

Golden Plains Wind Farm

Application to Amend Planning Permit PA1700266

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DOCUMENT HISTORY and STATUS

The following table outlines the revisions made to this document

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Golden Plains Wind Farm Management Pty Ltd
ACN 627 730 563
Office 4 Nexus Centre
17 Goode Street
Gisborne VIC 3437 Australia

T +61 3 5421 9999
E info@goldenplainswindfarm.com.au
W www.goldenplainswindfarm.com.au

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NOMENCLATURE

Table 1: Terms and abbreviations

Term/Abbreviation	Definition or Description
Application Plans	The Project layout plans that accompanied the Planning Permit Application (PPA) and that are referred to in Condition 1 of the Permit as <i>'Golden Plains Wind Farm: Site Layout – Inset Maps 1- 6,' dated 24 April 2018 (Jacobs)</i> .
BMCP	Brolga Monitoring and Compensation Plan
CHMP	Cultural Heritage Management Plan
CRM	Collision Risk Modelling
EES	Environment Effects Statement
EMI	Electromagnetic Interference
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
EPBC Approval	The Project's approval under the EPBC Act (EPBC 2017/7965)
GPSC	Golden Plains Shire Council
Inquiry Panel	EES Inquiry and Planning Permit Application Panel
Management Plans	The Management Plans required under the Permit
MNES	Matters of National Environmental Significance
MW	Megawatt
PPA	Planning Permit Application
The Permit	Planning Permit PA1700266
The Project	Golden Plains Wind Farm
Responsible Authority	The Minister for Planning
RSA	Rotor Swept Area
SPV	Special Purpose Vehicle
WTG	Wind Turbine Generator

1 INTRODUCTION

Planning Permit PA1700266 (Permit) was issued by the Minister for Planning (the Minister) on 21 December 2018, which granted use and development permission for the Golden Plains Wind Farm (the Project).

The Victorian Supreme Court proceedings in 2019 and subsequent Court of Appeal proceedings in 2020 have resulted in significant delays in finalising development approvals for the Project to enable commencement of construction. During the litigation process, wind turbine generator (WTG) technology has advanced significantly. The WTG model approved for the Project has now been superseded by more efficient WTGs available to the market with rotor size increases being one of the advances. Golden Plains Wind Farm Management (GPWFM) now seeks to utilise current WTG technology and amend the Planning Permit to allow the use of current WTG technology.

In response to the outcomes of the Project's Environment Effect Statements (EES) and conditions of the Planning Permit, the inclusion of a *turbine free buffer zone for Brolga*¹ (the Brolga buffer) has the potential to result in the loss of a number of WTGs. In consideration of the remainder of the Project area once the Brolga Buffer is applied, there is the potential to reconfigure the WTG layout to allow for 215 WTGs which equates to a loss of 13 WTG. The reconfigured 215 WTG layout has been optimised to ensure that the environmental impacts are no greater than those allowed for under the EES and in fact, in some aspects (such as native vegetation removal), the impact is substantially less than that allowed for in the layout referred to in the permit as the development plans '*Golden Plains Wind Farm: Site Layout – Insert Maps 1-6,*' dated 24 April 2018 (Jacobs).

GPWFM now submits the following application to amend Planning Permit PA1700266 to:

- Provide a revised layout in light of the Brolga buffer and allow for updated WTG technology to:
 - Allow for a 215 WTG layout;
 - Allow for an increase in the size of the maximum WTG rotor diameter from 150m to 165m;
 - Require an increase in the minimum blade tip clearance from ground level from 40m to 57.5m;
- Address expert advice and experience in delivery of the Brolga Monitoring and Compensation Plan (BMCP) to:
 - Include in the BMCP the principles for the selection of Brolga breeding wetlands for enhancement instead of specifying the locations of historical and potential Brolga breeding wetlands for enhancement;
 - Require that prior to the commencement of works at each Brolga enhancement site, a signed copy of the relevant agreement to be submitted to the Responsible Authority, rather than providing evidence of landholder agreements to participate in the breeding site enhancement as part of the BMCP;
- Improve clarity on Condition 68 regarding flood depths of 300mm to reference a particular flood event of 1% of Annual Exceedance Probability, as supported by the Corangamite Catchment Management Authority.

The following report outlines the history of the planning and environmental approvals for the Project and provides the planning support for the amendment of the Permit.

¹ Planning Permit PA1700266, Condition 1(c)

The application to amend the permit includes:

- Planning Report (this document)
- General Plans (for information only) (Appendix A):
 - A.1 – Project Locality Plan
 - A.2 – Project Area Plan
 - A.3 – Baths Swamp
 - A.4 – Terminal Station Drawings
 - A.5 – WTG Specification Permit Conditions
 - A.6 – WTG Locations within 1km of a Dwelling
- Plans for Endorsement under Condition 1 of the Permit (Appendix B):
 - B.1 – Development Plans of the WTG layout and ancillary infrastructure
 - B.2 – Infrastructure Drawings in plan and elevation
 - B.3 – WTG Specification Plans
 - B.4 – Turbine Free Brolga Buffer Plan
 - B.5 – Business Identification Signage Plans
 - B.6 – Native Vegetation Removal Plans
- Expert Technical Impact Assessments (Appendix C):
 - C.1 – Aviation Impact Assessment and Peer Review;
 - C.2 – Biodiversity Impact Assessment;
 - C.3 – Electromagnetic Interference (EMI) Impact Assessment;
 - C.4 – Ground Water Impact Assessment;
 - C.5 – Landscape and Visual Impact Assessment;
 - C.6 – Noise and Vibration Impact Assessment and Environmental Audit;
 - C.7 – Shadow Flicker Impact Assessment;
 - C.8 – Surface Water Impact Assessment; and
 - C.9 – Traffic and Transport Impact Assessment.
- Records of Consultation (Appendix D):
 - D.1 – Letter of support from Golden Plains Shire Council
 - D.2 – Letter from Corangamite Catchment Management Authority (CCMA)
 - D.3 – Letter from Department of Transport (DoT) (formerly VicRoads)
 - D.4 – Letter from DELWP Environment Portfolio
 - D.5 – Letter from AusNet Transmission Group
- External Advice regarding Permit conditions (Appendix E):
 - E.1 – Odonata’s advice on BMCP conditions
 - E.2 – Corangamite Catchment Management Authority’s advice on Condition 68
- Landholder Consents (Appendix F):
 - F.1 – Consent of dwelling owners within 1km of a WTG
 - F.2 – Participation Agreement for Dwelling H32 - a

- Condition 1 Requirements (Appendix G)
- GIS Vector Data (Appendix H) showing:
 - Wind Farm Infrastructure;
 - Environmental and ecological matters; and
 - Planning considerations such as nearby dwellings and the site boundary.
- Project's planning permit detailing the proposed amendments (Appendix I)
- Review of the proposed amendments against the Minister's Assessment of the EES (Appendix J)
- CHMP Amendment Notice of Approval (Appendix K)
- Certificates of title for land comprising the Project site (Appendix L)

1.1 Amendment to Application before Notice

The following Planning Report supersedes the previous Planning Report submitted with the Application to Amend Planning Permit PA1700266 submitted to the Minister for Planning on 13 January 2021.

The following Planning Report incorporates the response to the request for further information under *Section 54 (1) of the Planning and Environment Act 1987* (the Act) whilst also submitting an Amendment to application at request of applicant before notice under *Section 50 of the Act*.

The changes to the amendment application include:

- The assessment of an additional WTG model, known as the General Electric (GE) 6.0-164 WTG; and
- Correction to Condition 75 to reflect updated WTG numbering.

It is noted that the application previously omitted the location of the Project's meteorological masts (anemometers). This oversight has now been remedied with the inclusion of the masts detailed on the Development Plans at Appendix B.1.

1.2 WestWind Energy and Golden Plains Wind Farm Management

GPWFM was established by WestWind Energy Pty Ltd (WestWind) as a dedicated Special Purpose Vehicle (SPV) to facilitate external investment in the Project.

WestWind is an Australian company dedicated to the development, construction, operation and management of wind farms and other renewable energy projects in Australia.

WestWind has developed the Mt Mercer Wind Farm (131 MW), the Moorabool Wind Farm (360 MW) and the Lal Lal Wind Farm (228 MW). Combined these past projects:

- Power the equivalent of 375,000 Victorian homes;
- Contribute significant revenue through Local Government rates;
- Provide more than \$1.5 million in annual income across approximately 34 host landholders;
- Produce more than 2,000,000 MWh of clean renewable energy annually; and
- Create numerous regional construction and operational jobs in Victoria.

The Project, incorporating the proposed amendments, will generate more than 4,000 GWh of electricity per annum, enough to power more than 765,000 homes – and prevent more than 4.2 million tonnes of carbon dioxide from being emitted to the atmosphere each year.

1.3 GPWFM's Commitment to the Golden Plains Community

GPWFM has committed to delivering an extensive 'Community Benefits Program' which includes:

- A Community Benefit Fund of up to \$215,000 (\$1,000 per commissioned WTG) per year investing in a range of community-based initiatives;
- Neighbour benefits scheme consisting of:
 - \$1,000 per WTG for the first three commissioned WTGs, then \$750 for each further commissioned WTG within 2km of a non-host dwelling (located outside the Rokewood township zone);
 - energy audits to help homeowners understand how to minimise electricity usage; and
 - an electricity offset scheme to provide green electricity (equal to the usage of an average Victorian home) at no cost to all non-host dwellings within 3km of a commissioned WTG.
- A Community Investment Program to allow residents within 10km of the site boundary to participate in community-owned renewable energy through direct investment into the Project.

GPWFM's engagement with the community has extended beyond the requirements of the planning process and has incorporated community views and amendments through close collaboration with local residents and groups. Robust engagement practices will remain a top priority to ensure Project benefits are shared across the surrounding communities. GPWFM believes the Project has been enhanced through extensive consultation with the community and advice from the National Wind Farm Commissioner.

A Community Reference Group (CRG) has been established, that comprises 8 local representatives, to foster community partnerships and provide an open forum to raise questions or concern. This group meets regularly and provides recommendations on the allocation of the Community Benefit Fund for community projects surrounding the wind farm. GPWFM is committed to working in partnership with the community to gain the social licence necessary to own and operate the Project.

In addition to providing direct benefits to the community, the Project will result in the creation of 840 local construction jobs and will source much of its necessary onsite construction materials from local quarries, minimizing the impact of construction traffic and damage to local road networks. GPWFM has well-established relationships within the community, including the ongoing support from the Golden Plains Shire Council (GPSC), who is in regular contact with the Project team.

2 HISTORY OF ASSESSMENTS AND APPROVALS

The Project has undertaken the most vigorous and comprehensive environmental assessment available in Victoria via the preparation and assessment of an Environment Effects Statement (EES) under the *Environment Effects Act 1978*. Following the release of the joint EES Inquiry and Planning Permit Application Panel Report (Inquiry Panel), the Minister released the Minister's Assessment of the EES which found that:

*On balance, it is my assessment that the project, subject to specific modifications and recommendations set out in this assessment, will have acceptable environmental effects.*²

The Minister further concluded:

My overall conclusion is that the environmental effects of the project as I have recommended it be modified will be acceptable, subject to the findings and recommendations of my assessment, particularly those relating to Brolga

The project will provide significant net social and economic benefits to the local and regional communities. Even in the reduced form supported by the assessment, the project will also make significant contributions to achieving state and Commonwealth policies with regards to reducing greenhouse gas emissions.

*My assessment recommends amendments to the project's proposed layout, management and monitoring measures consistent with the panel's recommendations which I have supported.*³

Specifically, in relation to statutory decisions, the Minister's Assessment further concluded that the:

*Aboriginal and historic cultural heritage effects can be acceptably managed through the Cultural Heritage Management Plan (CHMP) process and the EMMs proposed as part of the EES*⁴;

*Project may be conditionally approved under the Environment Protection Biodiversity & Conservation Act (EPBC Act)*⁵; and

*Planning permit conditions generally in accordance with those contained within the Appendix F of the panel report are supported*⁶.

² Golden Plains Wind Farm Assessment under Environment Effects Act 1978, Minister for Planning, October 2018, pp. 10

³ Ibid, pp. 51

⁴ Ibid, pp. 42

⁵ Ibid, pp. 46

⁶ Ibid, pp. 54

The following Table 2 provides a chronology of the processes and key approvals undertaken to date:

Table 2: Chronology of Approval Process

Date	Chronology
14 June 2017	Environment Effects Statement (EES) Referral submitted to the Minister
June 2017	Referral to Commonwealth Government for determination on whether the Project is a controlled action under EPBC Act
24 July 2017	Project determined by Commonwealth to be a 'controlled action' under the EPBC Act due to potential impacts on Matters of National Environment Significance (MNES)
9 July 2017	The Minister determined that an EES was required for the Project
16 August 2017	EES and Planning Permit Application (PPA) submitted to Minister for Planning
4 to 18 June 2018	Combined public exhibition of EES and PPA
17 June 2018	Minister appointed joint Inquiry and Planning Panel to consider the EES and PPA
30 July to 13 August 2018	Public Hearings by the Inquiry and Planning Panel
26 September 2018	EES Inquiry and Planning Permit Application Report ⁷ released
20 October 2018	Ministers Assessment under the <i>Environment Effects Act 1978</i> was released and concluded that <i>the potentially significant environmental effects and risks of the project are acceptable, provided it is implemented in accordance with (the Minister's) assessment and appropriate mitigation and management measures</i> ⁸ .
29 October 2018	CHMP approved for the Project
21 December 2018	The Permit was approved by Minister for Planning
7 January 2019	The Permit was corrected by the Minister
17 January 2019	The Permit was corrected by the Minister
29 April 2019	The Permit was corrected by the Minister
1 August 2019	Commonwealth approval granted under the Environment Protection Biodiversity & Conservation Act 1999
21 and 22 October 2019	Hearing of the Supreme Court of Victoria
16 December 2019	Decision of Supreme Court of Victoria concluding that the proceeding against the Minister be dismissed. The decision noted that <i>no ground relied on by the plaintiffs against the Minister has been substantiated. The plaintiff's application for judicial review fails.</i> ⁹
15 June 2020	Court of Appeal Hearing
20 August 2020	Judgement of Court of Appeal concluded that the appeal against the Minister for Planning is dismissed.
17 September 2020	Application for special leave to appeal to High Court of Australia
3 December 2020	Application to High Court of Australia dismissed

⁷ Golden Plains Wind Farm EES Inquiry and Planning Permit Application Panel Report, 26 September 2018

⁸ Minister for Planning, Letter to Tobias Geiger (WestWind Energy) dated 20 October 2018, para 3

⁹ Cumming & Ors v Minister for Planning & Anor [2019] VSC 811, para 236

The following Table 3 provides a chronology of the current amendment application process to date:

Table 3: Chronology of Amendment Application

Date	Chronology
13 January 2021	Submission of Application to Amend Planning Permit PA1700266
8 February 2021	Further Information request from DELWP
13 April 2021	Submission of Amendment to Application before Notice

3 PLANNING PERMIT PA1700266

The approval of the Permit by the Minister gave effect to the findings and outcomes of the EES and Inquiry Panel process. The Permit granted approval for:

The use and development of the land for a wind energy facility and utility installation including the construction of buildings and the carrying out of works; the removal, destruction or lopping of native, non-native and dead vegetation; the creation and alteration of access to a road in a Road Zone, Category 1; the demolition, removal or alteration of a dry stone wall created before 1940; and the construction or putting up for display of business identification signs.¹⁰

Condition 1 states:

1. *Before development starts, development plans must be submitted to, approved and endorsed by the responsible authority. When endorsed, the plans will form part of this permit.*

The plans must be fully dimensioned and drawn to scale. The plans must be generally in accordance with the application plans 'Golden Plains Wind Farm: Site Layout – Inset Maps 1- 6,' dated 24 April 2018 (Jacobs), and must include:

- a. *the final location, specifications, materials and finishes of the wind energy facility*
- b. *a maximum of up to 228 turbines (reduced as required to comply with condition 1(c)) with the following specifications:*
 - i. *maximum blade tip height of up to 230 metres above ground level*
 - ii. *minimum blade tip clearance from ground level no less than 40 metres*
 - iii. *maximum rotor diameter of up to 150 metres*
- c. *turbine free buffer zones for Brolga in accordance with Document 86 presented to the Golden Plains Wind Farm EES Inquiry and Panel, 'Brett Lane & Associates Plan, BL&A Habitat model turbine free buffers', with the final boundaries to be agreed with DELWP Environment Portfolio*
- d. *realignment of the proposed grid connection powerline between the collector station on Bells Road and the 500kV terminal station on Geggies Road to avoid Baths Swamp and associated peripheral wetland dependent vegetation*
- e. *clear delineation of the boundary for the transmission station site, which must not intrude into the boundary of the Plains Grassy Wetland Ecological Vegetation Class boundary. The boundary of the transmission site must be approved by DELWP Environment Portfolio*
- f. *the final design and location of any proposed business identification signage*
- g. *the location and extent of native vegetation to be removed under this permit*
- h. *no buildings or structures on the existing Ausnet Transmission Group easement, except for access tracks, underground cables and interface works required for the connection of the wind farm electrical system to the existing 500kV Moorabool to Mortlake/Tarrone transmission line*
- i. *no aviation safety lighting on any turbine.¹¹*

Condition 3 of the Permit further states:

¹⁰ Planning Permit No: PA1700266, pp. 4

¹¹ Ibid, pp. 4

3. *Except as permitted under conditions 5 and 7, the use and development must be generally in accordance with the endorsed plans. The endorsed plans must not be altered or modified without the written consent of the responsible authority.*¹²

On 17 January 2019 the Planning Permit was amended by the Minister for Planning under Section 71 of the *Planning and Environment Act 1987*. The Minister's delegate made the decision to correct the Permit by inserting a requirement for a maximum rotor diameter of 150 m via the inclusion of Condition 1b iii:

1b iii) a maximum turbine rotor diameter of up to 150 metres.

Amendments made by the Minister to the planning permit on 7 January 2019 and 29 April 2019 are administrative by nature and are not considered to be relevant to this proposal.

A copy of the Permit dated 29 April 2019 is attached at Appendix I.1.

¹² Planning Permit No: PA1700266, pp. 5

4 LOCATION OF THE PROJECT SITE

The Project is located within the Golden Plains Shire Council, approximately 110 km west of Melbourne and 40 km south of Ballarat. The Project site is located to the west, south and south-east of Rokewood, and to the north and north-east of Cressy (see Figure 1 below).

Figure 1: Project Location (see also Appendix A.1)



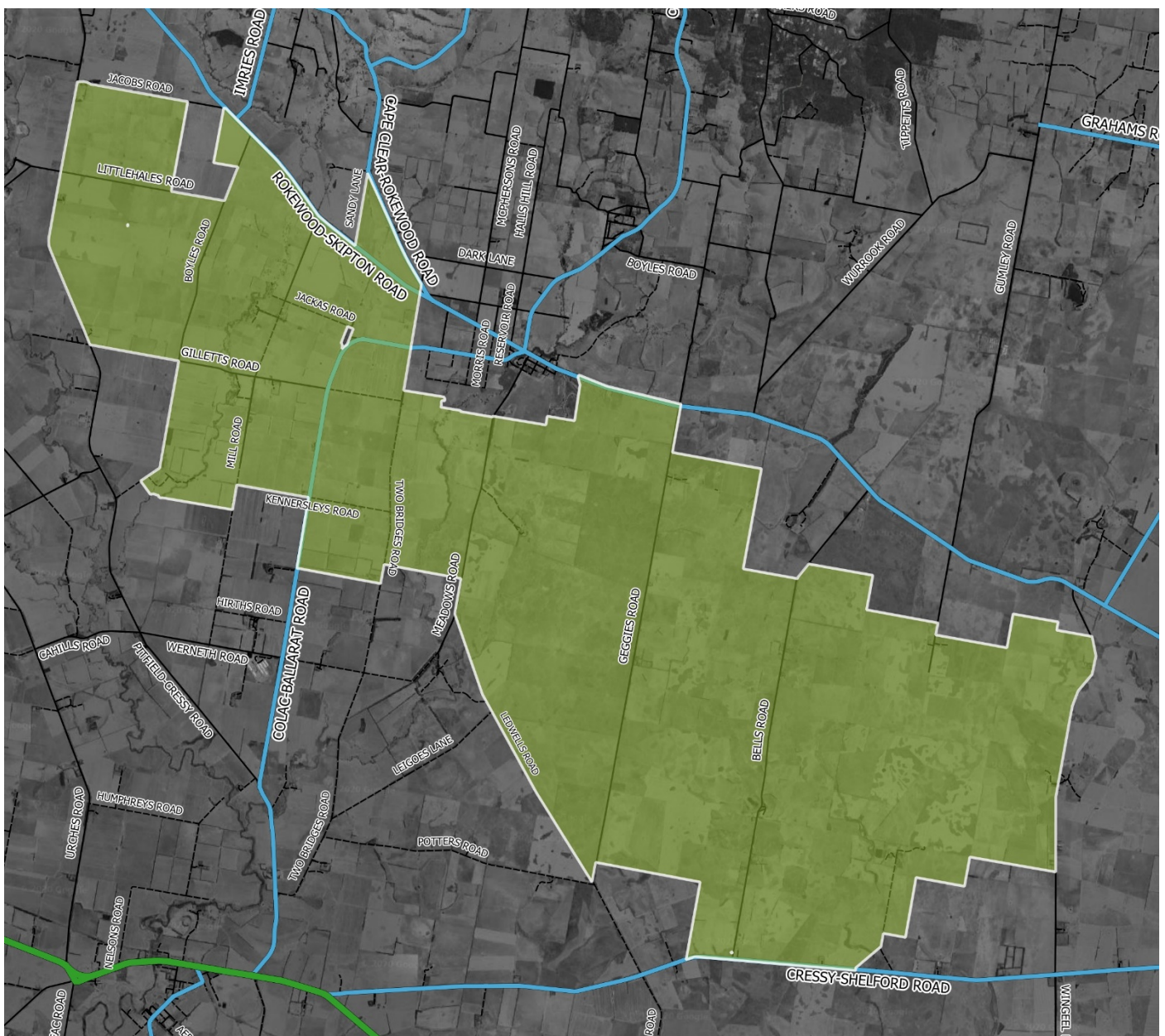
The Project has an approved site area spanning 16,739 hectares - shaded green in Figure 2.

The Project is generally bounded by Rokewood-Skipton Road and Rokewood-Shelford Road to the north, Pitfield-Cressy Road to the west, Ledwells Road and Cressy-Shelford Road to the south, and Wingeel Road to the east.

The site is predominantly situated in the district of Rokewood with parts of the site also within the districts of Werneth to the west, Barunah Park to the south east and Cressy to the south. The Shire of Colac Otway abuts the southern boundary of the site at Cressy-Shelford Road.

WestWind's EES submission and PPA included a comprehensive explanation of the site and surrounds that has not been reproduced in this report.

Figure 2: Project Site (see also Appendix A.2)



5 PROPOSAL

5.1 Amendment to Conditions of Planning Permit

GPWFM seeks to amend Planning Permit PA1700266 under Section 97I of the *Planning and Environment Act 1987* with the objective to:

1. Reconfigure the WTG layout to include 215 WTGs by referring to new development plans in the preamble of Condition 1 of the Permit;
2. Increase the rotor diameter of the WTGs from 150 m to 165 m and, to minimise impacts to birds and bats, increase the minimum blade tip clearance from ground level from 40 m to 57.5 m;
3. Adjust the requirements of the Brolga Monitoring and Compensation Plan (BMCP) to allow for the inclusion of principles that will inform the selection of Brolga breeding wetlands that will be enhanced as part of the BMCP;
4. Provide clarity in relation to the design of access routes to reflect a specific flood event; and
5. Correct condition 75 to refer to updated WTG numbering.

The specific amendments to the relevant conditions of Permit are detailed as follows:

Table 4: Proposed amendments to Permit conditions

Permit Condition Number	Current Condition	Amended Condition	Extent of Change
Development Plans			
1 Preamble	Before development starts, development plans must be submitted to, approved and endorsed by the responsible authority. When endorsed, the plans will form part of this permit. The plans must be fully dimensioned and drawn to scale. The plans must be generally in accordance with the application plans <i>'Golden Plains Wind Farm: Site Layout – Inset Maps 1-6,' dated 24 April 2018 (Jacobs)</i> , and must include:	Before development starts, development plans must be submitted to, approved and endorsed by the responsible authority. When endorsed, the plans will form part of this permit. The plans must be fully dimensioned and drawn to scale. The plans must be generally in accordance with the application plans <i>Golden Plains Wind Farm: Development Plans V39-04, dated 12 April 2021</i> and must include:	Delete reference to <i>Golden Plains Wind Farm: Site Layout – Inset Maps 1-6, dated 24 April 2018 (Jacobs)</i> and insert new reference to <i>Golden Plains Wind Farm: Development Plans V39-04, dated 12 April 2021</i> which provide for the location of 215 WTG.
1bii	a maximum of up to 228 turbines (reduced as required to comply with condition 1(c)) with the following specifications:	a maximum of up to 228 turbines (reduced as required to comply with condition 1(c)) with the following specifications:	An increase in distance in the minimum blade tip clearance of 17.5 metres .

	ii) minimum blade tip clearance from ground level no less than 40 metres	ii) minimum blade tip clearance from ground level no less than 57.5 metres	
1biii	a maximum of up to 228 turbines (reduced as required to comply with condition 1(c)) with the following specifications: iii) maximum rotor diameter of up to 150 metres	a maximum of up to 228 turbines (reduced as required to comply with condition 1(c)) with the following specifications: iii) maximum rotor diameter of up to 165 metres	An increase in the maximum rotor diameter of 15 metres (equivalent to a 7.5 m (10%) increase in the length of each WTG blade)
Brolga Monitoring and Compensation Plan			
51 Preamble	The Environmental Management Plan must include a Brolga Monitoring and Compensation Plan. The plan must be prepared in consultation with DELWP Environment Portfolio to the satisfaction of the responsible authority. Once endorsed, the plan must be placed on the project website for the life of the project.		No Change
51e	The plan must: specify the locations of historical and potential Brolga breeding wetlands that will be enhanced ('enhancement site')	The plan must: Include the principles for the selection of Brolga breeding wetlands that will be enhanced ('enhancement site')	Remove the requirement to ' <i>specify the locations</i> ' of historical potential brolga breeding wetlands and substitute ' <i>including the principles for the selection</i> ' of Brolga breeding wetlands that will be enhanced
51f	The plan must: include evidence of landholder agreements to participate in the breeding site enhancement project for its duration that will run with the land for the life of the project	Delete Condition 51f and insert two new conditions: Prior to the commencement of works at each enhancement site, a signed copy of the Delivery Agreement/Landholder Agreement for the Brolga breeding site enhancement project must be submitted to the Responsible Authority; Agreements for the breeding site enhancement project must extend for the duration of the life of the Wind Energy Facility.	Facilitates a more detailed and extensive site investigation and selection process while retaining the requirement for Agreements to be provided to the Responsible Authority.

51g	The plan must: include methods of enhancement appropriate to each enhancement site such as restoration of the natural flooding regime and controlled grazing or stock removal	The plan must: Include methods of enhancement which will be assessed at each enhancement site	Aligns condition 51g with the intent of amendments to condition 51f.
Sediment, Erosion and Water Quality Management Plan (Surface Water)			
68	Access routes are to be designed to maintain access to turbines and associated infrastructure with flood depths below 300mm during construction and maintenance operations.	Access routes are to be designed to maintain access to turbines and associated infrastructure with 1% Annual Exceedance Probability (AEP) flood depths below 300mm during construction and maintenance operations.	Provides clarity on design requirements by specifying reference datum for flood depths.
Aviation			
75	Prior to turbines GP 227, GP 231 and GP 229 being constructed, an aircraft safety assessment prepared by a suitably qualified person must be submitted which demonstrates that the existing operations conducted from the airstrip at 1944 Wingeel Road, Barunah Park will be able to continue safely without significant impact from the turbines, to the satisfaction of the responsible authority, unless an alternative arrangement is agreed between the parties to the satisfaction of the responsible authority.	Prior to turbines WTG215, WTG216 and WTG217 being constructed, an aircraft safety assessment prepared by a suitably qualified person must be submitted which demonstrates that the existing operations conducted from the airstrip at 1944 Wingeel Road, Barunah Park will be able to continue safely without significant impact from the turbines, to the satisfaction of the responsible authority, unless an alternative arrangement is agreed between the parties to the satisfaction of the responsible authority.	Administrative correction to reflect updated WTG numbering system. The WTGs formerly known as GP 227, GP 231 and GP 229 are now known as WTG215, WTG216 and WTG217 respectively.

A copy of the Permit with the proposed amendments captured as mark-ups is attached at Appendix I.2.

5.2 Reconfigured WTG layout

5.2.1 Rationale for reconfiguration of WTG layout

The application to amend the preamble of Condition 1 of the Planning Permit seeks to replace reference to the development plans '*Golden Plains Wind Farm: Site Layout – Insert Maps 1-6,*' dated 24 April 2018 (Jacobs) and insert reference to revised development plans known as *Golden Plains Wind Farm: Development Plans V39-04, dated 12 April 2021*.

The substitution of revised development plans is to enable the Project to comply with the remaining conditions of the Permit (which are not proposed for amendment) specifically Condition 1b and 1c, which state that the development plans must include:

1b) A maximum of up to 228 turbines (reduced as required to comply with condition 1(c))

1c) turbine free buffer zones for Brolga in accordance with Document 86 presented to the Golden Plains Wind Farm EES Inquiry and Panel, 'Brett Lane & Associates Plan, BL&A Habitat model turbine free buffers', with the final boundaries to be agreed with DELWP Environment Portfolio

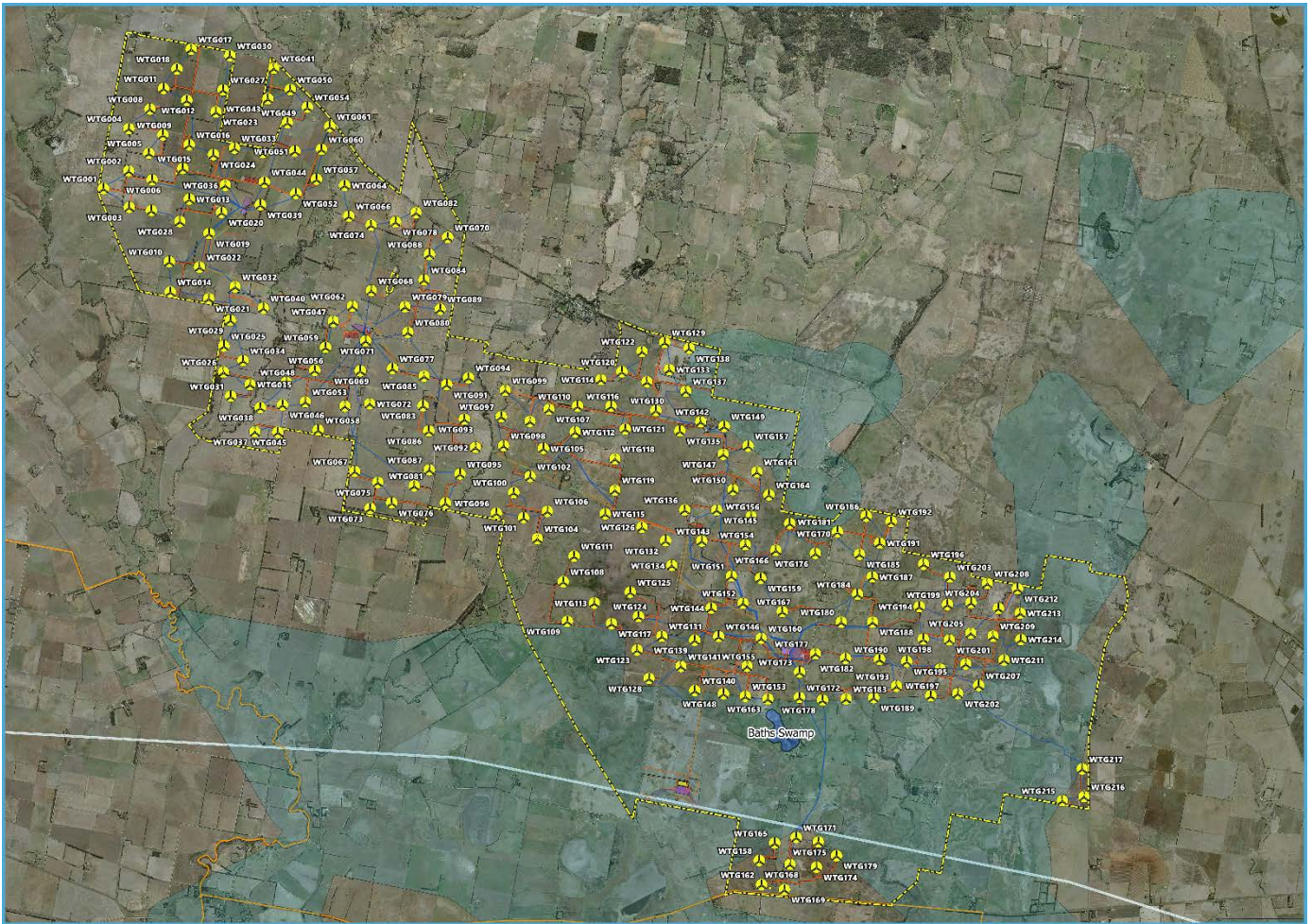
Furthermore, since the issue of the Permit, GPWFM has undertaken extensive detailed surveys of flora and fauna across the Project site. The surveys have informed further refinements to the Project's layout to reduce the overall impact on significant flora and fauna. The impacts associated with the WTG layout have been reduced through continual refinement of the layout in accordance with the 'Avoid, Minimise, Offset' hierarchy outlined in DELWP's *Guidelines for the removal, destruction or lopping of native vegetation (2017)*.

Similarly, detailed investigations of Aboriginal Cultural Heritage across the site have been undertaken which have further informed the location of WTGs and supporting infrastructure.

5.2.2 215 WTG layout

The proposed 215 WTG layout is shown in Figure 3 below and in more detail on the development plans at Appendix B.1.

Figure 3: 215 WTG layout (see also Appendix B.1)



5.2.3 WTG changes within 1km of an existing dwelling

The 215 WTG layout will locate 20 WTGs so that the centre of the WTG (at ground level) is closer to an existing dwelling (within one kilometre of a permitted turbine) than the centre of the WTG (at ground level) of the closest permitted turbine to that dwelling.

The 228 WTG layout presented in the EES resulted in 31 dwellings having a WTG within one kilometre. The 215 WTG layout will result in 24 dwellings having a WTG within one kilometre. Of these 24 dwellings, 12 will have a WTG placed closer than the closest WTG in the 228 WTG layout, while the other 12 will have the closest WTG move further away.

It is highlighted that all of the dwellings located within 1 km of a WTG are 'host dwellings' where a written agreement between GPWFM and the dwelling owner is in place. The owners of all 24 dwellings have consented to the WTG locations presented in the 215 WTG layout and copies of the consents are included in Appendix F.1

Table 5 provides the details of dwelling and WTG locations associated with the 215 WTG layout. Appendix A.6 provides plans visually representing the data detailed in Table 5.

Table 5: Dwellings with a WTG within 1km

Dwelling ID	Status	215 WTG Layout									228 WTG Layout	
		Closest WTG	Distance from Dwelling (m)	Change from 228 WTG Layout (m)	Second closest WTG	Distance from Dwelling (m)	Change from 228 WTG Layout (m)	Third closest WTG	Distance from Dwelling (m)	Change from 228 WTG Layout (m)	Closest WTG	Distance from Dwelling (m)
V18 - a	Host	WTG169	218.1	-122.5	WTG162	320.6	-20.0	WTG168	566.3	+225.7	GP165	340.6
AA25 - a	Host	WTG208	296.5	-27.3	WTG204	370.5	+46.7	WTG203	595.2	+271.4	GP212	323.8
Z25 - a	Host	WTG203	353.4	-146.0	WTG204	478.5	-20.9	WTG208	511.9	+12.6	GP202	499.3
O32 - a	Host	WTG084	619.9	-40.1	WTG088	636.3	-23.7	WTG070	804.0	+144.0	GP067	659.9
G35 - b	Host	WTG002	623.3	+147.5	WTG004	626.6	+150.8	WTG005	860.9	+385.0	GP002	475.8
J28 - a	Host	WTG031	645.6	-87.8	WTG037	742.6	+9.2	WTG038	918.6	+185.2	GP018	733.4
M35 - a	Host	WTG060	679.9	-34.8	WTG061	720.2	+5.5	WTG064	782.0	+67.3	GP047	714.6
O30 - a	Host	WTG085	700.2	-78.9	WTG080	748.2	-30.9	WTG091	855.6	+76.4	GP075	779.1
M28 - a	Host	WTG065	701.3	+150.1	WTG058	763.6	+212.4	WTG067	785.6	+234.4	GP059	551.2
N26 - a	Host	WTG076	702.0	+26.0	WTG090	740.6	+64.6	WTG081	780.2	+104.3	GP073	675.9
M34 - a	Host	WTG078	709.1	-162.0	WTG074	711.0	-160.0	WTG064	819.4	-51.6	GP050	871.0
W25 - b	Host	WTG184	722.3	-49.1	WTG180	770.7	-0.7	WTG176	892.2	+120.9	GP181	771.3
H32 - b	Host	WTG014	741.6	-81.2	WTG010	823.6	+0.7	WTG022	1406.4	+583.5	GP006	822.8
N28 - a	Host	WTG087	755.0	+122.5	WTG086	763.3	+130.9	WTG081	835.4	+202.9	GP059	632.4
T27 - a	Host	WTG147	769.2	+364.1	WTG136	774.8	+369.6	WTG150	800.4	+395.2	GP129	405.1
T24 - a	Host	WTG134	780.7	+266.2	WTG144	789.0	+274.6	WTG131	894.0	+379.6	GP130	514.4
R27 - a	Host	WTG105	782.8	+200.6	WTG102	826.4	+244.2	WTG106	942.3	+360.1	GP094	582.2
L33 - a	Host	WTG066	803.7	-0.8	WTG052	1120.1	+315.5	WTG074	1186.6	+382.1	GP039	804.5
N32 - a	Host	WTG088	821.6	+50.0	WTG078	827.1	+55.5	WTG084	844.1	+72.5	GP067	771.6
V20 - a	Host	WTG171	822.7	+107.3	WTG165	893.3	+178.0	WTG175	1188.5	+473.1	GP152	715.3
W25 - a	Host	WTG176	839.5	+131.7	WTG184	853.1	+145.2	WTG180	861.7	+153.9	GP162	707.8
K30 - a	Host	WTG040	847.4	+200.0	WTG048	923.0	+275.7	WTG034	948.8	+301.4	GP032	647.3
W20 - a	Host	WTG171	854.2	+46.2	WTG165	1062.6	+254.6	WTG175	1107.1	+299.2	GP164	807.9
P25 - a	Host	WTG104	995.9	-80.6	WTG101	1184.7	+108.2	WTG096	1198.3	+121.8	GP223	1076.5

5.3 Rotor Diameter Increase

5.3.1 Rationale for Rotor Diameter Increase

Since the 2017 assessment of the Planning Permit Application (PPA), significant advancements in wind turbine technology have resulted in larger, more efficient WTGs that improve energy yield across a wide range of wind speeds. An increase to the rotor diameter allows each WTG to harvest a greater area, and consequently more energy, that correlates to greater generation of electricity.

Increasing the allowable WTG rotor diameter from 150m to 165m will allow the Project to produce more electricity with fewer turbines. Larger rotor machines on this Project site will result in an increase in electricity generation without the need to increase the number of wind turbine generators or the overall tip height of the turbines.

The newest wind turbine technology also allows for a more efficient use of materials, given it allows for increased generation whilst not increasing the use of materials to the same extent.

Most importantly, larger machines reduce the cost of producing electricity. This is primarily due to:

- more electricity being generated by each machine with only a modest increase in price per wind turbine;
- more electricity being created per WTG that can be distributed across the fixed grid connection cost
- the cost of wind turbine maintenance reduces per unit of electricity as there is only a very minor increase in maintenance costs per turbine;
- the amount of electricity produced per unit of raw material used (steel, fibre reinforced composites, concrete, copper, aluminium, crushed rock etc.) and per unit of labour also increases.

The Project's EES nominated the Vestas V150 4.2MW WTG as the candidate WTG. To illustrate the effect a change in blade length can have, GPWFM has compared the Project's Annual Energy Production (AEP) using the V150 4.2MW, with both the Vestas V162 6.0MW WTG and the General Electric (GE) 6.0-164 WTG. The main factor that increases energy yield between the V150 and current WTG models is the rotor diameter due to the relationship between blade length and swept area. Whilst a change from 150 m to 162m or 164m m is only an increase of 8-9%, this in turn has an effect of increasing the rotor swept area by more than 16-19%. Importantly, the overall blade tip height remains unchanged at 230m above ground level.

Table 6: Annual Energy Production Comparison

WTG model	Vestas V150 4.2MW (EES Model)	Vestas V162 6.0MW 'EnVentus' (Proposed)	GE 6.0-164 (Proposed)
Number of WTGs	228	215	215
Nominal generator size	4.2MW	6.0MW	6.0MW
Blade tip height	230m	230m	230m
Rotor diameter	150m	162m	164m
Rotor swept area	17,671m ²	20,612m ²	21,124m ²
Annual Energy Production	Approximately 3,500 GWh per annum	More than 4,000 GWh per annum	More than 4,000 GWh per annum

		(a ~14% increase over the original proposal)	(a ~14% increase over the original proposal)
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Based on the above specifications and the wind conditions experienced at the Project site, the Vestas V162 or GE 6.0-164 would produce approximately 14% more electricity than the V150 when all losses are accounted for, including array or ‘wake’ losses, electrical losses, and turbine availability. In other words, 215 larger WTGs will produce as much electricity as 260 V150 wind turbines. The additional generation comes principally from the larger rotor swept area that harnesses more energy from the wind, in the same way that a larger sail on a sailboat can capture more energy and push the boat along quicker. This becomes particularly important in lower wind speeds where a smaller rotor may not capture sufficient energy to allow the maximum output from the WTG. Periods of moderate to low wind speeds generally correlate with periods of higher electricity prices given the reduced outputs from wind farms require an increased contribution from expensive gas and hydro generators, so any increase in the Project’s output at low wind speeds stands to have a positive impact on power prices.

It is very important for the Project to be able to employ the latest wind turbine technology in order to be able to meet the expectations of all Victorians to have a long-term secure and cost-effective supply of electricity from clean and sustainable generation sources. Furthermore, as technology advances older style machinery and WTG become obsolete and replaced with current models. By the time the Project commences construction WTGs of comparable size to the Vestas V162 and GE 6.0-164 will be the standard in WTG technology.

It is also important to note that due to lengthy approval processes in Victoria it is often the case that technology advances quicker than the planning approvals process resulting in the need for many projects to seek further amendments to their permits to keep up with available technology. This amendment will position the Project to use the latest generation of WTGs without a need for further amendments.

5.3.2 Specifications of Rotor Diameter Increase

An amendment to Condition 1biii of the Permit to allow for an increase in rotor size diameter from 150m to 165m will enable the Project to install the latest generation of WTGs. The proposed change in rotor diameter will allow GPWFM the ability to select a WTG model within the proposed specifications. Suitable candidate WTG models include:

- A Vestas V162 6.0MW, and
- A GE 6.0-164.

The proposed WTG specifications are detailed in Table 7 below.

Table 7: Specifications for candidate WTGs

Item	Vestas V162 6.0MW ‘EnVentus’ (Proposed)	GE 6.0-164 (Proposed)
Overall height	230m	230m
Blade tip clearance from ground	> 57.5m	> 57.5m
Rotor diameter	162m	164m

External finish	Matte white or similar (non-reflective)	Matte white or similar (non-reflective)
Aviation safety lighting	No aviation safety lighting on any WTG	No aviation safety lighting on any WTG

WTG specification plans for both candidate WTGs are provided at Appendix B.3. The following submission provides an analysis of the impact of both proposed WTG to inform a decision on the amended WTG specifications proposed for Condition 1 of the Permit.

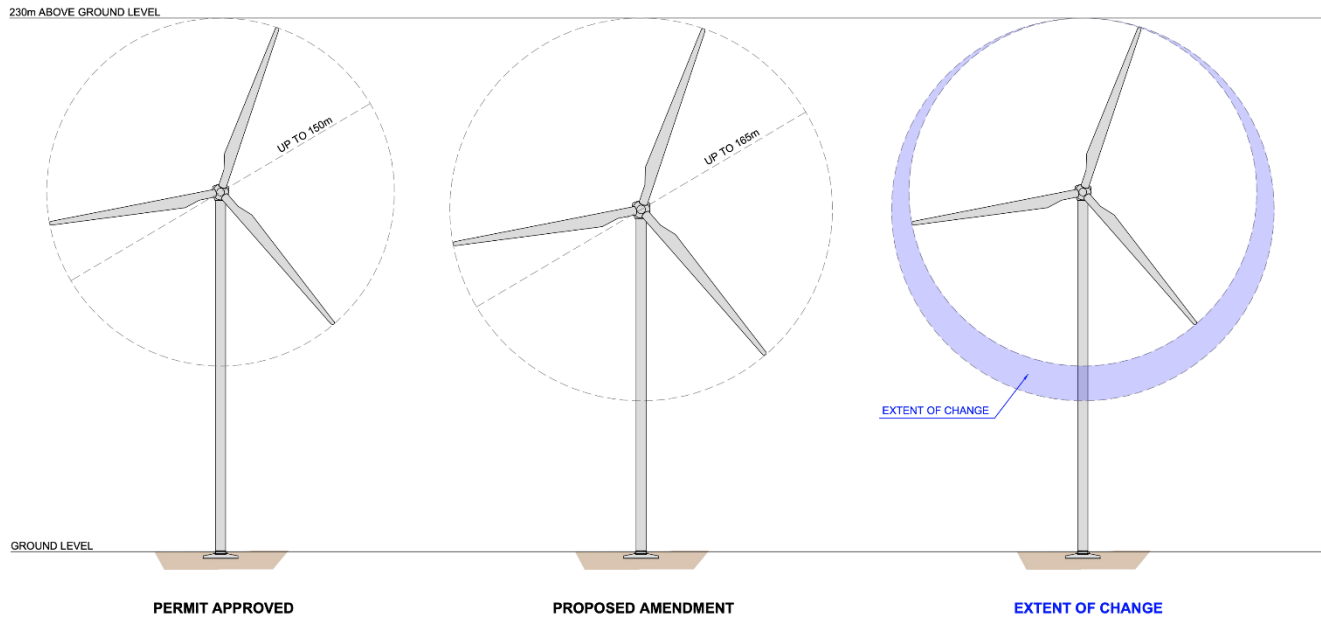
A comparison of the approved V150 WTG, both of the proposed WTG model specifications and the proposed amendment to Condition 1b of the Permit are outlined in Table 8.

Table 8: WTG Specifications Comparison between the V150, V162, GE 6.0-164 and Specifications of Amended Permit

WTG model	Vestas V150 4.2MW (EES Model)	Vestas V162 6.0MW 'EnVentus' (Proposed)	GE 6.0-164 (Proposed)	WTG Specification proposed in Permit Amendment	Extent of Change from V150 to Permit Amendment
Nominal generator size	4.2MW	6.0MW	6.0MW	N/A – not in permit conditions	N/A – not in permit conditions
Maximum blade tip height	230m	230m	230m	230m	No change
Rotor diameter	150m	162m	164m	165m	Up to 15m increase
Blade tip clearance from ground	> 40m	> 57.5m	> 57.5m	> 57.5m	17.5m increase
Rotor swept area	17,671m ²	20,612m ²	21,124m ²	21,382m ²	3,711m ² increase

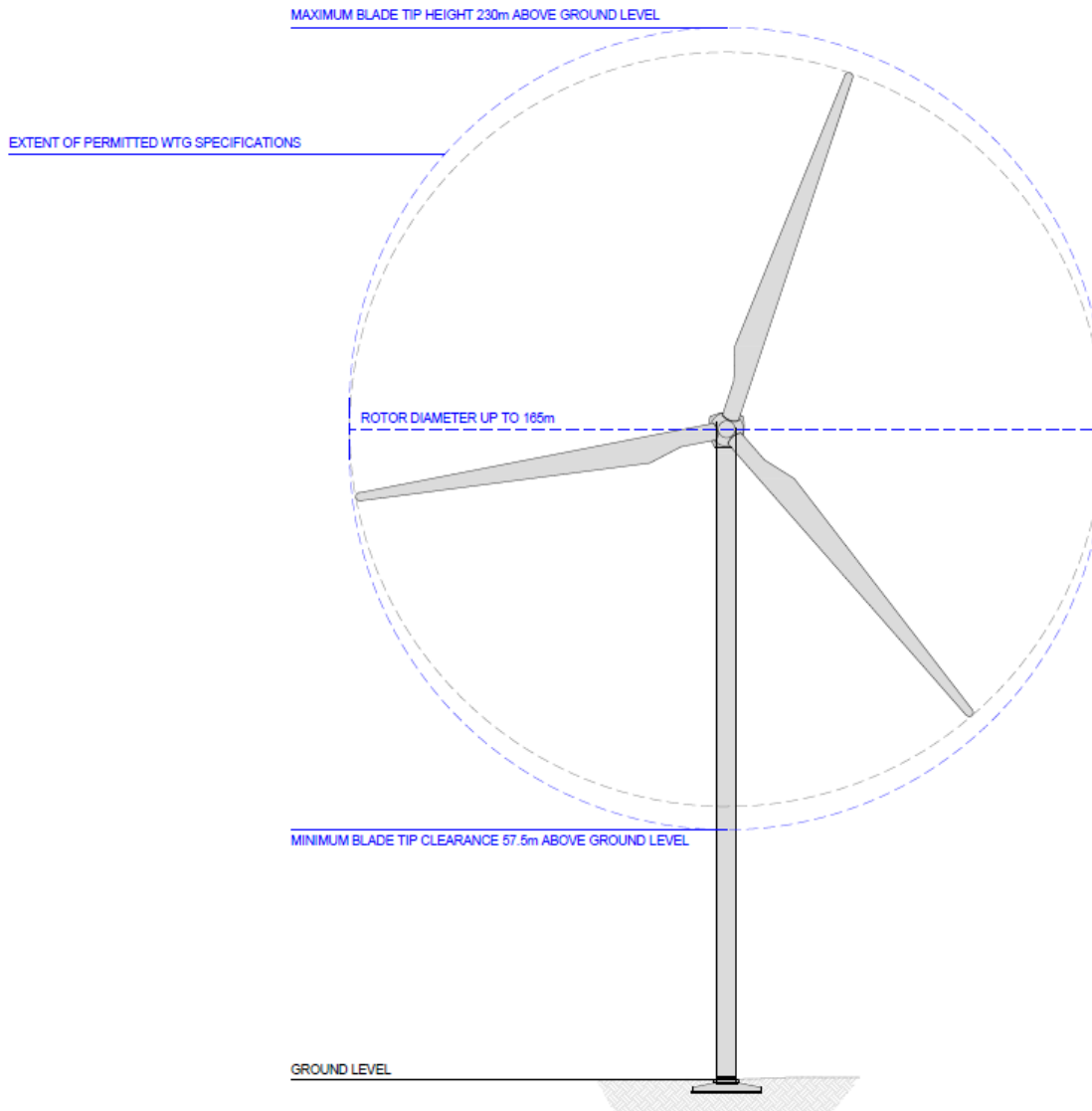
The extent of change is further represented visually in Figure 4 which highlights the area of rotor diameter increase associated with a 165m rotor. The additional rotor swept area associated with the 15m increase in rotor diameter is represented in purple.

Figure 4: WTG Change Parameters



The amended permit conditions will allow some flexibility in hub height to suit site conditions or manufacturer's specifications, provided the maximum and minimum blade tip heights are observed, as shown in Figure 5 below.

Figure 5: Proposed permitted WTG Specifications (see also Appendix A.5)



5.4 Brolga Monitoring and Compensation Plan (BMCP)

5.4.1 Rationale for changes to BMCP conditions

Expert advice from Odonata, a not-for-profit entity supporting biodiversity impact solutions has recommended amendments to Conditions 51e, 51f and 51g of the Permit to facilitate an improved site investigation and Brolga wetland selection process, which increases the potential to secure yield higher-quality wetland enhancement sites for the Project's BMCP.

Odonata's experience with the Dundonnell Wind Farm has informed their recommendation to amend the Permit conditions to facilitate a more lengthy, detailed and rigorous site investigation process. The proposed investigation process will in turn allow identification, selection and enhancement of wetlands that will position the program to achieve better success in meeting its target of 'zero net impact' on the Victorian Brolga population, in accordance with the Interim Guidelines.

A copy of Odonata's advice is at Appendix E.1.

5.4.2 Odonata BMCP Conditions

Odonata has suggested the amendments to Conditions 51e, 51f and 51g as outlined in Table 4.

The proposed amendments remove the requirement for site selection to occur before the BMCP is endorsed, which enables a longer, more detailed site investigation methodology. The more rigorous methodology will encourage the selection of the wetland enhancement sites that provide the greatest opportunity for the program's success, as opposed to sites that are 'quick' or 'easy' to secure.

Further, Odonata advises that:

*"The proposed minor amendments to the Project's planning permit will allow the program to be delivered in accordance with industry best-practice and in a way that will maximise the program's positive impacts."*¹³

5.5 Surface Water Condition 68

5.5.1 Rationale for changes to Surface Water Condition 68

Condition 68 currently states:

Access routes are to be designed to maintain access to turbines and associated infrastructure with flood depths below 300mm during construction and maintenance operations.

Condition 68 of the Permit is currently incomplete and does not specify which flood event the 300mm depth relates to. Without reference to a flood event (e.g. '1 in 100 year', or 1% Annual Exceedance Probability (AEP) flood event), GPWFM is unable to define the flood levels relative to a height datum and therefore cannot design access tracks to maintain the required depth.

5.5.2 Condition 68

Although the Corangamite Catchment Management Authority (CCMA) did not write the condition, they have advised that Condition 68 should relate to a 1% AEP flood event. The CCMA has provided a letter (Appendix E.2) stating that Condition 68 should read:

*Access routes are to be designed to maintain access to turbines and associated infrastructure with **1% Annual Exceedance Probability (AEP)** flood depths below 300mm during construction and maintenance operations.*

The CCMA's advice also notes that this approach would be in line with the *Flood Safety Criteria for Vehicles in Australian Rainfall and Runoff Revision Project 10 (April 2010 and February 2011) Safety Criteria*.

5.6 Aviation Condition 75

Condition 75 currently states:

¹³ Odonata (Samuel Marwood), letter to Minister for Planning Re: Amendment to Planning Permit PA1700266, pp. 12

Prior to turbines GP 227, GP 231 and GP 229 being constructed, an aircraft safety assessment prepared by a suitably qualified person must be submitted which demonstrates that the existing operations conducted from the airstrip at 1944 Wingeel Road, Barunah Park will be able to continue safely without significant impact from the turbines, to the satisfaction of the responsible authority, unless an alternative arrangement is agreed between the parties to the satisfaction of the responsible authority.

The condition is currently worded to require aviation impacts to be considered for the WTGs near the airstrip at 1944 Wingeel Road, Barunah Park. As part of the reconfiguration of the WTG layout, GPWFM has renumbered the WTGs within the Project and the former GP 227, GP 231 and GP 229 are now known as WTG215, WTG216 and WTG217 respectively. This administrative correction will ensure the intention of condition 75 is preserved.

5.7 Remainder of Condition 1 Requirements

The remainder of the requirements specified under the sub clauses of Condition 1 of the Permit will remain unchanged. To demonstrate that the changes proposed by the permit amendment can achieve compliance with the remainder of the requirements of Condition 1, a short report has been attached at Appendix G.

6 PLANNING AND ENVIRONMENT ACT 1987

The objectives of planning in Victoria are set out in Section 4(1) of the *Planning and Environment Act 1987* (the P&E Act). They are:

- a) to provide for the fair, orderly, economic and sustainable use and development of land;*
- b) to provide for the protection of natural and man-made resources and the maintenance of ecological processes and genetic diversity;*
- c) to secure a pleasant, efficient and safe working, living and recreational environment for all Victorians and visitors to Victoria;*
- d) to conserve and enhance those buildings, areas or other places which are of scientific, aesthetic, architectural or historical interest, or otherwise of special cultural value;*
- e) to protect public utilities and other assets and enable the orderly provision and coordination of public utilities and other facilities for the benefit of the community;*
- f) to facilitate development in accordance with the objectives set out in paragraphs a), b), c), d) and e);*
- (fa) to facilitate the provision of affordable housing in Victoria;*
- g) to balance the present and future interests of all Victorians.*

The purpose of the P&E Act is to establish a framework for planning the use, development, and protection of land in Victoria in the present and long-term interests of all Victorians.

The P&E Act also outlines what matters must a Responsible Authority consider before deciding on an application.

Section 60 of the P&E Act outlines these matters which are:

- (1) Before deciding on an application, the responsible authority must consider—*
 - (a) the relevant planning scheme; and*
 - (b) the objectives of planning in Victoria; and*
 - (c) all objections and other submissions which it has received, and which have not been withdrawn; and*
 - (d) any decision and comments of a referral authority which it has received; and*
 - (e) any significant effects which the responsible authority considers the use or development may have on the environment or which the responsible authority considers the environment may have on the use or development; and*
 - (f) any significant social effects and economic effects which the responsible authority considers the use or development may have.*

7 GOLDEN PLAINS PLANNING SCHEME

7.1 Planning Policy Framework

The Planning Policy Framework of the Victoria Planning Provisions (VPPs) outlines the purposes of the Golden Plains Planning Scheme, which state:

- *To provide a clear and consistent framework within which decisions about the use and development of land can be made.*
- *To express state, regional, local and community expectations for areas and land uses.*
- *To provide for the implementation of State, regional and local policies affecting land use and development¹⁴.*

The specific relevant clauses of the Planning Policy Framework relating to the assessment of the Project are outlined as follows.

Clause 12.01-1S Protection of Biodiversity

Objective

To assist the protection and conservation of Victoria's biodiversity.

Strategies

Use biodiversity information to identify important areas of biodiversity, including key habitat for rare or threatened species and communities, and strategically valuable biodiversity sites.

Strategically plan for the protection and conservation of Victoria's important areas of biodiversity.

Ensure that decision making takes into account the impacts of land use and development on Victoria's biodiversity, including consideration of:

- *Cumulative impacts.*
- *Fragmentation of habitat.*
- *The spread of pest plants, animals and pathogens into natural ecosystems.*

Avoid impacts of land use and development on important areas of biodiversity.

Consider impacts of any change in land use or development that may affect the biodiversity value of national parks and conservation reserves or nationally and internationally significant sites; including wetlands and wetland wildlife habitat designated under the Convention on Wetlands of International Importance (the Ramsar Convention) and sites utilised by species listed under the Japan-Australia Migratory Birds Agreement (JAMBA), the China-Australia Migratory Birds Agreement (CAMBA), or the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

Assist in the identification, protection and management of important areas of biodiversity.

¹⁴ VPP 01

Assist in the establishment, protection and re-establishment of links between important areas of biodiversity, including through a network of green spaces and large-scale native vegetation corridor projects.

Clause 12.03-1S River corridors, waterways, lakes and wetlands

Objective

To protect and enhance river corridors, waterways, lakes and wetlands.

Strategies (relevant)

Protect the environmental, cultural and landscape values of all water bodies and wetlands.

Ensure development responds to and respects the significant environmental, conservation, cultural, aesthetic, open space, recreation and tourism assets of water bodies and wetlands.

Ensure development is sensitively designed and sited to maintain and enhance environmental assets, significant views and landscapes along river corridors and waterways and adjacent to lakes and wetlands.

Ensure development does not compromise bank stability, increase erosion or impact on a water body or wetland's natural capacity to manage flood flow.

Clause 15.02-1S Energy and resource efficiency

Objective

To encourage land use and development that is energy and resource efficient, supports a cooler environment and minimises greenhouse gas emissions.

Strategies

Improve efficiency in energy use through greater use of renewable energy technologies and other energy efficiency upgrades.

Clause 19.01-1S Energy Supply

Objective

To facilitate appropriate development of energy supply infrastructure.

Strategies

Support the development of energy facilities in appropriate locations where they take advantage of existing infrastructure and provide benefits to industry and the community.

Support transition to a low-carbon economy with renewable energy and greenhouse emission reductions including geothermal, clean coal processing and carbon capture and storage.

Facilitate local energy generation to help diversify the local economy and improve sustainability outcomes.

Clause 19.01-2s Renewable Energy

Objective

To promote the provision of renewable energy in a manner that ensures appropriate siting and design considerations are met.

Strategies

Facilitate renewable energy development in appropriate locations.

Protect energy infrastructure against competing and incompatible uses.

Develop appropriate infrastructure to meet community demand for energy services. Set aside suitable land for future energy infrastructure.

Consider the economic and environmental benefits to the broader community of renewable energy generation while also considering the need to minimise the effects of a proposal on the local community and environment.

Recognise that economically viable wind energy facilities are dependent on locations with consistently strong winds over the year.

7.2 Particular Provisions

Clause 52.32 Wind Energy Facility

This clause applies to land used and developed or proposed to be used and developed for a Wind energy facility.

Purpose

To facilitate the establishment and expansion of wind energy facilities, in appropriate locations, with minimal impact on the amenity of the area.

In this instance, clause 52.32-9 Application to amend a permit under section 97I of the P&E Act applies. Section 97I (1) of the P&E Act states:

Application for amendment of permit

(1) A person who is entitled to use or develop land in accordance with a permit issued under this Division may apply to the Minister for an amendment to the permit.

Clause 52.32-3 Turbines within one kilometre of a dwelling

This application includes plans at Appendix A.6 which, together with the signed landholder's consents in Appendix F satisfy the requirements of Clause 52.32-3 which states:

An application that includes a proposed turbine within one kilometre of an existing dwelling must be accompanied by:

- *A plan showing all dwellings within one kilometre of a proposed turbine (measured from the centre of the tower at ground level).*
- *Evidence of the written consent of any owner as at the date of that application of an existing dwelling located within one kilometre of a proposed turbine (measured from the centre of the tower at ground level) that forms part of a Wind energy facility. This does not apply to an application to amend such a permit under section 72 or section 97I of the Act unless the amendment of the permit would:*
 - *increase the number of turbines; or*
 - *change the location of a turbine so that the centre of the tower (at ground level) is located closer to an existing dwelling (within one kilometre of a permitted turbine) than the centre of the tower (at ground level) of the closest permitted turbine to that dwelling.*

This does not apply to a Wind energy facility that is located on land in a residential zone, an industrial zone, a commercial zone or a special purpose zone.

Clause 52.32-4 Application Requirements

An application must be accompanied (as appropriate) by a Site and Context Analysis, Design Response and Mandatory Noise Assessment.

The Site and Context Analysis and Design Response is attached at Appendix A.8.

The Noise Assessment is outlined in Section 8.7 and a copy of the report is attached at Appendix C.6.

7.3 Operational Provisions

The PPA for the Wind Energy Facility was referred to the Minister bringing the permit application within the operation of Part 4 Division 6 of the P&E Act.

Clause 72.01-1 Minister is Responsible Authority

The Minister for Planning is the responsible authority for matters under Divisions 1, 1A, 2 and 3 of Part 4 of the Act, and matters required by a permit or the scheme to be endorsed, approved or done to the satisfaction of the responsible authority, in relation to the use and development of land for a:

- Energy generation facility with an installed capacity of 1 megawatt or greater.
- Utility installation used to:
 - Transmit or distribute electricity.
 - Store electricity if the installed capacity is 1 megawatt or greater.

Clause 52.32-9 Application to amend a permit under section 97I of the P&E Act

An application to amend a referred wind energy facility permit made under section 97I of the Act is wholly exempt from the requirements of section 97E (1) of the Act if the application does not seek to:

- increase the total number of turbines; or
- increase the maximum height of any turbine

The requirements of section 97E(1) of the Act are modified so as to require referral of objections and submissions to an advisory committee established under section 151 of the Act if an application to amend a referred wind energy facility permit made under section 97I of the Act does not seek to:

- increase the total number of turbines by more than 15%; or
- increase the maximum height of a turbine by more than 20%.

Importantly, the amendment sought under Section 97I of the *Planning and Environment Act 1987* does not:

- increase the total number of turbines; or
- increase the maximum height of any turbine.

7.4 Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (March 2019)

The *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria* inform planning decisions about development proposals and set out:

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

Clauses 19.01-2S, Renewable Energy and 53.32-6, Wind Energy Facility of the Golden Plains Planning Scheme require the guidelines to be considered, as appropriate, when deciding on an application.

7.5 Zones and Overlays - Assessment of Permit Triggers

GPWFM has undertaken a detailed review of the proposal against the zones and planning overlays within the Project site as shown in

Table 9.

Table 9: Assessment of Permit Triggers

Project Component	Planning Permit Control	Relevant Planning Scheme Clause	Assessment Response
Wind Energy Facility and associated infrastructure	Use and development of a wind energy facility	Clause 35.07 - Farming Zone Clause 52.32 - Wind Energy Facility	No additional permit requirement triggers are raised by the submitted Amendment application.
	Buildings and works	Clause 42.01 – Environmental Significance Overlay (Schedule 2 – Watercourse Protection) Clause 44.02 – Salinity Management Overlay Clause 44.04 – Land Subject to Inundation Overlay	No additional permit requirement triggers are raised by the submitted Amendment application.
	Removal of native & dead vegetation	Clause 42.01 - Environmental Significance Overlay (Schedule 2 – Watercourse Protection) Clause 42.02 Vegetation Protection Overlay (Schedule 1 – Western Plains Grassland) and (Schedule 2 – Bushland Reserves and Roadside Vegetation Areas) Clause 52.17 – Native Vegetation	No additional permit requirement triggers are raised by the submitted Amendment application.
	Removal of (non-native) vegetation	Clause 44.02 Salinity Management Overlay Clause 42.01 - Environmental Significance Overlay (Schedule 2 – Watercourse Protection) Clause 42.02 Vegetation Protection Overlay (Schedule 1 – Western Plains Grassland) and (Schedule 2 – Bushland Reserves and Roadside Vegetation Areas)	No additional permit requirement triggers are raised by the submitted Amendment application.
	Creation and alteration of access to/from a Road Zone, Category 1. (Rokewood-Skipton Road, Rokewood-Shelford Road, Colac-Ballarat Road)	Clause 52.29 – Land Adjacent to a Road Zone, Category 1, or a Public Acquisition Overlay for a Category 1 Road	No additional permit requirement triggers are raised by the submitted Amendment application.

Project Component	Planning Permit Control	Relevant Planning Scheme Clause	Assessment Response
	Demolish, remove or alter a dry stone wall constructed before 1940 to facilitate ancillary infrastructure (cabling and access roads)	Clause 52.37 Post Boxes and Dry Stone Walls	No additional permit requirement triggers are raised by the submitted Amendment application.
Utility Installation	Use and development of land for a utility installation	Clause 35.07 - Farming Zone	No additional permit requirement triggers are raised by the submitted Amendment application.
Business Identification Signage	Erection of Business Identification Signage	Clause 52.05 – Advertising Signs	No additional permit requirement triggers are raised by the submitted Amendment application.

8 EXPERT TECHNICAL IMPACT ASSESSMENTS

GPWFM commissioned expert technical advice on the reconfigured WTG layout and rotor diameter increase to understand the extent of impacts associated with the change and to ensure that the environmental impacts allowed for by the Minister for Planning in the Minister's Assessment under the *Environment Effects Act 1978* are not exceeded.

The following sections include the technical assessments undertaken to inform the WTG layout and rotor diameter increase include:

- Section 8.1 - Aboriginal Cultural Heritage
- Section 8.2 - Aviation Impact Assessment
- Section 8.3 - Biodiversity Impact Assessment
 - Section 8.3.1 - Native Vegetation, Flora and Fauna Assessment
 - Section 8.3.2 - Bird and Bat Assessment (excluding Brolga)
 - Section 8.3.3 - Brolga Assessment
- Section 8.4 - Electromagnetic Interference (EMI) Impact Assessment
- Section 8.5 - Groundwater Impact Assessment
- Section 8.6 - Landscape and Visual Impact Assessment
- Section 8.7 - Noise and Vibration Impact Assessment
- Section 8.8 - Traffic Impact Assessment
- Section 8.9 - Shadow Flicker Impact Assessment
- Section 8.10 - Surface Water Impact Assessment

This Section provides an overview of the key findings from each assessment. The detailed assessments are included in Appendix C.

8.1 Aboriginal Cultural Heritage

The Project's Cultural Heritage Management Plan (CHMP) (CHMP Number 14795) was approved on 29 October 2018. In 2019, GPWFM applied to amend the CHMP to reflect the amended WTG layout. The amended CHMP was approved by the Secretary, Department of Premier and Cabinet, on 17 February 2021. A copy of the Notice of Approval is included at Appendix K.

GPWFM notes that the impacts of the 215 WTG layout are comparable with the 228 WTG layout, with the Project's avoidance rate (that is, the proportion of known Aboriginal places avoided by the Project layout) remaining almost unchanged at 90.7% under the 215 WTG layout, compared with 90.6% under the 228 WTG layout.

8.2 Aviation Assessment

Chiron Aviation Consultants has undertaken an Aviation Assessment of the increase in rotor diameter size from 150m to 165m. The Aviation Assessment also assesses the airstrip at 1944 Wingeel Road, Barunah Park. It is noted that the change in blade tip clearance from the ground is not relevant to the potential aviation impact changes.

In regard to the impacts of the proposed 215 WTG layout and increased rotor diameter, Chiron Aviation Consultants found that:

The proposed 215 turbine layout and turbine specifications retain the maximum permitted turbine tip height of 230m Above Ground Level (AGL) (condition 1 b i) and remains within the permitted boundary, therefore the volume of airspace occupied is within that assessed in the AIA (Aeronautical Impact Assessment). The conclusions of the AIA (228 turbine) remain valid for the 215 turbine Golden Plains Wind Farm layout.

Aviation obstacle lighting is not required.

In regard to 1944 Wingeel Road, Barunah Park Chiron Aviation Consultants found that:

Revising the turbine layout and increasing the maximum turbine rotor diameter has no impact on the existing operations of the airstrip at 1944 Wingeel Road, Barunah Park since the turbine rotor disk remains beyond the suggested maximum obstacle free area outlined in Civil Aviation Advisory Publication 139-1(1) Guidelines for Aeroplane Landing Areas.

Finally, Chiron Aviation Consultants concluded that:

The proposed changes to the Golden Plains Windfarm layout and turbine specifications have no impact on the Aeronautical Impact Assessment or the continued operation of the airstrip at 1944 Wingeel Road.

8.3 Biodiversity Assessment

Nature Advisory has undertaken a Biodiversity Assessment of the changes associated with the reconfigured WTG layout and an increase in the size of the WTG rotor diameter which includes the following aspects:

- Native Vegetation, Flora and Fauna;
- Birds and Bats (excluding Brolga); and
- Brolga.

The following sections will respond to each of these areas in detail.

8.3.1 Native Vegetation, Flora and Fauna Assessment

The Native Vegetation Assessment found that the 215 WTG layout results in the removal of 37.835 hectares of native vegetation and two scattered trees. This equates to a reduction of 11.217 hectares (or 22.8%) from the limits outlined in the Permit which allow for the removal of up to 49.052 ha.

The following figure provides a comparison of the vegetation removal proposed including a breakdown of EPBC listed species. The amended WTG layout will result in a reduced impact on EPBC listed species.

Table 10: Comparison of impacts on EPBC listed flora communities

EPBC listed communities	228 WTG layout impact (ha)	Proposed 215 WTG layout impact (ha)	Change in impact (ha)
Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP)	28.74	25.963	-2.777 (-9.6%)
Seasonal Herbaceous Wetland (Freshwater) of the Temperate Lowland Plains (SHWTLP)	0.82	0.574	-0.246 (-30%)
Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP)	0	0	0
Total	29.56	26.537	-3.023 (-10.2%)

Listed flora species have been avoided by the 215 WTG layout. Extensive targeted surveys were undertaken across all works areas associated with the 215 WTG layout and Nature Advisory has determined that:

The proposed 215 WTG layout avoids all impacts on EPBC and FFG Act listed flora species, including Small Golden Moths, Small Milkwort, Spiny Rice-flower and Trailing Hop-bush.

With regard to Fauna species other than Birds and Bats, Nature Advisory determined that:

Impacts to Growling Grass Frog and Yarra Pygmy Perch have been avoided through the following mitigation measures:

- *All WTGs are located more than 100m from major waterways and more than 30m from minor waterways as required by Conditions 82 and 83 of the Permit.*
- *No infrastructure will be placed within 100 metres of confirmed Growling Grass Frog wetland sites.*
- *No impacts on Yarra Pygmy Perch habitat are anticipated as no Project infrastructure, other than overhead powerlines, crosses the two waterways where the species has been recorded.*

And:

The 215 WTG layout has reduced the impacts to Golden Sun Moth and Striped Legless Lizard habitat by 10.43 hectares through the reduction of removal from the permitted 44.1 hectares to 35.503 hectares.

Table 11: Impacts on habitat for EPBC listed fauna species

EPBC listed species habitat	228 WTG layout impact (ha)	215 WTG layout impact (ha)	Change in impact (ha)
Striped Legless Lizard	44.1	35.503	-8.597 (-19.5%)
Golden Sun Moth	44.1	35.503	-8.597 (-19.5%)
Growling Grass Frog	0	0	0
Yarra Pygmy Perch	0	0	0

8.3.2 Bird and Bat Assessment (excluding Brolga)

In consideration of the Bird and Bat Assessment Nature Advisory has modelled impacts associated with the WTG specification that results in the maximum acceptable impact:

- Blade tip height of 222.5 m above ground level;
- Blade tip clearance from ground level of 57.5 m; and
- Rotor diameter of 165 m.

Nature Advisory determined that the assessed WTG specifications resulted in levels of impact that were comparable to those assessed in the EES. Any subsequent increase in ground clearance (for example, by raising the hub height to realise a 230m tip height) will result in further reductions in the overall risk to birds and bats, given some 99.44% of birds observed on site flew below elevations of 57.5m.

Nature Advisory's assessment detailed impacts on raptors, remaining bird species and bats which are outlined as follows:

8.3.2.1 Impact on Bats

Bat surveys conducted on site recorded nine (9) species across the wind farm with four species recorded frequently, namely:

- White-striped Freetail Bat
- Gould's Wattled Bat
- Eastern Falsistrelle
- Large Forest Bat

Seven of the nine bat species recorded were widespread, common and secure species and two were threatened: Eastern Bent-wing Bat (Vulnerable under FFG Act) and Yellow-bellied Sheath-tail Bat (Threatened under FFG Act).

Nature Advisory has confirmed that:

- *The total area of RSA between 40 and 100 meters decreases with the modified turbine dimensions. This will have a corresponding decrease in risk to bats flying at this height.*

- Above 100 metres there is an increase in the total area of RSA up to 222.5 metres. However, this is also the height range where few bats are expected to fly. The pooled bat data (Nature Advisory, unpubl. data) indicate that higher-flying species such as White-striped Freetail Bat, Gould's Wattled Bat, Chocolate Wattled Bat and Long-eared Bat sp. (*Nyctophilus* sp.) are most at risk but these species are not listed as rare or threatened and they are common and widespread species in agricultural landscapes in south eastern Australia.

Nature Advisory concluded that:

Given the species of bats involved (common, widespread species in agricultural landscapes in south eastern Australia) and low recorded numbers of the two species listed under FFG Act (Eastern Bent-wing Bat and Yellow-bellied Sheath-tail Bat), the increase in minimum blade clearance from the ground will reduce the RSA's intrusion into the likely flight height of the species recorded at GPWF. The theoretical impacts of longer blade lengths are mitigated by the increased ground clearance, resulting in an overall reduction in impact on listed bat species.

8.3.2.2 Impact on Raptors

The Brown Falcon and the Nankeen Kestrel were both recorded on the Project site. Both species usually fly at heights below 40m which is lower than the proposed 57.5m blade tip ground clearance.

Nature Advisory has determined that the Project site lies within the territories of at least four (4) pairs of Wedge Tail Eagles. While Nature Advisory determined that the number of eagle flights potentially at risk of collision will slightly increase, they further that the proposed changes:

... will slightly increase the number of eagle flights potentially at risk of collision. However, as this species is considered secure at the state and national levels and is not listed by the EPBC Act and FFG Act as threatened or endangered, the potential for a significantly greater population impact from the proposed modification compared with the currently permitted turbine specifications is considered negligible.

Overall, the risk to the eagle from collision with turbines is still considered to be low given the low number of pairs assessed as using the area (four), the low utilisation rate on the site and the non-threatened status of the mainland Australian sub-species of the eagle. The landscape across the project site and surrounds is generally flat to undulating cleared land with no known nesting sites, rocky escarpments or cliffs that typically attract raptor species including Wedge-tailed Eagles. Consequently, changes to the location of the WTGs and associated infrastructure within the project site would result in no change to the overall collision risk to raptors and selective siting of infrastructure is not required.

The Project's Bat and Avifauna Management Plan (BAMP) will require ongoing monitoring of raptor mortalities on site and will include proactive management measures such as carrion removal near turbines which will discourage raptors from scavenging on site. The BAMP will specify supplementary mitigation measures in the unlikely event that significant impacts on raptors are detected.

8.3.2.3 Impact on White-throated Needletail

The White-throated Needletail was recently categorised under the EPBC Act as Vulnerable. This species was not observed during site surveys. However, the project site does lie within the species' known habitat range allowing that the species has been recorded throughout eastern and southern Australia.

Nature Advisory has concluded:

The amended WTG specifications may increase the risk of impact of this high flying species, however as White-throated Needletail was not observed during the Bird Utilisation Survey (BUS) and is likely to be only an occasional visitor, the likelihood that the increase in turbine RSA and (ground clearance) height will lead to population consequences for the species is considered to be minimal.

8.3.2.4 Impact on other Birds

In respect to remaining bird species, Nature Advisory determined:

Given the species of birds involved (common, widespread species in agricultural landscapes in south eastern Australia and no species listed under FFG Act or EPBC Act as rare or threatened) and the decrease in the RSA at the heights where most birds fly (<100m), the amended WTG specifications are likely to have a minimal impact and are therefore unlikely to lead to effects on bird populations of conservation concern.

If any threatened bird species listed on the EPBC Act or FFG Act are found under turbines, an eventuality that is considered to have a low likelihood, the BAMP, which is currently being prepared for the project sets this as a trigger for immediate reporting to DELWP and investigation of the impact. This investigation aims to understand the species' usage of the site, if the species is engaging in "risk behaviour" that puts it in danger of turbine collision and if the impact is likely to be an ongoing issue. If required, mitigation measures will need to be identified and implemented to reduce the risk of repeat collisions by the threatened species.

8.3.3 Impact on Brolga

Brolga Collision Risk Modelling (CRM) was undertaken using the location and specifications of the WTG outlined in Section 8.3.2 and found that the location and specifications of the WTGs resulted in a reduced risk to Brolga when compared with the Minister Assessment of the EES. Results of the CRM are shown in Table 12.

Table 12: Results of Brolga Collision Risk Modelling

Scenario	Annual Average Collision Risk (at 90% avoidance)	Average Collision Risk over 25 years (at 90% avoidance)
228 WTG layout (EES submission)¹⁵ <ul style="list-style-type: none"> • 228 WTGs • 150m diameter rotor • 115m hub height • 40m ground clearance 	0.371	9.270
228 WTG layout with Brolga buffer applied (See note below)¹⁶ <ul style="list-style-type: none"> • 181 WTGs • 150m diameter rotor • 115m hub height • 40m ground clearance 	0.230	5.750
Proposed 215 WTG layout (This proposal)¹⁷ <ul style="list-style-type: none"> • 215 WTG layout • 165m rotor diameter • 140m hub height • 57.5m ground clearance 	0.222	5.550

Note: The 228 WTG layout presented in the EES resulted in an Annual Average Collision Risk of 0.371. The Minister's Assessment of the EES supported the Panel's recommendation to apply the 'BL&A Habitat Model turbine-free buffers' to the 228 WTG layout. A revised CRM, reflecting the removal of turbines within the Brolga buffer, showed an Annual Average Collision Risk of 0.23. (See 'Panel document 49', pp. 2).

With respect to Brolga collision risk, Nature Advisory concluded that:

The annual collision rate with a hub height of 140m and 165m rotor diameter with a 215 WTG scenario is lower than the collision rate for the assessment under the EES with a 228 WTG layout at a 90% avoidance rate.

Nature Advisory also noted that:

... any additional increase in ground clearance, either through an increase in hub height or a decrease in rotor diameter, will result in further reductions in the Annual Average Collision Risk given that the majority of Brolga flights occur at lower heights.

With respect to the Brolga breeding buffers Nature Advisory found that:

- ... the BL&A model for turbine free buffers has been applied to all 27 suitable Brolga Breeding sites within 3.2 kilometres of the wind farm site.

¹⁵ Lane, B., *Memorandum to Planning Panels Victoria* dated 8 August 2018, ('Panel document 49') pp. 2

¹⁶ Ibid., pp. 2

¹⁷ *Updated brolga collision risk for Golden Plains Wind Farm*, Symbolix, 19 November 2020, pp. 3 (Appendix 3 to Biodiversity Assessment)

- ... all 215 turbines are placed outside the Brolga breeding buffer of these wetlands. In addition, an allowance for blade overhang has been added to the buffers to ensure no part of the turbine enters the defined buffer area.

The proposed 215-turbine layout complies with condition 1c of the Planning Permit.

Brolga breeding surveys on and near the site have been undertaken annually since 2016. In response to the number of suitable wetlands for Brolga breeding Nature Advisory determined:

The number of suitable wetlands remains as assessed in the EES although fewer were suitable for breeding during the 2018 and 2019 breeding seasons due to dry conditions. The estimate of eight Brolga breeding pairs within the ROI as stated during the EES is still considered realistic during wetter years.

8.3.4 Conclusions of Biodiversity Assessment

Overall, the Biodiversity Impact Assessment concluded that the proposed 215 WTG layout will result in a reduced impact on all aspects of biodiversity. Nature Advisory concluded that:

The results of the assessment show that the biodiversity impacts associated with the updated 215-WTG layout and proposed modifications to the WTGs are equal to or, in most cases, significantly less than the impacts assessed under the EES.

The biodiversity outcomes associated with the proposal are appropriate and residual impacts can be managed by the Permit conditions. The Project's impacts also comply with all relevant conditions in both the Permit and the EPBC Approval.

8.4 Electromagnetic Interference (EMI) Impact Assessment

DNV-GL has prepared an Electromagnetic Interference Assessment for the 215 WTG layout to determine the level of change in EMI related impacts in comparison to the 228 WTG layout.

The key findings of the review concluded the 215 WTG layout will result in:

- No change to impacts on:
 - Radiocommunications towers;
 - Meteorological radar;
 - Trigonometrical stations;
 - Citizens band (CB) radio services; and
 - Satellite television and internet services.
- A reduced impact on fixed point-to-point links including nearby emergency services; and
- Comparable impacts on mobile phones, wireless internet, radio and television coverage that can be appropriately managed through the Signal Strength Survey required by conditions 35 and 36 of the Permit.

DNV-GL noted that they did not hold sufficient information to assess impacts on fixed point-to-multipoint links operated by Powercor and Central Highlands Water. GPWFM has undertaken consultation with both organisations who have confirmed that the Project will not impact on their services. Records of the consultation are included in Appendix C.3.1.

8.5 Groundwater Impact Assessment

Water Technology prepared a Ground Water Impact Assessment which evaluated the risk assessment included in the EES and determined the risk profile of the 215 WTG layout. Their technical assessment is (included in Appendix C.4.) concluded:

Water Technology is satisfied that the risk profile of the 215 WTG layout is comparable with the risk profile of the 228 WTG layout. The principal reasons for this finding are:

- 1. The habitat and impact on significant Groundwater Dependent Ecosystem (GDE) species has been assessed by Nature Advisory during extensive ecological surveys;*
- 2. The potential for the findings of this assessment to be referenced in the Environmental Management Plan (EMP); and*
- 3. The hydrogeological models are better constrained due to geotechnical investigations and these can inform the EMP.¹⁸*

Water Technology further noted that the groundwater impacts “*can be appropriately and effectively managed via existing permit conditions*”¹⁹

8.6 Landscape and Visual Assessment

XURBAN has prepared a Landscape and Visual Impact Assessment comparison between the 228 WTG layout with the inclusion of the Brolga buffer zone (defined as the Base Case) and the 215 WTG layout with a 165m rotor diameter. The assessment also includes photomontages which graphically illustrate the visual changes between the:

- 228 WTG layout with the Brolga buffer applied and a 150 m diameter rotor with a 155 m hub height; and
- 215 WTG layout with a 165 m diameter rotor and a hub height of 147.5 m.

XURBAN has noted that the height of the WTGs has remained the same at 230 m, and there is no alteration to the viewshed or to the Zones of Visual Influence upon which earlier assessments were, in part, based. The assessment also includes a series of comparisons of the visual impacts from identified public domain and private domain viewpoints.

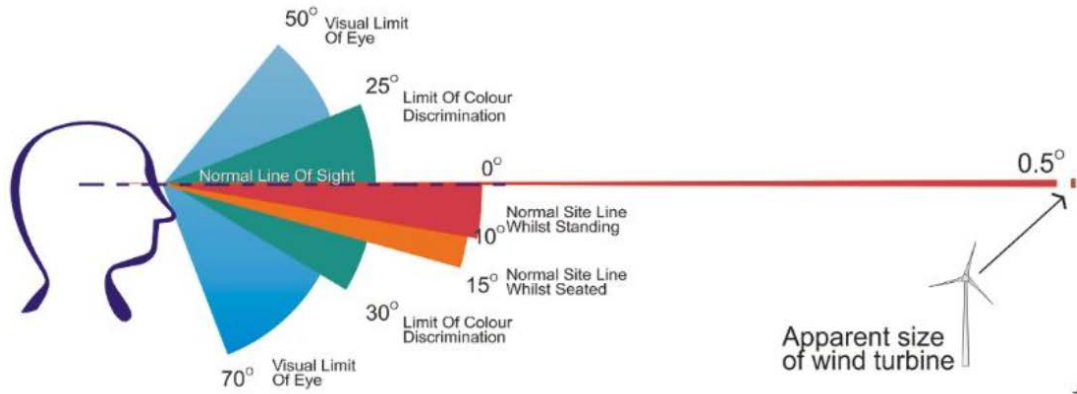
In determining the level of impact associated with the 215 WTG layout, the Visual Assessment relies on the assessment of the vertical field of view which defines the ‘viewshed’, or the area that may potentially be visually affected by a development.

¹⁸ Water Technology, Groundwater Impact Assessment, Version 8.0, pp. ii

¹⁹ Ibid., pp. 19

The vertical field of a view is best represented by Figure 10:

Figure 6: Viewshed limit at 0.5° ²⁰



In addition to the viewshed, zones of visual influence provide a guide to the potential visual impact of a WTG based solely on distance. XURBAN states:

...These zones of visual influence are a guide, based on human vision parameters, and give an indication of the potential visual impact at various distances. However, it is recognised that visibility and the apparent size of the nearest wind turbine does not dramatically change when a viewer moves from 2.5 km to 2.7 km (for example).²¹

In addition to the viewshed and the visual zones of influence, a Seen Area Analysis was undertaken for the EES which is based on a Geographical Information System (GIS) and used as the base case for the 215 WTG layout assessment. This showed areas within the viewshed from which sections of wind turbines may be visible or not visible based solely on topography.

The key findings of the XURBAN Visual Assessment are:

- *The turbine height is unchanged, the extent of the project area is unaltered and the outer extent of the project's layout is generally unchanged, therefore there is no appreciable change to either the Seen Area Analysis nor to the bands of visual influence between the Base Case and 215 WTG Layouts.*
- *Viewpoint analysis shows that the changes, brought about by the alteration between the Base Case Layout and the 215 WTG Layout, are only discernible when one enlarges greatly a small section of the 60° field of view photomontages. This would be similar to viewing through a telephoto lens or utilising a telescope and even with that degree of enlargement the change is minimal.*
- *Similarly, distance measurements from residential properties to the nearest WTG show that the changes are minor and as shown by the Viewpoint analysis and based on the comparative photomontages, the change in visual impact if the closest WTG is slightly closer or further away, is assessed as **Nil**.*
- *Furthermore, the distances from residential properties to other turbines are minor and the resultant change in visual impact is assessed as **Nil**.*

²⁰ XURBAN, Visual Impact Assessment of comparison between Base Case & 215 WTG Layout with 165m rotor diameter (February 2021 RPT8_Final_RevA), pp. 4

²¹ Ibid, pp. 5

- *The impacts at the three dwellings identified in the Panel report are either unchanged or reduced as a result of the 215 WTG Layout, owing to the minimal changes in distances to the nearest WTGs and the changes in WTG numbers within the nearest distance bands seen from each dwelling.*
- *The minor changes in the numbers of WTG's in the distance bands are small and would result in no discernible change. This conclusion is also verified by the photomontages prepared for six representative viewpoints.*
- *For these reasons, the overall visual impact of the changes between the Base Case Layout and the 215 WTG Layout for the Golden Plains Wind Farm is assessed as **Nil**.*
- *The impacts from ancillary infrastructure are unchanged.*²²

8.7 Environmental Noise Assessment

Marshall Day Acoustics (MDA) has prepared an Environmental Noise Assessment in compliance with the New Zealand Standard NZS6808:2010, Acoustics – Wind Farm Noise, that presents the results of a revised assessment of the operational WTG noise from the Project. The revised assessment *considers two (2) candidate turbine models (Vestas V162-6.0MW and GE 6.0-164) that are representative of the size and type of turbines which could be used at the site*²³.

*The assessment has been undertaken using unconstrained generation modes (i.e. no noise reduced operating modes)*²⁴.

MDA concluded that:

- *... the proposed Golden Plains Wind Farm, incorporating the revised layout and rotor diameter of up to 165m is able to be designed and developed to achieve Victorian policy requirements for operational noise, and that appropriate control mechanisms are available to ensure compliance is maintained over the life of the project*²⁵;
- *... the proposed Golden Plains Wind Farm turbines are predicted to achieve compliance with the applicable noise limits determined in accordance with NZS6808:2010, for both candidate turbine models, including the locations where high amenity limit considerations are relevant*²⁶; and
- *... cumulative wind farm noise considerations (from the nearby Berrybank Wind Farm) are not applicable*²⁷.

MDA further noted that:

Operational noise from the associated ancillary infrastructure, and the noise and vibration from construction activities, were previously addressed in the noise assessment accompanying the original planning application. As the proposed amendments to the planning permit relate primarily to the

²² Ibid., pp. iv

²³ Marshall Day Acoustics, Golden Plains Wind Farm – Environmental Noise Assessment, 23 March 2021, pp. 3

²⁴ Ibid., pp. 3

²⁵ Ibid., pp. 3

²⁶ Ibid., pp. 31

²⁷ Ibid., pp. 31

turbine rotor diameter and layout, no further assessments of ancillary infrastructure or construction noise and vibration have been undertaken as part of this revised assessment²⁸.

The predictive assessment of the Vestas V162 found that of the 91 noise sensitive locations within the 35 dB contour:

- 79 will experience decreases of between 0.1 and 6.2 dB;
- one will experience no change; and
- eight will experience modest increases of up to 0.8 dB.

Note that the remaining three locations (W27 – i, P32 – a and R31 – bf) were unable to be compared with the EES assessment as they were not within the 35 dB contour in the EES assessment.

The predicted noise levels for the Vestas V162 are generally lower than the levels predicted in the EES. At the eight locations where the noise levels are expected to increase, the increases are minor and are expected to be imperceptible in most conditions.

The predictive assessment of the GE 6.0-164 found that of the 104 noise sensitive locations within the 35 dB contour:

- four will experience decreases of between 0.1 and 4.4 dB;
- 63 will experience modest increases of between 0.1 and 1.0 dB;
- 17 will experience moderate increases of between 1.1 and 2.0 dB; and
- four will experience increases of between 2.1 and 2.5 dB.

Note that the remaining 16 locations were unable to be compared with the EES assessment as they were not within the 35 dB contour in that assessment.

When compared to the EES assessment, the predicted noise levels for the GE 6.0-164 are marginally higher than the Vestas V162, but are not generally expected to result in any noticeable increase in operational noise or impact from the Project.

GPWFM has summarised the results of the Environmental Noise Assessment and the results of the EES Assessment in

²⁸ Ibid., pp. 6

Table 13 below.

Table 13: Results of Environmental Noise Assessment (compiled by GPWFM based on results in MDA report)

Receiver	EES Assessment (dB)	Vestas V162-6.0MW 215 WTG Layout		GE 6.0-164 215 WTG Layout	
		Highest predicted noise level (dB)	Difference from EES (dB)	Highest predicted noise level (dB)	Difference from EES (dB)
G30 - a	34.7	35.3	0.6	36.7	2.0
H30 - a	34.9	35.3	0.4	36.7	1.8
H32 - a	37.4	38.2	0.8	39.9	2.5
H38 - a	N/A	34.6	N/A	36.1	N/A
K27 - a	37.5	37.9	0.4	39.5	2.0
L26 - a	37.2	37.5	0.3	39.1	1.9
M35 - b	37.0	37.8	0.8	39.4	2.4
M37 - a	N/A	34.0	N/A	35.3	N/A
N25 - a	36.4	36.3	-0.1	37.8	1.4
N25 - b	36.4	36.4	0	37.8	1.4
O24 - a	N/A	34.7	N/A	35.9	N/A
O34 - a	36.4	37.1	0.7	38.8	2.4
O34 - b	36.3	37.0	0.7	38.6	2.3
P24 - a	35.8	35.2	-0.6	36.5	0.7
P24 - b	36.8	36.3	-0.5	37.8	1.0
P31 - a	38.8	38.3	-0.5	39.8	1.0
P31 - c	38.7	38.3	-0.4	39.8	1.1
P32 - a	N/A	37.3	N/A	38.9	N/A
Q30 - a	39.2	38.2	-1.0	39.7	0.5
Q31 - a	37.0	36.5	-0.5	37.8	0.8
Q31 - b	36.4	36.0	-0.4	37.3	0.9
Q31 - c	35.9	35.5	-0.4	36.8	0.9
Q31 - e*	35.8	35.4	-0.4	36.7	0.9
Q31 - f*	35.8	35.4	-0.4	36.7	0.9
Q31 - g*	35.9	35.5	-0.4	36.8	0.9
Q31 - h*	35.9	35.5	-0.4	36.8	0.9
Q31 - i*	36.0	35.6	-0.4	36.9	0.9
Q31 - j*	36.0	35.6	-0.4	36.9	0.9
Q31 - k*	36.0	35.6	-0.4	36.9	0.9
Q31 - l*	36.0	35.6	-0.4	36.9	0.9
Q31 - m*	36.2	35.8	-0.4	37.1	0.9
Q31 - o*	37.3	36.7	-0.6	38.1	0.8
Q31 - p*	37.1	36.5	-0.6	37.9	0.8
Q32 - a	35.6	35.4	-0.2	36.7	1.1
Q32 - b	35.5	35.3	-0.2	36.6	1.1
Q32 - c	35.4	35.1	-0.3	36.4	1.0
Q32 - d	35.3	35.1	-0.2	36.4	1.1

Q32 - e	N/A	34.7	N/A	36.0	N/A
Q32 - f	35.3	35.0	-0.3	36.3	1.0
Q32 - g*	35.5	35.2	-0.3	36.4	0.9
R31 - aa*	37.0	36.6	-0.4	38.1	1.1
R31 - ab*	37.5	37.0	-0.5	38.4	0.9
R31 - ad*	38.0	37.5	-0.5	39.1	1.1
R31 - ae	37.6	37.1	-0.5	38.6	1.0
R31 - af	37.5	37.0	-0.5	38.5	1.0
R31 - ai*	37.8	37.2	-0.6	38.7	0.9
R31 - aj*	37.4	36.9	-0.5	38.3	0.9
R31 - ak*	37.4	36.9	-0.5	38.3	0.9
R31 - al*	37.3	36.8	-0.5	38.2	0.9
R31 - am*	37.0	36.5	-0.5	37.9	0.9
R31 - an*	36.9	36.4	-0.5	37.8	0.9
R31 - ao*	36.7	36.2	-0.5	37.6	0.9
R31 - ap*	37.4	36.9	-0.5	38.4	1.0
R31 - aq*	37.2	36.8	-0.4	38.2	1.0
R31 - ar*	37.3	36.8	-0.5	38.3	1.0
R31 - as*	37.1	36.7	-0.4	38.1	1.0
R31 - at*	37.2	36.8	-0.4	38.2	1.0
R31 - av*	37.0	36.6	-0.4	38.0	1.0
R31 - aw*	36.9	36.5	-0.4	37.9	1.0
R31 - ax*	37.1	36.6	-0.5	38.0	0.9
R31 - az*	37.0	36.5	-0.5	38.0	1.0
R31 - b*	37.2	36.8	-0.4	38.3	1.1
R31 - ba*	37.2	36.8	-0.4	38.3	1.1
R31 - bb*	36.8	36.3	-0.5	37.7	0.9
R31 - bc*	36.8	36.3	-0.5	37.7	0.9
R31 - bd*	36.9	36.4	-0.5	37.8	0.9
R31 - be*	38.4	37.9	-0.5	39.4	1.0
R31 - bf*	N/A	35.4	N/A	36.7	N/A
R31 - c*	36.6	36.1	-0.5	37.5	0.9
R31 - d*	37.1	36.8	-0.3	38.2	1.1
R31 - f*	36.9	36.4	-0.5	37.8	0.9
R31 - g*	37.0	36.5	-0.5	37.9	0.9
R31 - h*	36.9	36.4	-0.5	37.8	0.9
R31 - j*	36.7	36.3	-0.4	37.7	1.0
R31 - k*	36.6	36.2	-0.4	37.6	1.0
R31 - n*	36.5	36.1	-0.4	37.5	1.0
R31 - q*	35.5	35.2	-0.3	36.4	0.9
R31 - r*	36.4	36.0	-0.4	37.3	0.9
R31 - s*	36.4	36.0	-0.4	37.3	0.9
R31 - t*	36.4	36.0	-0.4	37.4	1.0
R31 - u*	36.5	36.0	-0.5	37.4	0.9
R31 - v*	36.5	36.1	-0.4	37.5	1.0
R31 - w*	36.6	36.1	-0.5	37.5	0.9

R31 - z*	36.8	36.3	-0.5	37.7	0.9
R32 - a	N/A	34.5	N/A	35.8	N/A
R32 - b	N/A	34.9	N/A	36.2	N/A
R32 - c	35.4	35.0	-0.4	36.3	0.9
R32 - d*	35.5	35.1	-0.4	36.4	0.9
R32 - e	N/A	34.2	N/A	35.5	N/A
T32 - b	N/A	34.2	N/A	35.6	N/A
U18 - a	36.5	35.5	-1	37.2	0.7
U18 - b	37.4	35.6	-1.8	37.3	-0.1
U18 - c	37.1	35.3	-1.8	37.0	-0.1
U31 - a	N/A	34.2	N/A	35.6	N/A
V30 - a	37.7	37.1	-0.6	38.6	0.9
W17 - a	39.0	36.6	-2.4	38.4	-0.6
W27 - i	N/A	38.4	N/A	40.0	N/A
W28 - a	38.3	38.0	-0.3	39.5	1.2
X18 - a	43.0	36.8	-6.2	38.6	-4.4
Y28 - a	35.3	35.0	-0.3	36.4	1.1
Z28 - a	N/A	34.5	N/A	35.8	N/A
AA27 - a	N/A	34.9	N/A	36.3	N/A
AA27 - b	N/A	34.8	N/A	36.1	N/A
AC22 - a	N/A	34.9	N/A	36.6	N/A

* Denotes receiver within Township Zone and Low Density Residential Zone

8.7.1 Environmental Audit of Noise Assessment

In accordance with clause 4.3.3(c) of Victoria State Government's *Development of Wind Energy Facilities in Victoria Policy and Planning Guidelines* and clause 52.32-4 of the *Victoria Planning Provisions*, GPWFM has commissioned an environmental audit of the MDA Noise and Vibration Impact Assessment. The audit was undertaken by Stephen Jenkins of EnviroRisk and is included in Appendix C.6.1.

The auditor concluded that:

- ... the process employed by the proponent adopted to identify the relevant non-stakeholder properties with potential to be impacted by noise have (sic) been rigorous.
- ... the predicted maximum noise levels for the operating wind energy facility ... have been determined in accordance with ... NZS6808:2010...
- ... compliance with the specified noise limits is predicted at all non-stakeholder noise sensitive locations, and consequently the risk of harm is deemed acceptable...²⁹

8.8 Traffic Impact Assessment

Cardno has undertaken a Traffic Impact Assessment in relation to the component and material delivery and construction of the Project. Specifically, the assessment has compared the traffic impacts associated with

²⁹ Environmental Audit of the Golden Plains Wind Energy Facility Pre-Construction Noise Assessment, EnviroRisk, April 2021, pp. 27-28

the 215 WTG layout with 165 m diameter rotors against the impacts assessed under the EES. A copy of the assessment is at Appendix C.9.

Cardno's assessment found that, with regard to the delivery of WTG components:

- *... the change of rotor diameter from 150m to 165m does not change the number of components required for each WTG, and therefore, the construction of the 215 WTG can be completed using a reduced number of components when compared to the 228 WTG layout.*
- *Each WTG blade will increase in length by up to 7.5m, which will increase the rotor diameter from 150m to 165m but the overall tip height of 230m remains unchanged. This is due to the reduced length of the tower sections which will reduce the hub height from 155m to 147.5m;*
- *The increase in blade length does not result in any change to transport configurations or pilot vehicle requirements, and hence has no effect on traffic and transport impacts;*
- *A total of 12,897 one-way or 25,794 two-way trips (vehicle movements) inclusive of convoy vehicles are required for the delivery of the 215 WTGs (a reduction of 143 one-way trips from the original 228 WTG layout); and*
- *The reconfigured and consolidated WTG layout will result in an overall net decrease in transport related impacts compared with the impacts considered by the EES and approved by the Minister under the Planning Permit.*

With regard to general construction traffic and the delivery of materials, Cardno assessed two scenarios:

1. GPWFM's preferred option of sourcing quarried materials such as crushed rock and concrete aggregates from on-site or local quarries; and
2. A contingency or backup option where materials are sourced from existing operational quarries.

When compared with the impacts considered by the EES, Scenario 1 results in the number of general construction traffic movements being reduced by 13,943 (or approx. 5.7%). Scenario 2 results in an increase of 24,902 movements (or approx. 10.1%), however Cardno notes that:

a significant portion of these increases occur on VicRoads arterial routes including:

- *Rokewood-Skipton Road (17-18%);*
- *Rokewood-Shelford Road (8-10%);*
- *Colac-Ballarat Road (4-14%); and*
- *Inverleigh-Shelford Road (~9%).*

The increase experienced on these roads will not cause delays or disruptions along the route. The impacts associated with road surface and structures can be appropriately managed through the Project's TMP and agreements with VicRoads/DoT and local councils.

Cardno further concluded that:

- *The reconfigured and consolidated WTG layout (using on-site or local quarries) will result in an overall net decrease in transport related impacts compared with the impacts considered by the EES and approved by the Minister under the Planning Permit; and*
- *Should the sourcing of materials not be possible ... (the use of existing quarries) would generate an additional 108 new daily trips. The additional trip generation that is likely to be generated onto the*

external road network to the project site is considered to have a negligible traffic impact on the existing road network.

8.9 Shadow Flicker Impact Assessment

Jacobs undertook a Shadow Flicker assessment for the 215 WTG layout to assess any change in impact on nearby dwellings. A copy of the Jacobs report can be found in Appendix C.7.

The assessment found that the number of neighbour dwellings experiencing shadow flicker has been reduced from four in the EES, to three in the current assessment. Additionally, a further 'Host' dwelling (L32 – a) will now experience no shadow flicker.

The shadow flicker modelling predicts that one neighbour dwelling (H32 – a) will experience shadow flicker in excess of 30 hours per year. However, in accordance with Permit condition 33, GPWFM has entered into an agreement with the property owner to waive this amenity limit. This has been provided at Appendix F.2

The Jacobs report concluded that with this agreement in place:

...the Vestas V162, hypothetical (165m) WTG model, and GE6.0-164 all comply at all assessed dwellings with the shadow flicker limits set out in Condition 33 of the Permit.³⁰

8.10 Surface Water Impact Assessment

Water Technology prepared a Surface Water Impact Assessment which documents the flood risk assessment of the 215 WTG layout and analysed how the risk assessment compares to the flood risk assessment undertaken for the 228 WTG layout.

The report in Appendix C.8 assesses the Project area, access roads and other works with regards to flood risks using the hydraulic model results of the 1% AEP flood event developed for the Project's EES. The report confirms that all WTGs have been located a minimum of 100 m from any of the four major waterways that intersect the site and WTGs are no less than 30 m from smaller intermittent streams. Importantly, this ensures compliances with condition 82 and 83 of the Permit.

The Surface Water Impact Assessment concluded:

The modelled results for the 1% AEP flood events on the four waterways intersecting the Project site indicate there are three turbine locations (with associated hardstands) impacted by floodwaters, in both the flood fringe and active floodplain (depth > 300mm).³¹

Given the shallow depths and slope of the topography, the proposed wind turbines and associated infrastructure are unlikely to impact on floodplain storage and downstream flood levels (permit condition 85.a and 85.b) and the overall impacts on flooding have been reduced when compared with

³⁰ Golden Plains Wind Farm Shadow Flicker Assessment, Jacobs, 12 March 2021 pp. 4

³¹ Golden Plains Wind Farm Surface Water Impact Assessment, 25 November 2020, pp. 3

the impacts assessed under the EES (seven turbine locations were impacted by waterway flooding with the initial layout).³²

Furthermore, the assessment of site runoff has shown that four turbine locations would be subject to inundation along some of the flow paths activated during intense rainfall. Modelling results indicate water depths above 100 mm for the 1% AEP event are to be expected in those four locations. These impacts are less than the impacts assessed under the EES (seven turbines were impacted by local runoff) and can be managed through detailed design and in the Construction Environmental Management Plan as envisaged by the Permit conditions.³³

It is Water Technology's opinion that the overall flood risk of the site has not changed significantly, and in many cases has been improved. We do not believe that the revised layout will have any adverse impacts beyond that of the original layout considered in the Environment Effects Statement.³⁴

8.11 Summary of Impact Assessments

The impact assessment of the 215 WTG layout demonstrates that the location and number of WTGs will result in either similar or reduced impacts when compared to the 228 WTG layout assessment by the EES.

Table 14 provides a summary of the key findings of each Impact Assessment, as well as an assessment of the level of impact relative to those assessed under the EES.

³² Ibid., pp. 3

³³ Ibid., pp. 3

³⁴ Ibid., pp. 3

Table 14: Summary of findings of Technical Impact Assessments

Field of Impact Assessment	Item of assessment	Conclusions by technical experts	Assessment against EES impacts	
			Same level of impact	Decreased impact
Aboriginal Cultural Heritage Impact Assessment	CHMP	The 215 WTG layout avoids 90.7% of known Aboriginal places on site, compared with 90.6% for the 228 WTG layout.	☑	
Aviation Impact Assessment	Overall Aviation Impact	The overall impact of the 215 WTG layout on aviation activities remains the same as that assessed under the EES	☑	
	Impact on continued safety of airstrip at 1944 Wingeel Road	The 215 WTG layout will have no impact on the continued safe operation of the airstrip at 1944 Wingeel Road. This is consistent with the assessment undertaken for the Project's EES.	☑	
Biodiversity Impact Assessment	Overall Biodiversity Impact	The Biodiversity Impact Assessment found that the 215 WTG layout will result in a reduced impact on all aspects of biodiversity.		☑
	Native Vegetation Impact Assessment	Overall, 11.217 hectares less native vegetation will be impacted through the 215 WTG layout.		
		The 215-turbine layout has an impact on 37.835 hectares of native vegetation, comprising: <ul style="list-style-type: none"> • 36.935 hectares of native vegetation in patches; • 0.759 hectares of DELWP-mapped wetlands; and • Two scattered trees, equating to an area loss of 0.141 hectares. 		☑
		The 215 WTG layout has reduced the impact to listed communities from 29.56 ha to 26.538 ha when compared with the 228 WTG layout assessed under the EES.		☑
		The 228 WTG layout placed three WTGs within DELWP mapped wetland. In the 215 WTG layout, there are no WTGs within DELWP wetlands. Both layouts required access tracks		☑

		and underground cabling to cross wetlands in some locations and these impacts have been minimised by co-locating tracks and underground cabling.		
		The 215 layout satisfies Permit conditions 1d and 1e by avoiding impacts on Baths Swamp and associated Plains Grassy Wetland vegetation.		☑
		The 215-turbine layout including all access tracks, underground cabling and other infrastructure avoids impacts to all recorded threatened flora species including flora species specifically mentioned in condition 2 of the EPBC Approval.		☑
		The 215 WTG layout has reduced the impacts to Golden Sun Moth and Striped Legless Lizard habitat by 8.597 hectares through the reduction of removal from the permitted 44.1 hectares of the original 228 WTG layout to 35.503 hectares with the 215-turbine layout.		☑
	Bats and Avifauna Impact Assessment	The potential impacts to birds and bats have been reduced as a direct result in the reduction of WTG numbers.		☑
	Brolga Impact Assessment	The annual collision risk for Brolga is reduced for the 215 WTG layout.		☑
Electromagnetic Interference (EMI) Assessment Review	Radiocommunication towers	No change to impacts on radiocommunications towers.	☑	
	Fixed point to point links including emergency services	A reduced impact on fixed point-to-point links including emergency services.		☑
	Mobile phones, wireless internet, radio and television coverage	Comparable impacts on mobile phones, wireless internet, radio and television coverage that can be appropriately managed through the Signal Strength Survey required by conditions 35 and 36 of the Permit.	☑	
	Satellite television and internet	No change to impacts on satellite television and internet.	☑	
	Meteorological radar, trigonometrical	No change to impacts on meteorological radar, trigonometrical stations or citizen's band (CB) radio.	☑	

	stations or citizen's band (CB) radio			
Landscape and Visual Assessment	Overall Impact Assessment	The overall visual impact of the changes between the Base Case Layout and the 215 WTG Layout for the Project is assessed as Nil.	☑	
	Seen Areas Analysis & Bands of Visual Influence	The WTG height is unchanged, the extent of the Project area is unaltered and the outer extent of the Project's layout is generally unchanged, therefore there is no appreciable change to either the Seen Area Analysis nor to the bands of visual influence between the Base Case and 215 WTG Layouts.	☑	
	Viewpoint Analysis	Viewpoint analysis shows that the changes, brought about by the alteration between the Base Case Layout and the 215 WTG Layout are only discernible when one greatly enlarges a small section of the 60° field of view photomontages. Distance measurements from residential properties to the nearest WTG show that the changes are minor and as shown by the Viewpoint analysis and based on the comparative photomontages, the change in visual impact if the closest WTG is slightly closer or further away, is assessed as Nil.	☑	
	Distance to Non host dwellings	The changes in distance from residential properties to WTGs are minor and the resultant change in visual impact is assessed as Nil.	☑	
	Minor changes to WTGs within Distance Bands	The minor changes in the numbers of WTGs in the distance bands are small and would result in no discernible change. This conclusion is also verified by the photomontages prepared for six representative viewpoints.	☑	
Noise and Vibration Assessment	Overall Impact Assessment	When compared to the EES assessment, the 215 WTG layout will not result in any noticeable increase in operational wind turbine noise or ancillary infrastructure noise.	☑	
Shadow Flicker Assessment	Overall Impact Assessment	The number of 'neighbour' dwellings experiencing shadow flicker has been reduced from four to three. In addition, one further 'Host' dwelling will now experience no shadow flicker.		☑
Traffic Impact Assessment	Overall Impact Assessment	The traffic impacts of the 215 WTG layout were determined to be less than those associated with the EES layout.		☑

		<p>A reduction in the number of WTGs to be constructed results in a decrease of overall trips required to the site from each port route by 640, and a decrease in over-size and over-mass (OSOM) vehicle trips to the site by 143.</p> <p>A comparison between the 228 WTG and the 215 WTG site layouts concluded that the general density and placement of WTGs in the 215 WTG scenario was favourable to decreased traffic movements and thus reduced impact on the local road network.</p> <p>Should neither of the proposed on-site/local quarries be approved, the traffic impacts associated with sourcing materials from off-site quarries can be appropriately absorbed by the road network with minimal impacts, and all impacts can be appropriately managed via the Project's TMP.</p>		
Ground Water Assessment	Overall Impact Assessment	Water Technology is satisfied that the risk profile of the 215 WTG layout is generally comparable with the risk profile of the 228 WTG layout.	<input checked="" type="checkbox"/>	
Surface Water Assessment	Overall Impact Assessment	Water Technology has advised that the overall flood risk of the site has not changed significantly, and in many cases has been improved. The revised layout will not have any adverse impacts beyond that of the original layout considered in the Environment Effects Statement.	<input checked="" type="checkbox"/>	

9 PLANNING ASSESSMENT

Sections 6, 7 and 8 of this report provide a planning assessment of the amended Planning Permit conditions and demonstrates that the request to amend the Planning Permit is consistent with the P&E Act, State Planning Policy, the Policy and Guidelines for Development of Wind Energy Facilities in Victoria, the Golden Plains Planning Scheme and the matters raised within the EES under the *EE Act*.

The four (4) main elements of the amendment include:

1. The 215 WTG layout - Reconfigure the WTG layout to include 215 WTG by referring to new development plans in the preamble of Condition 1 of the Planning Permit;
2. Rotor Diameter increase - Increase the size of the rotor diameter by 15m from 150m to 165m (and the related increase the minimum ground clearance from 40m to 57.5m);
3. BMCP Wetland Selection – Facilitate a change to the wetland investigation and selection process to be used as part of the BMCP; and
4. Surface Water – Provide a clarification in relation to a reference datum for flood levels.

This section now assesses the planning merits of each of the proposed amendments.

9.1 The 215 WTG layout

9.1.1 Number and Location of Turbines

Importantly, the maximum number of turbines specified within condition 1b) of the Planning Permit which expressly uses the term ‘*a maximum of up to 228 turbines*’ reduced as required to comply with the requirement for the Brolga buffers. The condition prescribes an upper limit on the number of turbines but does not specify a precise number of permissible turbines, nor does it require any specific reduction other than as necessary to implement the Brolga buffer.

The condition quantifies the indeterminate number of turbines by stating that the number is to be ‘*reduced as required to comply with condition 1c*’ but does not specifically require a reduction in turbine numbers. This component of the condition is not proposed to be altered.

This matter was further interpreted by Justice Garde of the Supreme Court of Victoria in *Cumming and Ors v Minister for Planning and Anor* [2019]:

*Importantly, the Minister did not impose any condition reducing the number of turbines by any specific number. Rather, his decision was that turbines could not be located in designated buffer areas.*³⁵

Justice Garde was further satisfied that:

*Neither the panel nor the Minister at any time specified by condition the precise number of turbines that would ultimately be permitted.*³⁶

The Minister for Planning’s submission to the Supreme Court proceedings at paragraph 54 e) and f) reads:

³⁵ *Cumming and Ors v Minister for Planning and Anor* [2019] VSC 811, para 125

³⁶ *Ibid*, para 128 (c)

the Panel's proposed permit conditions did not require the reduction of a specified number of wind turbines, but rather required deletion of the turbines within the Brolga Buffer area which had been generally identified by reference to Document 86;

*the Minister's Assessment, contrary to the Plaintiffs' submissions, did not recommend a new or amended condition that would require a reduction in the number of turbines;*³⁷

Furthermore, the Minister's submission characterised the Minister's Assessment of the EES and Inquiry panel report by stating:

The Minister's Assessment referred to a potential significant loss in renewable energy capacity associated with the loss of 47 turbines (p10), but it did not make a recommendation that there be a reduction in the overall number of turbines, either by way of a specific number or at all.

The Panel report likewise assumed that a loss of turbines would be the consequence of the recommendation to delete turbines within the buffer area, but the loss of turbines was incidental to its recommendation to apply the BL&A habitat model rather than a recommendation in itself.

*The Panel's recommended permit conditions left the question of any overall reduction in the number of turbines to the subsequent approval process for the endorsement of plans.*³⁸

And from paragraph 80:

*The plans endorsement process, or even a later secondary consent process, may or may not result in the deletion of 47 turbines, or some lesser or greater number. If the proponent seeks to re-arrange the layout of the wind turbines outside the Brolga Buffer area, that is a matter that falls to be assessed at that time.*³⁹

In his decision, Justice Garde was satisfied that:

It was the inevitable consequence that WestWind would have to revisit the number and layout of turbines and associated infrastructure if it were to comply with the proposed permit conditions;

*The number and location of turbines to be constructed would only be known when WestWind provided a new plan showing a reconfigured turbine layout and associated infrastructure works, and that plan was approved and endorsed by the responsible authority.*⁴⁰

GPWFM now submits that amendments to the number and location of WTGs and associated infrastructure are a direct consequence of the conditions imposed by the Permit and that this view is supported by the Inquiry Panel, the Minister, and the Supreme Court of Victoria.

³⁷ Supreme Court of Victoria, *Hamish Cumming & Ors v Minister for Planning and WestWind Energy Pty Ltd*, First Defendant's Submissions, 13 September 2019, para 54 e) and 54 f)

³⁸ *Ibid*, para 73 - 75

³⁹ *Ibid*, para 80

⁴⁰ *Cumming and Ors v Minister for Planning and Anor* [2019] VSC 811, para 127 (d) and (e)

9.1.2 Reconfiguration of WTG layout

The reconfiguring of the WTG layout to achieve 215 WTGs will result in changes to the WTG positions and the location of associated infrastructure including access tracks, cabling, and ancillary infrastructure.

Table 15 provides an assessment of the extent of change associated between the 215 WTG site layout compared to the 228 WTG layout that was presented and assessed in the EES and PPA.

Table 15: Assessment extent of change in Project layout

Item	Extent of Change
Location and size of Project area	No change
Layout design principles and standards	No change
Turbines: <ul style="list-style-type: none"> a. Distribution in Project area b. Location c. Number d. Specification e. Spacing 	<ul style="list-style-type: none"> a. No change. All WTGs still located within the original Project area. b. Every WTG is in a new location that has been derived from the 228 WTG layout, refined to avoid known environmental constraints and maximise energy yield. c. Reduced to comply with conditions of the permit from 228 to 215 WTGs which is a reduction of approximately 5.5%. d. No change in overall height. Increase in rotor diameter to 165m. e. WTG spacing decreases by 12% on average. Spacing is used to optimize energy yield and minimize mechanical loading and wake-loss.
Transmission line Infrastructure (above ground): <ul style="list-style-type: none"> a. Location / Alignment b. Distance / length c. Specification 	<ul style="list-style-type: none"> a. Similar location and general alignment (runs from south-east to north-west) but now located more centrally within the Project. New alignment avoids significant wetlands, increases distance from roads, increases distance from dwellings and reduces overall length of line. b. 1.8km reduction in length (7% reduction) and reduction in number of poles and towers. c. No change.
Grid connection location, specifications and entry into Project area	No change
Underground Cabling: <ul style="list-style-type: none"> a. Location / Alignment b. Distance / length c. Specification 	<ul style="list-style-type: none"> a. All underground cabling is in a new location. New alignment reflects 215 WTG layout locations. b. 33% increase in length of cabling to reduce impact on vegetation, cultural heritage items and sensitive areas by circumventing, rather than passing through areas of significance. c. No change.

Item	Extent of Change
Internal roads and turbine hardstands a. Location b. Distance/ length c. Specification	a. 93% of internal roads and all turbine hardstands are in new locations. The new locations reflect the revised 215 WTG layout locations which were derived from the 228 WTG layout. b. Roads have increased in length by around 26% to reduce impact on vegetation by circumventing, rather than passing through areas of environmental significance. c. No change
Collector Stations a. Number b. Location c. Specification	a. The number of collector stations has been reduced from 4 to 3. b. 1 of the 3 collector stations is in the same location with the remaining 2 being re-located to more centralised locations within the Project area. This is in response to the inclusion of the Brolga buffers required in the Permit. c. Collector stations are housing the same type of infrastructure with an increase in the footprint of each facility due to the consolidation from 4 to 3 collector stations.
Access to Road Zone Category 1	The 228 WTG layout allowed for 10 vehicle access points to roads within the Road Zone, Category 1 with the 215 WTG now proposing 8 vehicle access points to road within the Road Zone Category 1 equating to a 20% reduction in vehicle access points. These locations are shown in the Development Plans at Appendix B.1.
Terminal Station a. Location b. Number c. Specification	a. Moved modestly (~800 m east) as required by the Permit to avoid wetland dependent vegetation. b. No change. c. No change to specifications. Minor reconfiguration of internal layout.
Significant Vegetation Loss	Reduction in significant vegetation loss across the Project site. The revised 215 WTG layout has less impact on significant species of vegetation than the original 228 WTG layout as detailed in Section 8.3.
Impact on Brolga	Brolga impact has been reduced through a reduction in the allowable WTG footprint by 26% to comply with the Brolga Buffer required by the Permit. Collision Risk Modelling shows a reduction in anticipated annual collisions from 0.23 to 0.222 flights per year.
Aboriginal Cultural Heritage	Continued avoidance of Aboriginal Places as required by the CHMP.
Turbine relationship to sensitive receptors (non-host dwellings)	<ul style="list-style-type: none"> The location of WTGs responds directly to the Permit conditions while being informed by the Application Plans,

Item	Extent of Change
	<p>the Ministers Assessment of the EES, the CHMP and the EPBC approval.</p> <ul style="list-style-type: none"> • No non-host dwellings are within 1km of a WTG, with the closest being 1,021m (up from 1,010m in the 228 WTG layout). • For dwellings within 2km of the nearest WTG, the average distance to the nearest WTG has increased from 1,521m to 1,597m (a 5% increase). • For dwellings within 3km of the nearest WTG, the average distance to the nearest WTG has increased from 1,862m to 1,919m (a 3% increase). • For dwellings within 4km of the nearest WTG, the average distance to the nearest WTG has increased from 2,337m to 2,405m (a 3% increase). • For dwellings within 5km of the nearest WTG, the average distance to the nearest WTG has increased from 2,604m to 2,661m (a 2% increase).
Turbine relationship to non-sensitive receptors (host dwellings)	<ul style="list-style-type: none"> • The 215 WTG layout complies with host dwelling noise limits. • Average distance from a host dwelling to the closest turbine increased from 738m to 930m (a 26% increase). • Number of landholders hosting turbines has reduced by 10%

9.1.3 WTG Spacing

The number of WTGs has been reduced in the 215 WTG layout and the location of WTGs has been altered to respond to the turbine free buffer zones required by the Permit and to further minimise the Project's environmental impacts.

The Visual Impact Assessment addresses the issue of WTG spacing in assessing the zones of visual influence around the Project. XURBAN has produced a selection of photomontages included in the Visual Impact Assessment at Appendix C.5 which provide a visual representation of both WTG layouts. Each photomontage demonstrates that although minor differences in WTG locations are apparent, the differences do not result in a change in visual impact.

XURBAN's visual assessment concluded that for one of the selected viewpoints (VP3):

*The changes in layout and rotor diameter size, as shown in the photomontages, make no discernible difference to the level of visual impact.*⁴¹

A similar conclusion was drawn for VPA:

⁴¹ XURBAN, Visual Impact Assessment of comparison between Base Case & 215 WTG Layout with 165m rotor diameter, RPT8_Final_RevA, February 2021, pp. 11

These changes, as shown in the photomontages, make no discernible difference to the level of visual impact. Therefore, the difference between the Base Case and 215 WTG Layout for VPA is assessed as Nil.⁴²

The minor changes in the numbers of WTGs in each zone of visual influence are small and will result in no discernible change in impact. This conclusion is also evident in the photomontages prepared from six representative viewpoints.

9.1.4 WTGs within 1km of a Dwelling

All dwellings located within 1km of WTGs are 'host dwellings' where a written agreement is in place between GPWFM and the owner of the dwelling. No WTGs are located within 1 km of a non-host or neighbour dwelling.

The locations of these dwellings and the WTGs are detailed in Table 16 and Figure 7, and further individually represented in Appendix A.6.

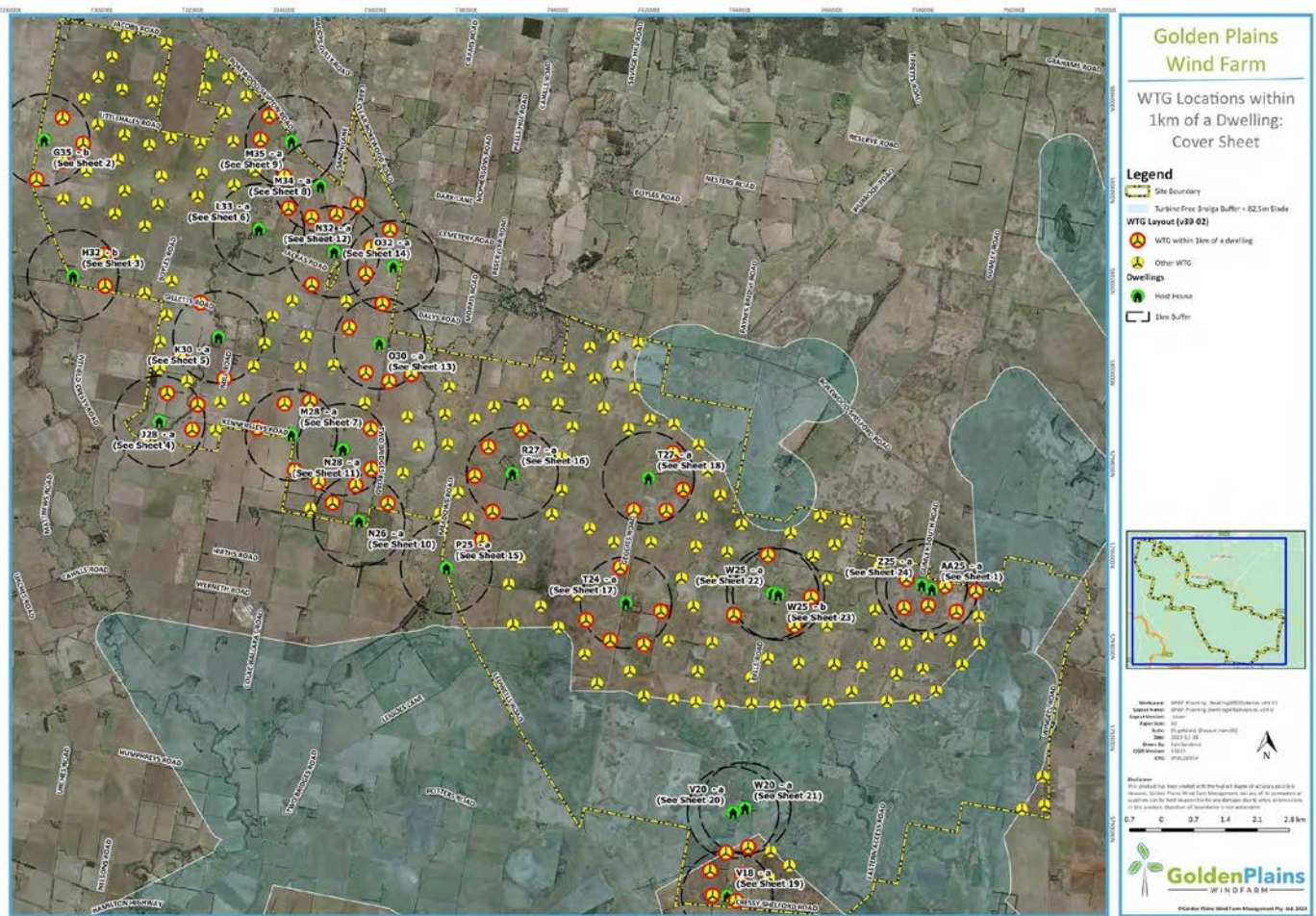
The Project's layout positions 68 WTGs within 1 km of 24 project host dwellings. This represents a reduction in the number of dwellings and WTGs within 1 km of each other when compared to the 228 layout which allowed for 31 dwellings within 1 km of 71 WTGs. The amended 215 WTG layout results in a decrease of dwellings having WTGs within 1 km, as shown in Table 16 below.

Table 16: Count of dwellings and WTGs within 1km

WTG Layout	Number of dwellings within 1km of a WTG	Number of WTGs within 1km of a dwelling
228 WTG layout	31	71
215 WTG layout	24	68

⁴² XURBAN, Visual Impact Assessment of comparison between Base Case & 215 WTG Layout with 165m rotor diameter, RPT8_Final_RevA, February 2021, pp. 16

Figure 7: WTGs within 1km of a dwelling (see also Appendix A.6)



As noted previously, the owner(s) of each dwelling within 1 km of a WTG have provided their consent to the proposed WTG locations. Copies of the consents are included in Appendix F.1.

9.1.5 Extent of Visual Change and Proximity to Sensitive Receptors

The Visual Impact Assessment prepared by XURBAN provided extensive analysis of the changes in visual impact between the 228 WTG layout and the 215 WTG layout. The Assessment also provided further analysis to alleviate any concern regarding significant impact changes on non-host dwellings surrounding the project.

Section 5 of the Assessment provides a comprehensive analysis of the three properties identified by the Panel as potentially experiencing a significant impact. This analysis is detailed in Section 9.2.4.1 of this report.

Section 6 of the Visual Impact Assessment examines a selection of WTGs within 1500 m of the site boundary which includes all the WTGs on the periphery of the 215 WTG layout and assesses the overall impact on neighbouring residential dwellings brought about by the changes in layout and WTG specifications. Section 6 concludes that:

...the change of impact for those residential properties around the perimeter of the Project would be assessed as Nil.⁴³

The visual analysis also notes that:

...some WTGs have moved slightly closer and some slightly further away and in some cases there may be slightly more WTGs in the different distance bands, however this change, as demonstrated by the photomontages, would make no discernible change to the level of visual impact between the Base Case and 215 WTG Layouts.⁴⁴

9.1.6 Electrical Infrastructure

The 215 WTG layout reduces the number of collector stations from four to three and realigns the overhead transmission line infrastructure more centrally within the Project area. The collector station that was previously located on Bells Road (within the turbine free Brolga buffer), has been consolidated with the collector station that was previously located on Geggies Road. This move was made to ensure all collector stations are in a location that is outside of the Brolga buffer zone.

The realignment of the overhead transmission line and the consolidation of the collector stations reduce the length of the overhead power line infrastructure by 1.8 km (or 7%). Importantly, the length of overhead line within the Brolga buffer is reduced from 7 km to 2.5 km (a reduction of 64%), which significantly decreases the likelihood of Brolgas colliding with a power line. All overhead transmission lines within the Brolga Buffer will be marked to further reduce the chance of Brolga collisions.

The amendment also relocates the Terminal Station to avoid Wetland 25 and all associated peripheral wetland dependent vegetation, as shown on the plans at Appendix A.4.

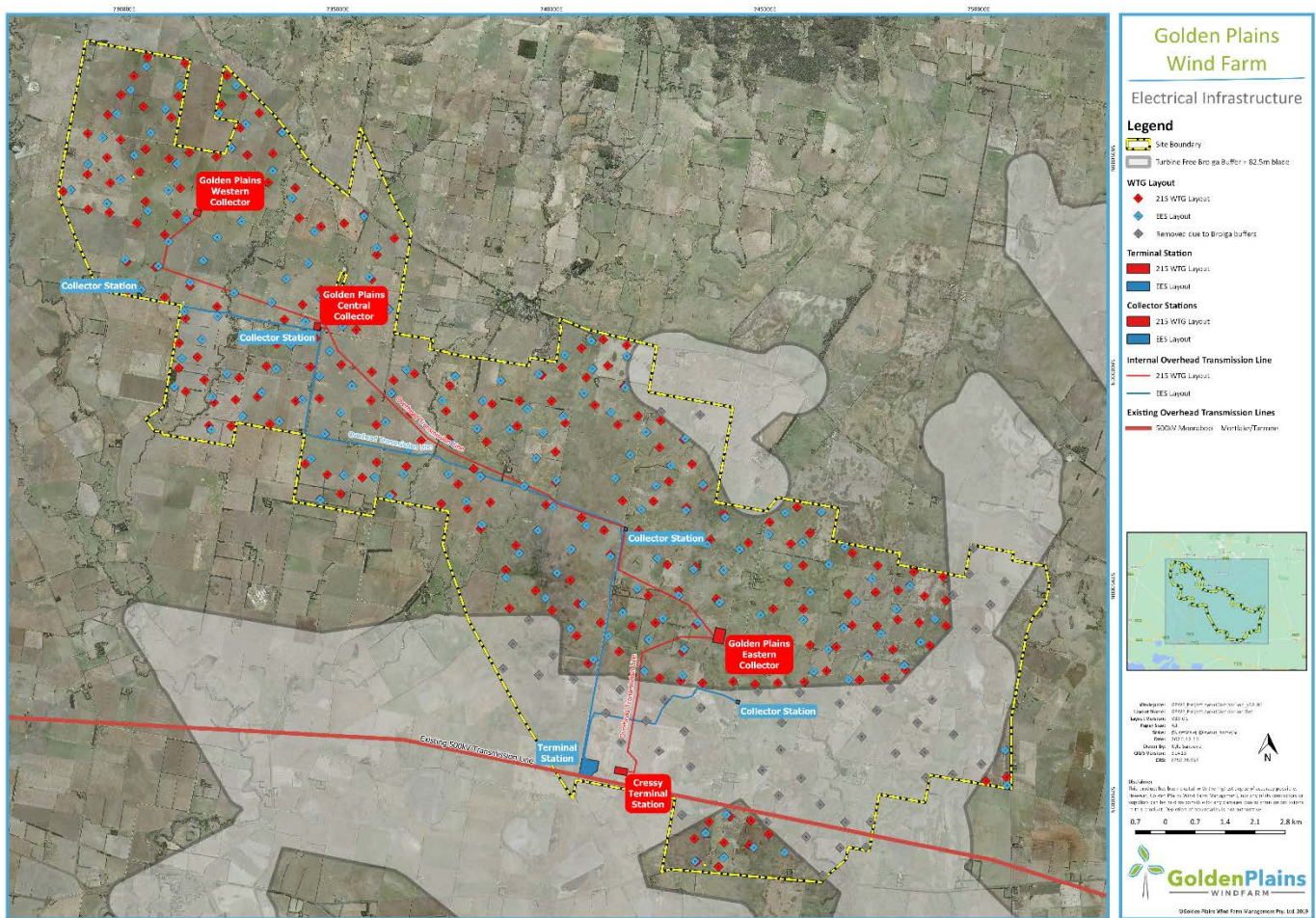
The location of electrical infrastructure for both the 228 WTG layout and the 215 WTG layout are shown in Figure 8.

The electrical infrastructure layout changes serve to reduce risk to Brolga collision by reducing the length of overhead transmission line within the Brolga buffer area, whilst minimising the visual impact beyond the Project boundary through the centralisation of key infrastructure within the Project.

⁴³ XURBAN Visual Impact Assessment of comparison between Base Case & 215 WTG Layout with 165m rotor diameter, December 2020 RPT8_Final, pp. 34

⁴⁴ Ibid, pp. 34

Figure 8: Comparison of Electrical Infrastructure layouts (see also Appendix A.7)



9.1.7 Native Vegetation

Condition 53 of the Permit states:

*No more than 49.052 hectares of native vegetation is to be removed under this permit.*⁴⁵

The Project's EPBC approval under Condition 1 granted permission for impacts of no greater than:

1. The approval holder must not cause impacts to more than:
 - a. 44.1 ha of Stripped Legless Lizard habitat;
 - b. 44.1 ha of Golden Sun Moth habitat;
 - c. 28.74 ha of Natural Temperate Grasslands of the Victorian Volcanic Plain (NTGVVP);
 - d. 0.82 ha of Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (SHWTLP)⁴⁶

The Project is required to avoid impact on certain significant species which are outlined in Condition 2:

⁴⁵ Planning Permit No: PA1700266, pp. 20

⁴⁶ EPBC Approval (EPBC 2017/7965), pp. 2

During construction and operation of the action, the approval holder must avoid all impacts to the Grassy Eucalypt Woodlands of the Victorian Volcanic Plains (GEWVVP), Spiny Rice Flower, Trailing Hop Bush and habitat for the Growling Grass Frog, Plains Wanderer and Yarra Pigmy Perch within the project site. ⁴⁷

Nature Advisory has prepared Native Vegetation Removal Plans which are included in the Appendix of the Biodiversity Impact Assessment.

Impacts to native vegetation are substantially reduced from the EES layout to the 215 WTG layout proposed by the amendment application. A 22.9% saving in the amount of native vegetation for removal ensures that a smaller amount of EPBC listed communities are being removed. Specifically, less removal is proposed for the EPBC listed communities of Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVP) and Seasonal Herbaceous Wetland (Freshwater) (SHWTLP) of the Temperate Lowland Plains. No removal of vegetation within the Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP) is proposed for the 215 WTG layout.

9.1.8 Aboriginal Cultural Heritage

Investigations undertaken for the approved CHMP for the 228 WTG layout identified a total of 32 Aboriginal places and 7 Low Density Artefact Distributions (LDADs) within the investigation area. The 228 WTG layout avoided 29 of 32 known Aboriginal places (90.6%). The CHMP approved impacts on the remaining 3 Aboriginal places (one with a significant impact, and two others with only minor impacts) and detailed suitable salvage procedures to be applied at each place.

To inform the 215 WTG layout, further detailed site investigations were undertaken to ensure the revised layout avoided and minimised impacts on sites of Aboriginal Cultural Heritage. The additional investigations identified a further 11 Aboriginal places and four LDADs, bringing the total to 43 Aboriginal places and 11 LDADs. The reconfigured 215 WTG layout will avoid 39 of 43 known Aboriginal places (90.7%). Revisions to the layout and construction methodologies have minimised the impacts on the four impacted places, and each place will be subject to salvage works in accordance with the Cultural Heritage Management Conditions in the CHMP. Aboriginal Victoria has approved the amended CHMP reflecting the 215 layout submitted in the permit amendment application.

9.2 Rotor Diameter Increase

The following section considers the impacts associated with the increase in permitted rotor diameter from 150m to 165m and the revised location of WTG proposed by the 215 WTG layout.

9.2.1 Increased renewable energy yields

The increase in the diameter of the rotor from 150m to 165m equates to a 15m rotor increase (or a 7.5m increase in length to each WTG blade). This equals a 3,711m² increase in the swept area of each turbine (from 17,671m² to 21,382m²).

With the advancement in WTG technology the Project now has the opportunity to produce 4,000 GWh of clean energy per annum, which represents a ~14% increase over the 3,500 GWh under the currently approved specifications. This significant increase in renewable energy is enough to power an additional 95,000 households. The Project will now supply clean energy equivalent to the usage of 765,000 medium-

⁴⁷ EPBC Approval (EPBC 2017/7965), pp. 2

sized Victorian households, which equates to more than all of the dwellings in regional Victoria. Importantly, this increase in renewable generation will allow the Project to provide Victoria with 9% of its total electricity demand and contribute significantly the State's Renewable Energy Targets.

9.2.2 Brolga

In proposing to increase the diameter of the WTG rotor, it is essential that any change is within the environmental impacts assessed as acceptable in the Minister's Assessment of the EES. The Minister's Assessment of the EES found that:

On balance, it is my assessment that the project, subject to specific modifications and recommendation set out in this assessment, will have acceptable environmental effects⁴⁸.

The specific modifications recommended by the Minister's Assessment of the EES relate primarily to the inclusion of turbine free buffer zones for Brolga in accordance with Document 86 presented to the Inquiry Panel. The inclusion of the Brolga Buffer Zone was a requirement of Condition 1c of the Permit which is not considered for amendment as part of this application.

Ultimately, following the inclusion of the Brolga Buffer, the Project's acceptable allowable impact on the Brolga is 0.23 birds annually and 5.75 average birds over the 25 year life of the project. To ensure compliance with this limit, Nature Advisory conducted additional Brolga collision risk modelling for a 165m rotor. In undertaking further modelling, Nature Advisory found that:

Any additional increase in ground clearance, either through an increase in hub height or a decrease in rotor diameter, will result in further reductions in the Annual Average Collision Risk given that the majority of Brolga flights occur at lower heights.

For this reason, the WTG hub height was lifted as proposed in this amendment application to achieve a greater distance from the ground. At a blade tip clearance from the ground of no less than 57.5m with a rotor diameter of 165m, the Project can achieve a further reduction in the impact on the Brolga and reduce the annual average collision risk down to 0.222, or 5.55 collisions over the 25 year life of the Project. As a consequence of Brolga collision risk modelling to reduce the impact on the Brolga a further amendment to Condition 1bii is proposed to increase the blade tip clearance from the ground level from 40m to 57.5m.

The combination of a change in WTG rotor size diameter and an increase in blade tip clearance from the ground will result in a reduction in the impact on Brolga than allowed for by the EES.

⁴⁸ Golden Plains Wind Farm, Assessment under the *Environment Effects Act 1978*, Minister for Planning, October 2018, pp. 10

Table 17 summarises the results of the CRM modelling for each of the WTG specification scenarios.

Table 17: Results of Brolga Collision Risk Modelling

Number of Turbines	Rotor diameter (m)	Hub height (m)	Annual Average Brolga collisions (90% avoidance rate) (excluding powerline collisions)
228 (EES submission)	150	115	0.371
181 (EES submission with BLA habitat model turbine-free buffers applied)	150	115	0.230
215	165	140	0.222

9.2.3 Bats and Birds other than Brolga

Nature Advisory's assessment of impacts on bats and remaining bird species is detailed in Appendix C.2 and summarised in section 8.3.1. Overall, the impacts associated with the change in rotor diameter and blade tip clearance will predominately impact on common species which are widespread in agricultural landscapes and not species listed under the FFG Act or the EPBC Act.

Furthermore, if any threatened species are impacted by the WTGs the mitigation techniques are addressed in the Bird and Avifauna Management Plan (BAMP) found at Condition 48-50 of the Permit. Nature Advisory has stated:

If any threatened bird species listed on the EPBC Act or FFG Act are found under turbines, an eventuality that is considered to have a low likelihood, the BAMP, which is currently being prepared for the project sets this as a trigger for immediate reporting to DELWP and investigation of the impact. This investigation aims to understand the species' usage of the site, if the species is engaging in "risk behaviour" that puts it in danger of turbine collision and if the impact is likely to be an ongoing issue. If required, mitigation measures will need to be identified and implemented to reduce the risk of repeat collisions by the threatened species.

The 215 WTG layout with a rotor diameter of 165m was considered by Nature Advisory to have either no increase in impact, or a reduction in impact on seven of the nine bird and two bat species listed in the Victorian Biodiversity Atlas (VBA) and the Commonwealth Protected Matters Search Tool (PMST). It is noted that the bird species, the White throated Needletail and the Fork tailed Swift were not recorded on site during site surveys, however the increase in RSA has the potential to increase collision risk. Nature Advisory determined that as the species was not recorded during surveys the likelihood that this will lead to population consequences for the species is minimal.

In terms of the overall impacts associated with the change in location, number and specification of WTG, Nature Advisory found that:

The potential impacts to birds and bats have been reduced as a direct result in the reduction of turbine numbers. The ~5% reduction in turbine numbers will generally result in a comparable reduction in the collision risk to birds and bats flying at rotor swept area (RSA) height. As noted in the EES, 97.5% of birds observed at the site flew below rotor height (BL&A 2018a, Section 9.4) and the vast majority of bats flew close to ground level (BL&A 2018a, Section 10.4).

9.2.4 Landscape and Visual

XURBAN stated that:

The initial assessment for the Planning Panel showed that the Golden Plains Wind Farm is situated in a landscape that has a low sensitivity to change. It is a broad-acre rural landscape that has been significantly altered to create expansive areas for farming. The visual impacts associated with the Project were examined in detail in the EES and a subsequent report examined the visual impact of siting changes.

The key findings of the XURBAN Landscape and Visual Assessment in respect of the layout and rotor size amendments are:

The turbine height is unchanged, and therefore there is no change to the Viewshed nor to the bands of visual influence brought about by the proposed change in rotor dimensions.

Viewpoint analysis shows that the changes, brought about by the alteration in the rotor diameter, are not even discernible when one enlarges greatly a small section of the 600 field of view photomontages. This would be similar to viewing through a telephoto lens or utilising a telescope and even with that degree of enlargement the change is minimal.

For these reasons, the overall visual impact of the changes between a rotor of 150m diameter and one of 165m diameter for the Golden Plains Wind Farm is assessed as Nil.

The 215 WTG layout (whilst different in design to the 228 layout) will result in no discernible change when viewed as a project within the landscape.

The Visual Impact Assessment also assessed WTG locations near the outer boundary of the Project and concluded that:

...the change of impact for those residential properties around the perimeter of the Project would be assessed as Nil.⁴⁹

9.2.4.1 Matters Raised by Inquiry Panel

The Inquiry Panel raised some specific matters in relation to the visual impact of the Project on non-stakeholder properties. The Inquiry Panel stated:

It is clear to the Panel that several non-stakeholder properties will be significantly impacted by the Project, in particular the Coad property, Wurrook South and Warrambeen.⁵⁰

While these three properties were raised as a matter for discussion, the Inquiry Panel then concluded:

⁴⁹ XURBAN Visual Impact Assessment of comparison between Base Case & 215 WTG Layout with 165m rotor diameter, February 2021, RPT8_Final_RevA, pp. 34

⁵⁰ EES Inquiry and Planning Permit Application Panel Report, pp. 60

While the Panel accepts that there may not be consistently high viewer numbers on these properties, it does agree with the conclusions in the Landscape and Visual Assessment that impacts on these properties (those that were assessed) will be between 'low' and 'medium'. In particular, impacts on the Coad property and Wurrook South, are likely to be at least 'medium', possibly 'high'.

These impacts must, however, be balanced against other important planning and policy considerations. They must also be balanced against the evaluation objective in the EES scoping requirements, to minimise and manage potential adverse effects for the community with regard to landscape and visual amenity.

On balance, the Panel accepts Mr Wyatt's evidence that, on the basis of an objective assessment of the landscape values of the area (as required under the planning scheme and the Victorian Wind Farm Guidelines), the visual impacts of the wind farm are generally acceptable, and can be managed through permit conditions.⁵¹

Particular attention has been given to the three non-stakeholder properties in the 215 WTG layout noted by the Inquiry Panel to ensure no additional impact is observed.

Section 5 of the Visual Impact Assessment report provides a comprehensive analysis of the three properties and concludes the following for all of the properties:

***For house AD27-a** (Warrambeen), the 215 WTG Layout has decreased the distance to the nearest WTG by approximately 700 m. However, 228 WTG layout assessed by the Panel included closer WTGs than either the Base Case or 215 WTG layout, but these WTGs were impacted by the broлга buffers.*

There are no WTGs within 2.6 km and although the numbers within 5.2 km have increased, these are viewed against the backdrop of the remaining WTGs within the Project.

These changes would make no discernible difference to the level of visual impact. Therefore, the difference between the Base Case and 215 WTG Layouts for AD27-a is assessed as Nil.

***For house W28-a**, the 215 WTG Layout distance to the nearest WTG remains almost the same. There is also a slight increase in the number of WTGs within 2.6 km and 5.2 km.*

These changes would make no discernible difference to the level of visual impact. Therefore, the difference between the Base Case and 215 WTG Layouts for W28-a is assessed as Nil

***For dwelling W17-a**, the 215 WTG Layout has slightly increased the distance to the nearest WTG. There is also an increase in the number of WTGs within 2.6 km and 5.2 km.*

These changes would not result in a discernible difference to the level of visual impact. Therefore, the difference between the Base Case and 215 WTG Layouts for W17-a is assessed as Nil.

⁵¹ Ibid, pp. 60

*The impacts at the three dwellings identified in the Panel report are either unchanged or reduced as a result of the 215 WTG Layout, owing to the minimal changes in distances to the nearest WTGs and the changes in WTG numbers within the nearest distance bands seen from each dwelling.*⁵²

The conclusive findings ensure no increase in impact or material detriment will be observed as a consequence of the 215 WTG layout (with a 165m rotor), when compared with the 228 WTG layout with the brolga buffer imposed. Furthermore, all three properties will experience an increased distance to the nearest WTG from the 228 WTG layout which is an improved outcome.

9.3 BMCP Wetland Selection

The proposed amendments to conditions 51, 51e, 51f and 51g of the Permit will facilitate an improved site investigation and Brolga wetland selection process, which will consequently yield higher-quality wetland breeding enhancement sites. This amendment aligns with the wetland selection methodology at Dundonnell Wind Farm and will greatly improve the ability of selecting the highest quality brolga wetland sites to successfully meet a zero net impact on the Victorian Brolga population.

9.4 Surface Water

The correction to Condition 68 in relation to surface water is considered to be minor and administrative and will provide clarification necessary to enable the project to define the flood levels relative to a height datum.

⁵² XURBAN Visual Impact Assessment of comparison between Base Case & 215 WTG Layout with 165m rotor diameter, February 2021, RPT8_Final_RevA, pp. 36

10 CONSULTATION WITH AUTHORITIES

10.1 Golden Plains Shire Council (GPSC)

GPWFM has actively engaged with Golden Plain Shire Council (GPSC) from the early stages of the Project's inception and throughout the planning process. Council is an active supporter of renewable energy and supports the development of the Project. As part of GPWFM's ongoing relationship with GPSC, GPWFM provided Council with a copy of the Development Plans of the 215 WTG layout with a 165m rotor for comment. In response, GPSC has prepared a letter to the Department of Environment, Land, Water and Planning (DELWP) stating:

Council has and will continue working with GPWFM and supports the development of renewable energy facilities in the Shire. GPWF in particular will be the largest development ever undertaken in Golden Plains, delivering significant economic outcomes to the community and the region, particularly in terms of job creation and infrastructure development. Council is of the view that Golden Plains is an attractive location for investment in wind generation given its suitable land, proximity to the power grid, ready access to workforce and the Port of Geelong, and ideal climatic conditions. As such Council supports the finalisation of the final planning and environmental approvals to enable construction of the project. ⁵³

GPSC's letter of support is attached at Appendix D.4.

While GPSC is not the Responsible Authority for the Project, GPWFM continues to inform GPSC of all aspects of the Project's approval requirements including the 215 WTG layout. GPWFM considers GPSC support for the approval of the 215 WTG layout as part of Condition 1 of the Permit, is representative of the strong collaborative relationship taken to engaging with the local community.

10.2 Corangamite Catchment Management Authority (CCMA)

GPWFM has consulted the Corangamite Catchment Authority throughout development of the Project and has recently provided a copy of the Development Plans and associated GIS data for the CCMA's review. CCMA have provided written confirmation that the 215 WTG layout complies with the requirements of Conditions 82 and 83 of the Permit. A copy of the letter from CCMA is included in Appendix D.1.

10.3 Department of Transport (formerly VicRoads)

GPWFM has sought the Department of Transport's (DoT) input on the relocation of vehicle access points to roads within the Road Zone Category 1. The letter included in Appendix D.3 confirms that "DoT has assessed the above Plans (Development Plans V39-03) and approves the vehicle access points accessing Category 1 Road Zones identified under the Golden Plains Planning Scheme."⁵⁴

⁵³ Braslis, E. (Golden Plains Shire Council), letter to Michael Juttner (DELWP), Re: Golden Plains Wind Farm – Planning Permit PA1700266, 22 December 2020

⁵⁴ Pirrotta, S. (Department of Transport), letter to Michael Juttner (DELWP), Re: Golden Plains Wind Farm – Planning Permit PA1700266, Vehicle Access to Road Zones – Category 1, 15 December 2020

10.4 DELWP Environment Portfolio

DELWP Grampians Region provided confirmation by letter on 12 August 2020 that the location of the Cressy Terminal Station (CRTS) and associated works addressed “*DELWP Grampian Region’s concerns regarding the location of the transmission station with respect to impacts on Brolgas at wetland 25*”.

GPWFM subsequently refined the terminal station location and design to further reduce impacts on native vegetation and disturbance to Brolgas at wetland 25. The revised plans included in Appendix A.4 were submitted to DELWP Grampians Region for review on 1 December 2020. DELWP Grampians Region responded on 22 December 2020, confirming that:

DELWP Grampians Region is satisfied that the revised design of the CRTS will minimise the impact via disturbance to brolga breeding within the wetland, as well as to the structure of the wetland due to construction activities. Review of the plans indicate that it may achieve a better outcome than the previous design which was supported by DELWP Grampian (sic) region.

A copy of the response from DELWP Grampians Region is included in Appendix D.2.

Further, Appendix D.2 includes a letter from DELWP Grampians Region dated 27 May 2020 confirming that the *turbine free buffer zone for Brolga* presented in the maps in Appendix B.4 complies with the requirements of permit condition 1(c), and that the Project has avoided impacts on Baths Swamp in accordance with condition 1(d).

10.5 AusNet Transmission Group

AusNet Transmission Group confirmed by letter dated 17 December 2020 that the 215 WTG layout complies with the requirements of conditions 1h and 86 of the Permit. A copy of the letter is included in Appendix D.5.

11 KEY PROJECT BENEFITS

Section 0 assesses the level of change in the key project benefits associated with the 215 WTG layout and the rotor size increase.

The following table includes the Key Project Benefits identified in the EES⁵⁵. The table has been expanded to identify the key Project benefits anticipated for a 215 WTG layout to understand the level of change associated with the reconfigured 215 WTG layout using the Vestas V162 WTG, GE 6.0-164 WTG, or another WTG of comparable size.

Many significant increases in benefits can be achieved with the proposed amendments including a 14% increase in the annual renewable energy generation (from 3,500 GWh to 4,000 GWh). This significant increase in renewable energy is enough to power an additional 95,000 households, meaning the project will supply enough energy to power just over 765,000 households, which is more than all of the dwellings in regional Victoria. Importantly, the Project will now generate enough clean energy to meet 9% of Victoria's total electricity demand.

Table 18: Key Project Benefits

Objective	Project Benefits (from EES) (228 WTG EES Layout)	Project Benefits (215 WTG Layout with 165m WTG rotor)
Contribute to a reliable and affordable NEM as the generation mix transitions towards renewable energy.	<p>The Project will export in excess of 3500 GWh to the NEM, enough electricity for in excess of 500,000 households⁵⁶.</p> <p>With a LCOE below \$60/MWh, the electricity from the Project will be price competitive, placing downward pressure on electricity prices.</p>	<p>The 165m WTG will export in excess of 4000 GWh per annum to the NEM which is an increase of ~14% over the original proposal and a ~21% increase over the 215 WTGs with 150m rotor.</p> <p>The increase in generation is enough to supply an additional 95,000 average Victorian homes⁵⁷ when compared with the original proposal. This increase is equivalent to a city between the size of Ballarat (73,000 homes) and Geelong (107,000 homes).</p> <p>Importantly, the Project will produce enough electricity to power 765,000 homes which is more homes than Greater Adelaide (514,747) or the entire</p>

⁵⁵ *Golden Plains Wind Farm Environment Effects Statement Main Report*, Table 2.4, pp. 2-14

⁵⁶ Figures provided in the EES were based on average consumption for a 'large-sized' Victorian household. This is equivalent to the consumption for 670,000 medium-sized Victorian households. Medium-sized households are representative of a typical Victorian home and have been adopted in subsequent analysis. Source: *Energy Consumption Benchmarks 2017*, summarised in <https://www.esc.vic.gov.au/sites/default/files/documents/victorian-energy-usage-profiles-report.pdf>

⁵⁷ Ibid

		<p>number of households in Regional Victoria (577,736).</p> <p>The Project's LCOE will be lower given the improved efficiency and capacity of the larger WTGs, resulting in a lower cost of energy for consumers.</p>
<p>Support VRET, which establishes renewable energy generation targets of 25% by 2020 and 40% by 2025.</p>	<p>The Project will have an installed capacity of 800-1000 MW which will be connected directly into the NEM via the Moorabool-Mortlake/Tarrone 500kV transmission line that crosses the site.</p> <p>The development of the Project will likely occur in four stages, with the timing of stages to coincide with VRET funding rounds to help achieve their renewable energy targets.</p>	<p>The 165m rotor will increase the Project's contribution to the VRET through a 14% increased generation of renewable energy.</p> <p>The Project's installed capacity will increase to 1100-1200 MW.</p> <p>The Project's AEP of 4,000 GWh per annum equates to:</p> <ul style="list-style-type: none"> • approximately 9% of Victoria's total electricity demand⁵⁸; or • approximately 1/3 of Victoria's 2025 renewable energy target of 25% of electricity from renewable sources; or • approximately 1/5 of Victoria's 2040 renewable energy target of 40% electricity from renewable sources.
<p>Support initiatives within the Victorian <i>Climate Change Act 2017</i> to help achieve a long-term emissions reduction target of net zero by 2050.</p>	<p>Every MWh of electricity produced by the Project will offset the emission of one metric tonne of carbon dioxide (CO₂).</p> <p>The development of the Project will assist the Victorian Government in its goal to have zero net emissions by 2050.</p> <p>In order to achieve this goal, it is imperative that the transition towards a renewable electricity sector is well under way by 2030.</p>	<p>The Project's increased AEP will provide an abatement of more than 4.2 million tonnes of CO₂ per annum (up from 3.5 million tonnes).</p>
<p>Assist the Commonwealth Government's commitment to achieve its</p>	<p>By generating in excess of 3500 GWh of renewable electricity (approximately one third of the capacity of the now decommissioned Hazelwood coal-fired power station), the Project will provide an</p>	<p>The project's increased AEP will provide an abatement of more than 4.2 million tonnes of CO₂ per annum (up from 3.5 million tonnes under the original proposal).</p>

⁵⁸ Refer to: <https://www.aer.gov.au/wholesale-markets/wholesale-statistics/annual-electricity-consumption-nem>

2030 Climate Change Target, to reduce greenhouse gas emissions by 26% to 28% of 2005 levels by 2030.	abatement of 3.5 million tonnes of CO ₂ per annum.	
Drive economic development in the region.	<p>The development of the Project will provide a significant boost to the regional economy with an estimated 768 local and regional jobs during construction (factoring in a multiplier effect), and 40 operation and maintenance jobs through its operation.</p> <p>The operation of the Project will provide an injection of around \$800,000 every year into the Golden Plains Shire through the collection of municipal rates.</p>	The Project will continue to provide a significant boost to the regional economy and will contribute over \$1,500,000 per year in municipal rates.
Support the local community.	<p>WestWind has established a range of community initiatives to enable the local community to benefit from the Project. In addition to construction and operational jobs, community benefits will include:</p> <ul style="list-style-type: none"> • A community benefit fund of up to \$228,000 (\$1000 per turbine) per annum • Neighbour benefit scheme • Community investment opportunity • Host landholder benefits • Improved roads • Protection of farmland – sustainable farming. 	WestWind remains committed to all of the community benefits outlined in the EES.

In addition to the identified project benefits raised by the EES, the amendment to the Permit will further provide additional project benefits which are outlined in the following table.

Table 19: Additional Project Benefits

Additional Project Benefits	
Improved efficiency, reliability and capacity factors	By moving to the latest WTG platforms (which utilise larger rotors), the Project will benefit from ongoing improvements in WTG technology.
Improved utilisation of future BESS	The increased generation will allow additional electricity to be stored using the BESS and dispatched into the NEM in periods of higher demand.
Improved financing options and delivery models	Lower cost of energy will de-risk the project at times of very competitive electricity pricing and expand project financing options. This in turn is expected to bring forward delivery of the later stages of the GPWF Project, allowing for increased renewable generation to be connected sooner.

12 CONCLUSION

The permit amendment gives effect to the objectives of planning in Victoria and complies with and gives effect to the provisions of the Golden Plains Planning Scheme in particular Clauses 15.02-15, 19.01 and 52.32.

The amendments to Planning Permit PA1700266 are required due to a combination of factors including, the application of the Brolga Buffer, delays associated with unsuccessful legal challenges to the Minister's approval decisions and the modernisation in WTG technology over the period since the original permit was issued. Importantly, advances in WTG technology now provide the ability for the project to generate significantly more renewable energy which, despite the delays, provide an opportunity for the Project to maximise its contribution to Victoria's renewable energy profile.

There are substantial benefits associated with the permit amendment, all of which result in a project with either similar or reduced levels of environmental impacts when compared to the approved 228 WTG layout.

Specifically, the permit amendment when compared to the approved planning permit will achieve:

- The inclusion of turbine free buffer zones for Brolga in accordance with Document 86 presented to the Inquiry Panel;
- No change to the location and size of the Project area;
- A reduction in the number of WTGs – reduced by 13 WTGs;
- A reduction in the length of above ground transmission line infrastructure and the further internalisation (within the Project area) of line results in the avoidance of significant wetlands, and increased distances from roads and dwellings (on average);
- Increased cabling length which allows for further avoidance of Aboriginal cultural heritage and native vegetation;
- A reduction in the number of collector stations from 4 to 3;
- The relocation of the Terminal Station to avoid impact on Wetland 25;
- An overall reduction of 19.5% in the amount of native vegetation removal;
- A reduction in the impact on Brolga by 0.2 collisions across the life of the Project;
- Significant reduction in the number of traffic movements during construction due to the reduction in WTG numbers;
- No decrease in the distance from a non-host dwelling to the nearest WTG;
- No increased levels of environmental impact. In fact, for many areas of environmental impact assessment, the impact is decreased, specifically the amendment does not have new or greater adverse impacts on:
 - Aboriginal Cultural Heritage;
 - Aviation;
 - Biodiversity including Brolga, Native Vegetation, Birds and Bats;
 - Electromagnetic Interference (EMI);
 - Landscape and Visual;
 - Noise and Vibration;
 - Shadow Flicker;
 - Traffic;
 - Ground Water; and
 - Surface Water.

- The avoidance of additional locations of cultural heritage significance (stony rises).
- No greater visual impact on the three non-host dwellings identified in the Inquiry Panel as experiencing significant visual impact from the 228 WTG layout;
- An increase in the average distance to a host dwelling from the closest turbine by 22%;
- Increases the diameter of the rotor resulting in the extension of WTG blades by 7.5m;
- Improves the ability to identify and provide successful Brolga breeding wetlands.

In addition, Golden Plains Shire Council supports and endorses the permit amendments and has provided written consent to the facilitation of the planning process to enable construction of the project.

Regarding the increase in the diameter of the rotor from 150m to 165m, the permit amendment equates to a 15m rotor increase or a 7.5m increase in length to each WTG blade. This increase will result in an imperceptible visual change within the landscape when viewed from neighbouring dwellings, and in response to an increase in the WTG ground clearance (to 57.5m), will ensure a reduction in Brolga collisions. The renewable energy generation benefits of the larger WTG generator, and increased rotor size are substantial and will significantly increase the renewable energy output by 14%.

The proposed amendments to conditions 51, 51e, 51f and 51g of the Permit will facilitate an improved site investigation and Brolga wetland selection process, which will consequently yield higher-quality wetland breeding enhancement sites. This amendment aligns with the wetland selection methodology at Dundonnell Wind Farm and will greatly improve the ability of selecting the highest quality brolga wetland sites to successfully meet a zero net impact on the Victorian Brolga population.

The correction to Condition 68 is considered minor and administrative and will provide clarification necessary to enable the project to define the flood levels relative to a height datum.

In conclusion, the overall changes proposed as part of the permit amendment are considered to be reasonable and beneficial. These changes will result in an improved project which will deliver substantially more renewable energy whilst reducing its impacts on native vegetation, cultural heritage, Brolga and traffic movements. The relevant technical assessments have concluded that the impacts of the changes will either be negligible or improved.

The reduction in the Projects impacts and the careful avoidance of matters of environmental significance result in an improved layout which will have less impact than that allowed for by the 228 WTG layout. In consideration of this and in light of the changes listed above, it is submitted that the permit amendment is well considered and appropriately satisfies the objectives of planning in Victoria.

The net community benefit of the amended project will be both locally significant in terms of providing much needed regional investment and employment and regionally significant ensuring that the Golden Plains Wind Farm will meet 9% of Victoria's electricity needs with clean, reliable renewable energy.

APPENDICES

Appendix A General Plans

Appendix A.1 Project Locality Plan

Appendix A.2 Project Area Plan

Appendix A.3 Baths Swamp

Appendix A.4 Terminal Station Plans

Appendix A.4.1 PPA Terminal Station Location

Appendix A.4.2 215 WTG Terminal Station Location

Appendix A.5 WTG Permit Conditions

Appendix A.6 Dwellings within 1km of a WTG

Appendix A.7 Electrical Infrastructure

Appendix A.8 Site and Context Analysis Plan

Appendix B Plans for Endorsement

Appendix B.1 Development Plans

Appendix B.2 Infrastructure Drawings

Appendix B.2.1 Batching Plants

Appendix B.2.2 Collector Stations

Appendix B.2.3 Laydown Areas

Appendix B.2.4 Operations and Maintenance Facilities

Appendix B.2.5 Site Compounds

Appendix B.2.6 Terminal Station

Appendix B.2.7 Transmission Lines

Appendix B.3 WTG Specification Plan

Appendix B.4 Turbine Free Buffer Plan

Appendix B.5 Business Identification Signage

Appendix B.5.1 Business Identification Signage Plan Locations

Appendix B.5.2 Business Identification Signage Example

Appendix B.6 Native Vegetation Removal Plans

Appendix C Expert Technical Impact Assessments

Appendix C.1 Aviation Impact Assessment

Appendix C.2 Biodiversity Assessment

Appendix C.3 Electromagnetic Interference Impact Assessment

Appendix C.3.1 EMI Consultation

Appendix C.3.1.1 Central Highlands Water EMI Consultation

Appendix C.3.1.2 Powercor Australia EMI Consultation

Appendix C.4 Ground Water Impact Assessment

Appendix C.5 Landscape & Visual Impact Assessment

Appendix C.6 Noise & Vibration Impact Assessment

Appendix C.6.1 Environmental Audit of Noise & Vibration Impact Assessment

Appendix C.7 Shadow Flicker Impact Assessment

Appendix C.8 Surface Water Impact Assessment

Appendix C.9 Traffic Impact Assessment

Appendix D Records of Consultation

Appendix D.1 Corangamite Catchment Management Authority

Appendix D.2 DELWP Environment Portfolio

Appendix D.3 Department of Transport (formerly VicRoads)

Appendix D.4 Golden Plains Shire Council

Appendix D.5 AusNet Transmission Group

Appendix E External Advice

Appendix E.1 Odonata advice on BMCP Conditions

Appendix E.2 CCMA advice on Surface Water Conditions

Appendix F Landholder Consents

Appendix F.1 Consent to WTGs within 1km of dwellings

Appendix F.2 Participation Agreement for Dwelling H32 - a

Appendix G Condition 1 Requirements

Appendix H GIS Data

Appendix I Planning Permit PA1700266

Appendix I.1 Planning Permit dated 29 April 2019

Appendix I.2 Proposed amendments to Permit

Appendix J Review against Minister's Assessment

Appendix K Notice of Approval – CHMP 14795

Appendix L Certificates of Title