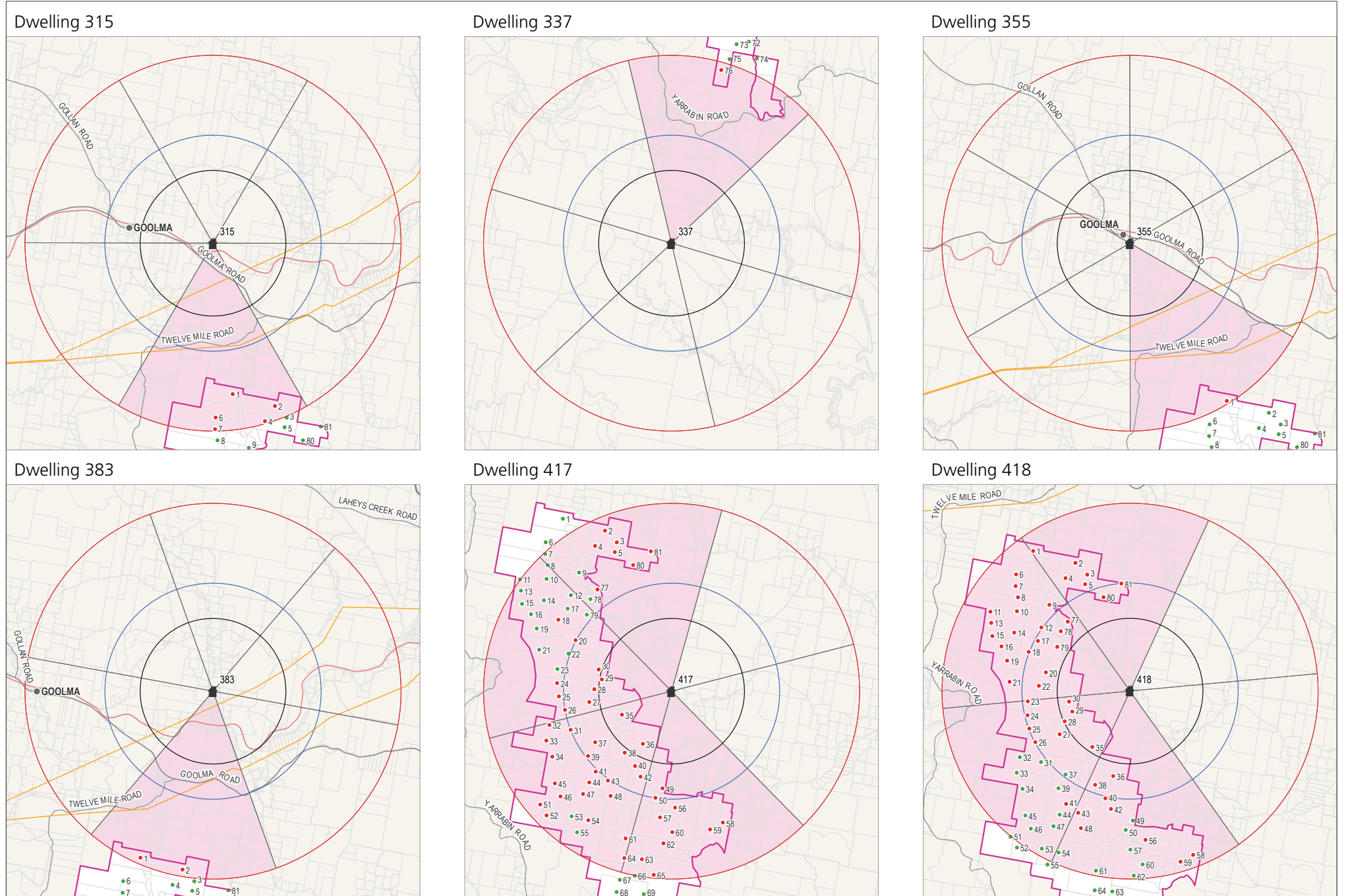


Figure 17
 Representative location dwellings 315, 337, 355, 383, 417 and 418
 - Multiple wind turbine tool

PIAMBONG WIND FARM | PRELIMINARY LANDSCAPE AND VISUAL IMPACT ASSESSMENT



Project features

- Project boundary
- Representative dwelling location

Visual magnitude thresholds

- Black line - 3,100m offset from residential dwelling
- Blue line - 4,600m offset from residential dwelling
- 8,000m offset from residential dwelling

Piambong wind turbine

- Visible
- Not visible

Uungula wind turbine

- Visible
- Not visible

Topographic features

- Cadastre (lot boundary)
- Road
- Railway
- Electricity transmission line
- Watercourse
- Water body



Section 8. Summary

8.1 Summary

This Preliminary LVIA has been prepared in accordance with the Visual Bulletin and specifically addresses the key steps set out in Stage 1 PEA / Scoping Report (pre-lodgement). The Preliminary LVIA has:

- Outlined the community consultation activities undertaken by the Proponent and identified the key landscape features and characteristics that are found within and surrounding the project boundary.
- Noted the landscape features and locations of concern to the community and will further consider these within the Stage 2 EIS Assessment and Determination process.
- Applied the preliminary assessment tools (magnitude and multiple wind turbine) to the preliminary wind turbine layout.
- Documented the process and analysis of the Stage 1 Preliminary Environmental Assessment.

The Preliminary LVIA will be carried forward to the Stage 2 EIS, which will consider the proposed wind farm development against the Visual Bulletin performance objectives and requirements.

8.2 Next steps

This Preliminary LVIA, incorporating the preliminary assessment tools, will be submitted to DPE together with the Scoping Report as a pre-requisite as a request for the Secretary's Environmental Assessment Requirements (SEARs). The Visual Bulletin notes that *'In relation to visual assessment, SEARs for wind energy applications will require the Proponent to provide a comprehensive assessment of the project in accordance with (the) Bulletin that analyses the proposed wind energy project in relation to the visual performance objectives'*.

The Steps in Visual Assessment (refer Section 4) identifies the key steps in the Stage 2 EIS visual assessment. These include:

- Prepare a Visual Baseline Study as part of the EIS
- Undertake community consultation aspects of the visual baseline study and describe mitigation and management options in the EIS
- Establish Visual Influence Zones from viewpoints using inputs from the visual baseline study
- Undertake an evaluation of project against the Visual Performance Objectives.

The Proponent will commission a detailed Landscape and Visual Impact Assessment (LVIA) report. The LVIA report will be prepared in accordance with the Visual Bulletin requirements and incorporate:

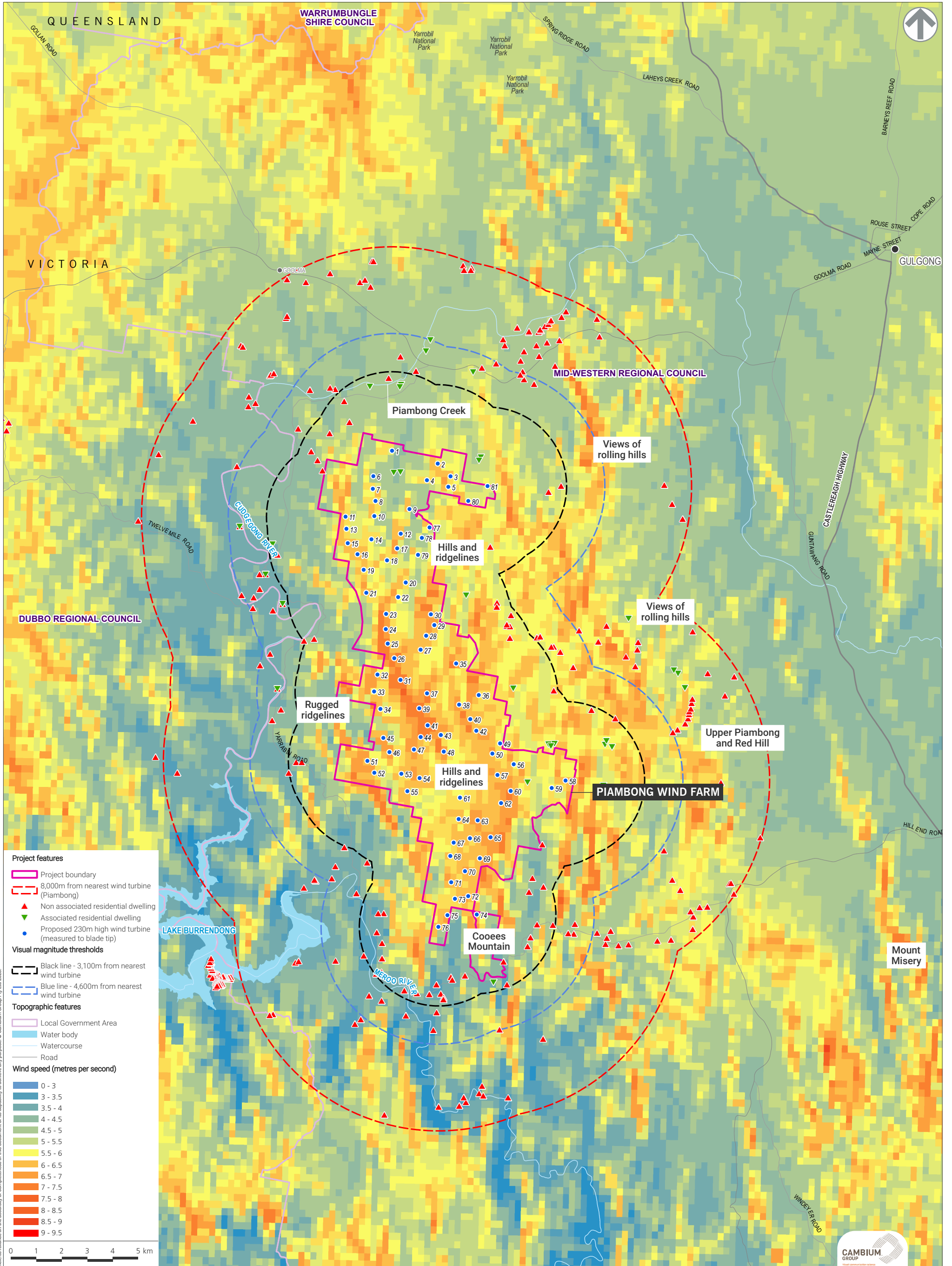
- Baseline Study Factors
- Visual Performance Evaluation and
- Visual Performance Objectives.

8.3 Consolidated Map

A Consolidated Map has been prepared and included as Figure 18 in accordance with the Visual Bulletin requirement. Wind turbines that occur below the black line are identified in the Multiple Wind Turbine Tool Figure 11 to Figure 17.

Figure 18
Consolidated map

PIAMBONG WIND FARM | PRELIMINARY LANDSCAPE AND VISUAL IMPACT ASSESSMENT



Green Bean Design Pty Ltd (GBD) is a highly experienced landscape architectural consultancy specialising in landscape and visual impact assessment. Established in 2006 as an independent consultancy, GBD provide professional advice to a range of commercial and government clients involved in large infrastructure project and policy development.

GBD Director Andrew Homewood is a Registered Landscape Architect, member of the Australian Institute of Landscape Architects and the Environmental Institute of Australia and New Zealand. Andrew has over 30 years' continuous employment in landscape consultancy and has completed numerous landscape and visual impact assessments for a range of state significant developments including wind energy, solar, mining, industrial and transport developments.

GBD has been commissioned for large scale renewable energy projects across New South Wales, Victoria, South Australia, Queensland and Tasmania.

GBD has been engaged as a peer reviewer of renewable energy landscape and visual impact assessments in Victoria and New South Wales.

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