

# REFERRAL OF A PROJECT FOR A DECISION ON THE NEED FOR ASSESSMENT UNDER THE *ENVIRONMENT EFFECTS ACT 1978*

## REFERRAL FORM

The *Environment Effects Act 1978* provides that where proposed works may have a significant effect on the environment, either a proponent or a decision-maker may refer these works (or project) to the Minister for Planning for advice as to whether an Environment Effects Statement (EES) is required.

This Referral Form is designed to assist in the provision of relevant information in accordance with the *Ministerial Guidelines for assessment of environmental effects under the Environment Effects Act 1978* (Seventh Edition, 2006). Where a decision-maker is referring a project, they should complete a Referral Form to the best of their ability, recognising that further information may need to be obtained from the proponent.

**It will generally be useful for a proponent to discuss the preparation of a Referral with the Impact Assessment Unit (IAU) at the Department of Environment, Land, Water and Planning (DELWP) before submitting the Referral.**

If a proponent believes that effective measures to address environmental risks are available, sufficient information could be provided in the Referral to substantiate this view. In contrast, if a proponent considers that further detailed environmental studies will be needed as part of project investigations, a more general description of potential effects and possible mitigation measures in the Referral may suffice.

In completing a Referral Form, the following should occur:

- Mark relevant boxes by changing the font colour of the 'cross' to black and provide additional information and explanation where requested.
- As a minimum, a brief response should be provided for each item in the Referral Form, with a more detailed response provided where the item is of particular relevance. Cross-references to sections or pages in supporting documents should also be provided. Information need only be provided once in the Referral Form, although relevant cross-referencing should be included.
- Responses should honestly reflect the potential for adverse environmental effects. A Referral will only be accepted for processing once IAU is satisfied that it has been completed appropriately.
- Potentially significant effects should be described in sufficient detail for a reasonable conclusion to be drawn on whether the project could pose a significant risk to environmental assets. Responses should include:
  - a brief description of potential changes or risks to environmental assets resulting from the project;
  - available information on the likelihood and significance of such changes;
  - the sources and accuracy of this information, and associated uncertainties.
- Any attachments, maps and supporting reports should be provided in a secure folder with the Referral Form.
- A USB copy of all documents will be needed, especially if the size of electronic documents may cause email difficulties. **Individual documents should not exceed 10MB as they will be published on the Department's website.**

- A completed form would normally be between 15 and 30 pages in length. Responses should not be constrained by the size of the text boxes provided. Text boxes should be extended to allow for an appropriate level of detail.
- The form should be completed in MS Word and not handwritten.

The party referring a project should submit a covering letter to the Minister for Planning together with a completed Referral Form, attaching supporting reports and other information that may be relevant. This should be sent to:

Postal address

**Minister for Planning  
PO Box 500  
EAST MELBOURNE VIC 8002**

Couriers

**Minister for Planning  
Level 16, 8 Nicholson Street  
EAST MELBOURNE VIC 3002**

In addition to the submission of the hardcopy to the Minister, separate submission of an electronic copy of the Referral via email to [ees.referrals@delwp.vic.gov.au](mailto:ees.referrals@delwp.vic.gov.au) is required. This will assist the timely processing of a referral.

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## PART 1 PROPONENT DETAILS, PROJECT DESCRIPTION & LOCATION

### 1. Information on proponent and person making Referral

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<b>Authorised person for proponent:</b>	Marton Kalocsay
<b>Position:</b>	Development Project Manager
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<b>Phone number:</b>	0401 475 958
<b>Facsimile number:</b>	N/A
<b>Person who prepared Referral:</b>	Caroline Funnell
<b>Position:</b>	Principal Environmental Consultant
<b>Organisation:</b>	Umwelt Australia Pty Ltd
<b>Postal address:</b>	180 Flinders Street, Melbourne VIC 3000
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<b>Phone number:</b>	0449 947 686
<b>Facsimile number:</b>	N/A
<b>Available industry &amp; environmental expertise:</b> (areas of 'in-house' expertise & consultancy firms engaged for project)	<p>The Watta Wella Renewable Energy Project (Project) is a development being undertaken by RES Australia Pty Ltd (RES), which operates as a subsidiary of Renewable Energy Systems Ltd (RES Group).</p> <p>RES Group is the world's largest independent renewable energy company. Established in 1981, RES Group has over 40 years of renewable development experience and an actively expanding project portfolio of currently in excess of 22 gigawatts (GW). RES has internal expertise in development, engineering and technical assessment, construction, project finance, project operations, and construction and asset management. RES has been developing renewable energy projects in Australia since 2004. With an experienced and specialist workforce of over 150 Australian employees, RES has a development pipeline of 5GW and is currently responsible for providing specialist construction management services to over 1.5GW of projects and managing a further 3GW of operational assets around Australia. RES has developed a number of projects in Victoria including Ararat Wind Farm, Murra Warra I Wind Farm, Murra Warra II Wind Farm (in construction), Murra Warra Solar Farm and BESS (approved), and Baringhup Solar Farm (approved).</p> <p>Umwelt Australia Pty Ltd (Umwelt) has been engaged by RES as the Lead Consultant to coordinate specialist environmental and planning assessments and author the EES referral for the Project.</p>

	<p>In addition to Umwelt, a number of suitably qualified consultants have been engaged by and on behalf of RES, to provide specialist technical assessment and advice:</p> <ul style="list-style-type: none"> <li>• Biodiversity: Ecology and Heritage Partners</li> <li>• Hydrology: Afflux Consulting</li> <li>• Landscape and Visual: Wax Design</li> <li>• Aviation and Solar Glare: Aviation Projects</li> <li>• Traffic: Access Traffic, and Impact Traffic and Transport Engineering</li> <li>• Noise: Marshall Day</li> <li>• Cultural Heritage: Tardis</li> <li>• EMI and Shadow Flicker: DNV GL</li> <li>• Agriculture: RMCG</li> </ul>
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## 2. Project – brief outline

<p><b>Project title:</b> Watta Wella Renewable Energy Project (the Project)</p>															
<p><b>Project location:</b> (describe location with AMG coordinates and attach A4/A3 map(s) showing project site or investigation area, as well as its regional and local context)</p> <p>The Watta Wella Renewable Energy Project (the Project) is located in western Victoria near the agricultural community of Joel Joel within Northern Grampians Shire. The project site is located approximately 16 kilometres north-east of Stawell and approximately 30 kilometres north of Ararat. The east to north-east boundary of the project site is intersected by the Wimmera River.</p> <p>The project site is largely defined by Stawell Avoca Road and the Wimmera River to the north, the Wimmera Downs Road and the Wimmera River to the east, Joel South Road and Landsborough Road to the south, and Wyndarra Road to the west. Sections of the project site are located adjacent to the Joel Joel Nature Conservation Reserve located to the south. Land within and adjacent to the project site is predominantly associated with agricultural practices, primarily used for dryland mixed farming of sheep, as well as cattle grazing and cropping.</p> <p>The project site covers an area of approximately 5,200 hectares and includes 13 rural landholdings and local road reserves. The following describes the location details of the three components that form the proposed Project:</p> <ul style="list-style-type: none"> <li>• The wind farm component covers the majority of the project site, approximately 5,100 hectares and 13 landholdings.</li> <li>• The solar farm component of the Project covers approximately 170 hectares and is located in the south-eastern portion of the project site bordering the Wimmera River.</li> <li>• The battery storage energy system (BESS) facility covers approximately 12 hectares and is located in the south-eastern portion of the project site to the east of the Joel Joel Nature Conservation Reserve.</li> </ul> <p><b>Appendix A – Figure 1a</b> (Project Site Context) and <b>Appendix A – Figure 1b</b> (Project Location) provides the overall project site context, project site boundary and the key boundaries of the three key Project components.</p> <p>The MGA Coordinates of the Project are shown in <b>Table 1</b> below.</p> <p><b>Table 1. Project site coordinates</b></p> <table border="1" data-bbox="528 1877 1166 2040"> <thead> <tr> <th>Location point</th> <th>Northing</th> <th>Easting</th> </tr> </thead> <tbody> <tr> <td>NE corner</td> <td>5909225</td> <td>677371</td> </tr> <tr> <td>SE corner</td> <td>5897362</td> <td>678742</td> </tr> <tr> <td>SW corner</td> <td>5896316</td> <td>669692</td> </tr> <tr> <td>NW corner</td> <td>5908179</td> <td>668321</td> </tr> </tbody> </table>	Location point	Northing	Easting	NE corner	5909225	677371	SE corner	5897362	678742	SW corner	5896316	669692	NW corner	5908179	668321
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**Short project description** (few sentences):

The Project involves a renewable energy facility comprising a wind farm, solar farm, BESS and associated infrastructure. The Project is in the development stage and indicatively comprises the following:

- Up to 47 wind turbines generators (WTGs) with a generation capacity of approximately 376 megawatts (MW) and a turbine tip height up to 255 metres.
- Up to 170 hectares of solar photovoltaic (PV) panels on single axis tracker tables, utilising either single or bifacial solar panels with a generation capacity of up to 85MW direct current of electricity (MWdc).
- A BESS may be established as a standalone development owned and operated separately to the wind farm and solar farm but anticipating energy capture from one or both of these components. The BESS has a storage capacity of up to 400MW / 1,200MWh of storage capacity (3 hours at 400MW).
- On-site substations for both the wind farm and solar farm, and BESS (220 kilovolt (kV) / 33kV).
- Overhead 220kV connection from both the wind farm and solar farm, and BESS to the existing Bulgana substation (approximately 600 metres in length pending final design detail of the Western Renewables Link Project).
- Associated ancillary infrastructure.

The final nameplate capacity for the different components will be subject to post approval detailed design and procurement processes, with the final technology selection subject to any prescribed planning restrictions. It is anticipated that the wind farm and solar farm will be developed as a hybrid generation project, in two stages (wind farm and solar farm respectively) with the BESS project to follow. The BESS is anticipated to utilise generation from the wind farm and / or solar farm, with the configuration of energy capture subject to further commercial and technical assessment by RES.

For the purposes of this referral, a comprehensive assessment of all three key components of the Project has been provided.

**3. Project description****Aim/objectives of the project** (what is its purpose / intended to achieve?):

The Project will supply renewable electricity to the National Electricity Market (NEM) and play a key role in supporting Victoria's transition to increased uptake of renewable energy in the electricity generation sector. The Project will be a key contributor to mitigating the projected impacts of climate change by providing renewable sources of energy and reducing greenhouse gas emissions.

Through the development of the proposed renewable energy facility, the aim of the collective Project is to generate approximately 376MW and 85MWdc of renewable energy, from the wind farm and solar farm components respectively to supplement Victorian and Australian energy supply. The wind farm is expected to generate enough electricity to supply around 190,000 Victorian homes.

The Project also includes a BESS with an anticipated 400MW / 1,200MWh of storage capacity. The BESS will assist in supporting Victoria's transition to renewable energy through allowing the storage of power from the wind farm and/or solar farm when demand is low and dispatching this stored energy when demand for electricity is high. As such, contributing to reducing the need for more expensive alternatives and the pressure on Victoria's electricity prices. The BESS facility will also help to provide greater security in energy supply and may aid the Australian Energy Market Operator in the management of the Frequency Control Ancillary Services (FCAS) across this part of the NEM.

Australia's greenhouse gas emissions are amongst the highest in the world (The World Bank, 2021), and the Project will play an important role in contributing to State and Federal Government

targets for greenhouse gas emission reductions. *Australia's Long Term Emission Plan* (DISER, 2021) details the country's commitment to up to 35 percent emission reductions by 2030 and net zero emissions by 2050. This resulted from Australia's signing of the Paris Agreement (UN, 2015) in which 193 countries committed to 'substantially reduce global greenhouse gas emissions to limit the global temperature increase in this century to two degrees Celsius while pursuing efforts to limit the increase even further to one and a half degrees'. In particular, the Project will directly contribute to achieving Victoria's legislated renewable energy target of 50 percent by 2030 and the long-term Victorian Government target of net zero emissions by 2050 (DELWP, 2021).

In addition to the electricity supply and greenhouse gas benefits, the Project will provide local employment opportunities, particularly during the construction phase and through to operation and maintenance, and a need to service this workforce with accommodation, food and amenities, providing local economic benefits.

An overall aim of this Project and all those in RES' portfolio is to provide renewable energy solutions which benefit the local community as well as the wider network of energy recipients, and to sensitively design all Projects to avoid and minimise environmental impacts. The Project has been through several design iterations based on the environmental study outcomes and achieved significant reductions in native vegetation removal as a result of re-siting infrastructure.

**Background/rationale of project** (describe the context / basis for the proposal, eg. for siting):

RES has undertaken detailed phase 1 feasibility studies to determine the suitability of the respective elements of the Project to be located within the project site. These phase 1 studies determined the availability of land and the compatibility of land uses, the viability of the project site from a planning and environmental context, access to the existing electricity network, and the exposure to suitable solar and wind resources. A number of preliminary environmental studies were then undertaken to inform the siting and location of key project infrastructure, including ecology, heritage, transport and landscape and visual assessments.

The key factors contributing to the suitability of the project site to accommodate the proposed renewable energy facilities include:

- Availability of a strong and consistent Victorian wind resource.
- High annual solar irradiance levels.
- Accessibility to the existing transmission network via connection to AusNet's 220kV transmission line at Bulgana Substation.
- The project site is currently used for agricultural activities and as such, much of the project site has historically been cleared of native vegetation and has reduced ecological value.
- The current agricultural land use of the project site, including the applicable planning zone and overlay provisions, are compatible with the Project. See **Section 7** for details on the planning context.
- The Project will have limited environmental impacts due to the existing land use, and through siting and design, the Project will seek to avoid key environmental and social constraints.
- Supportive host landowners.
- Townships or settlements are located over 10 kilometres from the project site.
- Available access to the project site from surrounding major roads, avoiding the use of local roads.
- Considerable buffers between the proposed turbine locations and non-associated dwellings (at least 1.5 kilometres).

The Project is also considered to provide a number of environmental and social benefits.

Environmental benefits:

- Minimal impact on the productivity of traditional farming practices, with ongoing agricultural use (to the extent practicable) anticipated within the wind farm and solar farm development areas (refer **Appendix L** (Agricultural Impact Assessment) and Part 2 – Section 11 of this referral for a summary of assessment outcomes).
- Site selection that has minimised the potential for environmental impacts associated with clearing, is located within low residential density, and reduced potential for impacts on local amenity.

- Land within the project site can be rehabilitated to its original condition and use at the end of the Project's operational life (regardless of actual operation duration) once all above ground infrastructure is removed.
- Additional fire breaks and improved access roads for firefighting will be implemented.
- The Project will generate renewable energy to power approximately 190,000 Victorian homes and reduce Australia's carbon emissions by more than one million tonnes of carbon dioxide annually.
- Contribute to reaching the Victorian and Commonwealth legislated renewable energy generation targets.

Community benefits:

- RES is committed to developing a community benefit sharing scheme once the Project is operational. This will provide ongoing funding to support local projects, community groups and organisations over the Project's lifetime. Finalisation of the structure of the benefit sharing scheme remains subject to RES' ongoing engagement with the community.
- The Project will generate direct jobs during construction as well as indirect supply chain jobs. A number of full-time staff will be employed during the operation and maintenance phase of the Project (approximately 30 years) and medium-term contract jobs during any major maintenance activities. The peak construction and operational jobs will be subject to the final size and configuration of the Project, but an operations and maintenance team of five to 10 full time equivalents (FTE) for each project component is anticipated.
- Employment benefits from the Project will extend through local supply chains to fuel supply, vehicles servicing, plant and equipment hire, uniform suppliers, hotels/motels, cafes, restaurants, tradespeople and many other local businesses.
- Once the project is operational, it would provide annual income to host landowners and neighbour benefits. This additional income helps farmers diversify income streams to offset environmental impacts such as drought or flood.

**Main components of the project** (nature, siting & approx. dimensions; attach A4/A3 plan(s) of site layout if available):

The Project consists of three main components: the wind farm, solar farm, and BESS. An indicative infrastructure layout plan of the Project is shown in **Appendix A – Figure 2** (Indicative Project Infrastructure Layout).

**Wind farm**

The wind farm component of the Project will have a maximum generation capacity of 376MW and comprise up to 47 WTG. The current designs and Project layout were prepared on the basis of a 'maximum envelope' of turbine dimensions, with consideration of the maximum number of turbines proposed for the project site. A final turbine model and specifications will be confirmed during detailed design and procurement (post approval). For the purpose of the noise impact assessment a specific turbine model has been selected for assessment purposes only, to obtain an appropriate sound power level.

Each individual WTG will have a maximum generation capacity of 8MW and have the following specifications:

- A maximum tip height of 255 metres
- A maximum hub height of 165 metres
- A maximum blade length of 89 metres
- A maximum rotor swept area (RSA) of 24,885 square metres
- A turbine foundation of up 800 cubic metres

The proposed siting of wind turbines, access tracks, and hardstand areas gives regard to existing agricultural use of the land, with a view to minimising the potential impact on ongoing agricultural use during the operation of the wind farm. Aside from the site office, warehouse, and substation which will be cordoned off with security fencing, the wind farm will not include the construction of any exclusion fencing, supporting ongoing grazing and cropping activities.

## Solar farm

The solar farm component of the Project is located in the southeast of the project site, which will cover approximately 170 hectares of land and have a maximum generation capacity of 85MWdc. The proposed solar PV modules are to be mounted on single axis tracker tables capable of tracking the sun from the east to west throughout the day. Final panel selection and specifications will be confirmed during detailed design. Panel selection could include either single or bi-facial panels.

Standard specifications of the PV modules will measure approximately two metres by one metres, by 50 millimetres thick. The panels will be fixed to single axis tracking tables approximately 1.8 metres above the ground. The trackers rotate around a north/south axis to track the sun throughout the day from east to west. The width of rows will be approximately five metres to allow for service and cleaning vehicles. Approximately 15 to 20 power conversion units will be located throughout the solar farm area, enclosing transformers and inverters. The PV modules generate direct current (DC) electricity, which is converted to Alternating Current (AC) via the inverters within the power conversion units. Transformers at the onsite substation then step up the voltage to 220kV ahead of export to the proposed grid connection point within the Bulgana terminal station. The solar farm component will be surrounded with security fencing per Australian standards and design guidelines.

Grazing of sheep is anticipated within the solar farm. The use of sheep will help to maintain onsite vegetation levels and will support the ongoing agricultural potential of the land within the solar farm area.

## BESS

The BESS is proposed to be located in the south-eastern portion of the project site to the east of the Joel Joel Nature Conservation Reserve and attached to either the wind and solar farm or independently connected to the Bulgana terminal station. The final location of the BESS will take into consideration the Bushfire Management Overlay that applies to the Joel Joel Nature Conservation Reserve and surrounds, and potential areas of inundation as detailed in the Hydrology and Flood Assessment (**Appendix D**).

The BESS facility will cover up to 12 hectares with an anticipated 100 square metres of battery storage area. The BESS facility will consist of approximately 480, 40 foot battery storage containers to store batteries, as well as approximately 80, 40 foot containers to store power conditioning equipment, with six battery storage containers connected to each power conditioning station.

The BESS will have a storage capacity of up to 4000MWh and store up to 1,200MWh of dispatchable energy. The BESS will store energy for use during periods of high demand and provide additional grid stability services. The final connection configuration for the BESS is subject to further commercial and technical assessment by RES.

The final BESS facility details will be confirmed during detailed design and procurement, whilst complying with the planning condition requirements.

The BESS component is proposed to be surrounded with security fencing per Australian standards and design guidelines.

**Ancillary components of the project** (e.g., upgraded access roads, new high-pressure gas pipeline; off-site resource processing):

Multiple site access locations to the project site have been identified through a preliminary transport route assessment. These access points are shown in **Appendix A – Figure 3** (Proposed Site Access Locations).

Preliminary transport route assessments have been undertaken to identify suitable road haulage routes to transport the Project infrastructure to site. Two separate routes have been considered: one from the Port of the Geelong and one from the Port of Portland. Feasible transport routes have been identified from both options to the project site, however pinch points have been



identified along each route. A small number of locations along each of the potential transport routes will require upgrade works such as additional hardstand pavement areas to accommodate the transport vehicles and their swept paths. Where required by the applicable roading authority, temporary upgrades / changes (e.g., the removal of street furniture) will be restored to their original state following construction of the Project. It is anticipated that pavement extensions will be retained by the road authority or local Council where these are constructed to support the delivery of replacement components required by the project. The turbine envelope and future procurement will give due regard to any transport route constraints.

A Transport Impact Assessment and Route Assessment are currently under preparation to support the approvals of the Project. A preferred transport route and the required road and intersection upgrades will be identified in these assessments, which will be provided with the planning approval documentation. Stakeholder engagement will be undertaken with Northern Grampians Shire Council, Department of Transport, Regional Roads Victoria, VicRoads and other key stakeholders as part of the assessments

A temporary concrete batching plant is proposed to be located in the east of the site just north of Vineyard Road. This batching plant is anticipated to consist of up to two units and produce approximately 140 cubic metres per hour. Concrete batching material (e.g., aggregate) may either be sourced offsite from local quarries and material suppliers (where available) or from onsite borrow pits if minimum quality and quantity requirements are met. A detailed analysis of the potential sources of material will be carried out during the preparation of the planning approval documentation, which will include assessment of potential impacts on the public road network. Final supplier selection will be confirmed post approvals and be subject to Engineering, Procurement and Construction (EPC) Contractor supplier pre-qualification and procurement processes.

The following ancillary components are also proposed as part the Project:

- Internal access tracks up to 60 kilometres in length (running track of up to 7.5 metre wide including required erosion and sediment controls either side) within the wind farm and solar farm components.
- Underground cabling for wind turbine reticulation within the site connecting to the wind farm substation (approximately 65 kilometres).
- Underground DC and AC cabling for the solar farm and BESS connecting into inverters and transformers.
- Overhead 220kV connection from both the wind and solar farm substation, and BESS to the existing Bulgana substation (up to 600 metres in length pending final location of the substations within the project site boundary and details of the Western Renewables Link Project).
- An on-site substation (up to 12,000 square metres) for the wind farm and solar farm, and BESS respectively.
- An operational and maintenance facility (up to 6,720 square metres) for each project component, including warehouse facilities for the wind farm and solar components (respectively).
- Construction compound areas (per project component).
- Wind turbine hardstand and lay down areas (up to 6,000 square metres per turbine).
- Other temporary infrastructure including car parking, site buildings and amenities (per project component).
- A 100-metre-high temporary meteorological mast (located to the southwest of the project site).
- Temporary solar irradiance monitoring equipment (e.g., pyranometer) for the solar farm development.
- Onsite borrow pits to source construction material where possible (however, if there is a shortfall in quantity or quality requirements, offsite materials will be sourced).

**Key construction activities:**

Construction of the Project is anticipated to commence in the third quarter of 2024. Construction of the Project is anticipated to be undertaken in stages, with the wind farm, solar farm, and BESS components potentially separately commercialised and progressed to construction. As a hybrid component, the construction of the solar farm is reliant on the construction of the wind farm and

will require the wind farm construction to progress as Stage 1 to a multi-stage build. The construction of the wind farm component is anticipated to be completed over a 27-month period.

It is anticipated that scopes will not be undertaken as discrete elements, with overlapping timeframes adopted where practicable.

### Wind Farm

The following key construction activities will be undertaken for the wind farm:

- Site preparation: The preparation of the wind farm site including creating site entry and access points, removal of vegetation (where required and approved), biosecurity control, site grading, cultural clearance, erection of ecological (e.g., Tree Protection Zones (TPZs)) and cultural/historical heritage exclusion areas (where these apply)).
- Borrow pits: Temporary borrow pits will be created on-site, to provide approximately 400,000 cubic metres of sub-base material for the construction of roads, hardstand areas and other infrastructure depending on the quality of material. Borrow pit activities will be subject to a work authority under the *Mineral Resources (Sustainable Development) Act 1990* issued by Earth Resources Regulation in Victoria. See **Section 10** for further details on Project approvals.
- Site access: Access roads and public intersection upgrades. Construction of internal access tracks (running track of up to 7.5 metres wide including required erosion and sediment controls either side). The access tracks are constructed to accommodate the extreme loading of haulage vehicles. Typical cross section of access track is 200 millimetres stabilised subgrade below natural surface, up to 200 millimetres compacted subbase and 100 millimetres base course crushed rock. Culverts and other drainage features will be constructed to manage stormwater flows and prevent erosion damage during the project construction and operation.
- Turbine Crane Hardstand: Construction of suitable surfaces to support loading of primary and assist cranes, laydown area for turbine blades, and erection area for the primary erection crane boom. Primary crane hardstands will be indicatively 60 metres by 40 metres, with additional areas established for assist cranes, temporary tower section and blade storage (ahead of installation) either side of the crane hardstands. Patches of hardstand extending approximately 150 metres along the edge of the access track will be established to support the assembly of the primary erection crane which is transported in pieces and re-established at each hardstand.
- Foundations: Excavation of turbine foundations and the installation of steel reinforcement for the foundation (ahead of concrete pours). Turbine foundation area is approximately 400 square metres, predominantly below the natural surface. Up to 800 cubic metres of concrete is required per foundation.
- Temporary ancillary infrastructure: Establishment of the concrete batching plant and construction of temporary site buildings and construction compounds.
- Permanent ancillary infrastructure: Construction of the onsite substation, switchgear building, operation and maintenance office and warehouse. The building construction will involve the excavation and pouring of building foundations and concrete pads at the substation.
- Electrical works: Excavation of cable trenches, laying bedding materials, cables and engineered backfill, and replacement of topsoil. Installation of overhead powerline infrastructure, e.g., towers for the 220kV line to the grid connection point.
- Transportation: Delivery of infrastructure and materials including (but not limited to) turbine components, transformers construction equipment, concrete batching materials.
- Installation: Construction of towers, turbines components (nacelle, hub, and blades).

- Commissioning: Testing of all electrical and mechanical components of the wind farm.
- Finishing: Removal of temporary structures, progressive rehabilitation and stabilisation of the parts of the wind farm site not required for operations, and landscaping.

### **Solar Farm**

The following key construction activities will be undertaken for the solar farm:

- Site preparation: The preparation of the solar farm site included creating site entry and access points, removal of vegetation (where required and approved), site grading, biosecurity control, cultural clearance, erection of ecological (e.g., TPZs) and cultural/historical heritage exclusion areas (where these apply).
- Borrow pit: Borrow pits utilised to support the wind farm build is anticipated to also support the construction of the solar farm.
- Site access: It is anticipated that the road upgrades for the wind farm will benefit the solar farm. Access to the solar farm will be constructed as required, beyond the extent of access constructed for the wind farm. Capped access tracks will be constructed through the solar farm area, with up to 7.5-metre-wide running width adopted including required erosion and sediment controls either side. Smaller access tracks for light vehicles will also be constructed through the array and around the perimeter.
- Security fence: A security fence will be erected around the extent of the solar site. The fence is anticipated to be mesh/chain wire with strands of barbed wire around the top.
- Transportation: Delivery of infrastructure and materials including (but not limited to) PV panels, inverters, posts, and torque tubes.
- Structures: Installation of posts, torque tubes, and panels within the solar farm array area.
- Temporary ancillary infrastructure: Establishment of temporary site buildings and construction compounds.
- Permanent ancillary infrastructure: Construction of the operation and maintenance office and warehouse. The construction of the substation is anticipated as part of the build of the wind farm.
- Electrical works: Excavation of cable trenches, laying bedding materials, cables and engineered backfill, and replacement of topsoil. Construction of connection arrangement to the wind farm switchgear building within the substation area.
- Commissioning: Testing of all electrical and mechanical components of the solar farm.
- Finishing: Removal of temporary structures, progressive rehabilitation and stabilisation of the parts of the solar farm site not required for operations, and landscaping.

## **BESS**

The following key construction activities will be undertaken for the BESS:

- Site preparation: The preparation of the BESS site included creating site entry and access points, removal of vegetation (where required and approved), site grading, biosecurity control, cultural clearance, erection of ecological (e.g., TPZs) and cultural heritage exclusion areas (where these apply).
- Borrow pit: Borrow pits utilised to support the wind farm build is anticipated to also support the construction of the BESS.
- Site access: It is anticipated that the road upgrades for the wind farm will benefit the BESS. Access to the BESS will be constructed as required, beyond the extent of access constructed for the wind farm.
- Civil works: Establishment of a hardstand area for the construction of the BESS and supporting operational infrastructure.
- Security fence: A security fence will be erected around the extent of the BESS site. Indicatively this is anticipated to be a mesh/chain wire with strands of barbed wire around the top.
- Transportation: Delivery of infrastructure and materials including (but not limited to) shipping containers, batteries, and inverters.
- Structures: Installation of BESS components, including the mounting of shipping containers, and installation of batteries and supporting electrical infrastructure.
- Temporary ancillary infrastructure: Establishment of temporary site buildings and construction compounds (as required).
- Permanent ancillary infrastructure: Construction of the site operation & maintenance I building and substation.
- Electrical works: Excavation of cable trenches, laying bedding materials, cables and engineered backfill, and reinstatement of the hardstand area within the BESS area. Construction of connection arrangement either to the wind farm or Bulgana Terminal Station.
- Commissioning: Testing of all electrical and mechanical components of the BESS.
- Finishing: Removal of temporary structures, progressive rehabilitation and stabilisation of the parts of the BESS site not required for operations, and landscaping (if required).

It is estimated that construction of the Project will require the following peak employee numbers per component:

- Wind Farm: Up to 240 employees
- Solar Farm: Up to 80 employees
- BESS: Up to 40 employees

**Key operational activities:**

The operational life of each of the component parts of the Project is 30 years, and it is anticipated that approximately five to 10 FTE staff will be required for each project component of the Project operation and maintenance activities.

Key operation activities across the Project will collectively involve the following:

- Maintenance and in-person / remote monitoring of the Project's permanent infrastructure
- Undertaking ongoing maintenance of relevant facilities on-site, predominantly associated with scheduled maintenance events or the ad hoc repair and replacement of equipment, structural components, access tracks, buildings and plant, control systems, connections, and cabling.
- Undertaking relevant administrative tasks.
- Vegetation maintenance activities and biosecurity (weed spraying).
- Ongoing environmental monitoring for the Project in accordance with the relevant approval conditions.

**Key decommissioning activities (if applicable):**

At the end of its operational life, the Project will either extend its operational period or decommission the Project. Where the operational life is extended, the process of re-powering will necessarily include any relevant planning approval processes and the upgrading of project infrastructure, facilities, and equipment.

Key decommissioning activities will include:

- Removal of all above-ground infrastructure (turbines, solar PV, fencing, BESS, buildings and infrastructure). Where practicable, and in accordance with relevant planning provisions, the warehouses, access tracks, and laydown areas established to support the Project may be retained by the landowner(s) where value to agricultural activities remains.
- Removal of concrete foundations to a certain point (indicatively 1,000 millimetres depending on the location and the foundation type) to allow the safe recommencement of agricultural activities. Removal of, overhead transmission line infrastructure.
- Where underground cabling cannot be salvaged without causing further environmental or soil impacts, cabling will be left in-situ and cut off to a minimum threshold below the ground surface.
- Removal of any residual components (if present).
- Rehabilitation of areas affected by the decommissioning process in accordance with relevant planning permit and land agreement requirements.

The Project will comply with any relevant requirements for decommissioning as stipulated under any planning approval or subsequent permit or licence that may be required. The decommissioning process will be undertaken in accordance with best practice methods available at the time of decommissioning. The decommissioning process will focus on the principles of repurpose, reuse, and recycling.

**Is the project an element or stage in a larger project?**

No  Yes If yes, please describe: the overall project strategy for delivery of all stages and components; the concept design for the overall project; and the intended scheduling of the design and development of project stages).

The Project is not part of an element or stage in a larger project; however, the wind farm and solar farm are intended to be staged components under one approval, with the BESS development anticipated to potentially be independent. Therefore, delivery of these project components may occur at different times. As discussed with DELWP Environment and Planning team at our pre-referral meeting in March 2022, the proposed approach to include all Project

elements in the one EES referral was supported, whilst acknowledging that RES may decide to submit separate planning permit applications for each component.

**Is the project related to any other past, current or mooted proposals in the region?**

No  Yes If yes, please identify related proposals.

**What is the estimated capital expenditure for development of the project?**

The approximate capital expenditure for the Project is \$580 Million.

#### 4. Project alternatives

**Brief description of key alternatives considered to date** (eg. locational, scale or design alternatives. If relevant, attach A4/A3 plans):

RES' approach to avoid or minimise potential impacts associated with renewable energy development starts from the initial identification of potential development sites. RES has a dedicated in-house 'New Sites' team who are focussed on identifying suitable development areas based on specific criteria and the use of proprietary software to aid this process. Once a suitable area is identified, RES will narrow the search based on a detailed Phase 1 assessment process. This Phase 1 process is supported by in-house and external technical specialists.

RES considers that the location selected represents a good balance of grid availability, wind and solar resource availability, and reduced potential environmental impacts relative to comparable sites. The collective layout and positioning of the components forming the collective Project, presented within this EES referral represents an iterative development process with each version of the layout building on the continuation of analysis and data capture within the project site. A design workshop between RES and the technical teams including biodiversity and hydrology was undertaken in March 2022 and subsequent significant layout amendments have been adopted by the Project to avoid further native vegetation, threatened species habitat and areas prone to flooding.

As founding signatories to the Clean Energy Council's 'Best Practice Charter', RES is committed to avoiding or minimising impact to areas of environmental and cultural heritage value, seeks to maximise ongoing agricultural use of the land (supporting true co-existence), and avoid potential impacts to the surrounding area and local community (as far as practicable). Flexibility to micro-site turbines and infrastructure during detailed design (post approval) will be sought as part of the planning approval to support the final layout achieving the best balance of impact to engineering and safety considerations.

**Brief description of key alternatives to be further investigated** (if known):

Further development of the Project design will continue as impact assessments are finalised, in particular to note - the completion of the Cultural Heritage Management Plan (CHMP) is ongoing and due for completion in late 2022, however it is not anticipated that this will greatly alter the Project.

As AusNet continue to develop their Western Renewables Link Project any implications to the Project layout will be reviewed to align the grid connection.

#### 5. Proposed exclusions

**Statement of reasons for the proposed exclusion of any ancillary activities or further project stages from the scope of the project for assessment:**

No ancillary activities or further Project stages are proposed to be excluded. The Project presented within this EES referral represents the entire proposed development.

**6. Project implementation**

<b>Implementing organisation</b> (ultimately responsible for project, i.e., not contractor):	
RES Australia Pty Ltd	
<b>Implementation timeframe:</b>	
The current proposed timeline for the construction, commissioning and operation of the Project is provided below. This timeline is subject to change and dependant on the timing and outcomes of the approvals processes (including referral outcomes).	
June 2023	Secure all planning and environmental approvals
June 2024	Construction period (27-month duration)
July 2026	Commence commissioning
January 2027	Commence operation (minimum 30 years, with the potential for re-deployment)
<b>Proposed staging</b> (if applicable):	
<ul style="list-style-type: none"> <li>The wind farm and solar farm will represent separate stages, with the wind farm representing Stage 1 and the solar farm (if progressed) representing Stage 2 under the same planning permit. Independent conditions and operational terms will be sought for each stage recognising the EPC contractor is anticipated to be different for each component, the two elements are likely to be commercialised separately, and the construction timeframes are likely to differ.</li> <li>Per above, BESS facility, if owned and operated separately to the wind farm and solar farm, it will likely be constructed independently and will be sought under a standalone planning permit.</li> </ul>	

**7. Description of proposed site or area of investigation**

<p><b>Has a preferred site for the project been selected?</b></p> <p><input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If no, please describe area for investigation. If yes, please describe the preferred site in the next items (if practicable).</p>
<p><b>General description of preferred site</b>, (including aspects such as topography/landform, soil types/degradation, drainage/ waterways, native/exotic vegetation cover, physical features, built structures, road frontages; attach ground-level photographs of site, as well as A4/A3 aerial/satellite image(s) and/or map(s) of site &amp; surrounds, showing project footprint):</p> <p>The project site is largely defined by Stawell Avoca Road and the Wimmera River to the north, the Wimmera Downs Road and the Wimmera River to the east, Joel South Road and Landsborough Road to the south, and Wyndarra Road to the west.</p> <p>The project site is located on the foot slopes, terraces and rises of the Wimmera River valley. It's a deeply weathered landscape of undulating low hills and rises of sedimentary (Ordovician and Tertiary) origin rising above the alluvial (Quaternary) sediments in the drainage depressions and higher terrace. The terrain is generally flat to moderately undulating with a number of defined hillocks rising to between 20 to 50 metres above the underlying terrain.</p> <p>The regional landscape character surrounding the project site is defined by the floodplain of the Wimmera River. The corridor forms a broad low-lying landscape approximately 30 kilometres wide. Across the low-lying riverine flood plain are several local ridgelines associated with the eastern escarpment of the Great Dividing Range. Topographic features such as the Pyrenees to the east, the Black Range to the south and Concongella Hill to the west punctuate the regional landscape forming defined landforms that contrast the uniform topography of the floodplain.</p> <p>Throughout the locality surrounding the project site, the visual character is defined by open paddocks used for grazing and cropping with belts of mature eucalypt vegetation and isolated</p>

trees. Views extend across the agricultural land and undulating local landforms to distant features such as the Concongella Hills and other landforms in the regional landscape.

The proposed wind farm turbines are generally positioned away from the flattest areas but have also been sited to avoid the steepest land. The proposed solar panels and BESS are located on relatively low relief land, being supportive to the respective technologies. Texture contrast or duplex soil are dominant and tend to be yellow, brown or grey Sodosols (with often sodic sub soils) and sometimes Chromosols. The soils in the alluvial drainage depression or creek line areas tend to have sandier surface soils (dark grey/brown) overlying medium to heavy mottled grey clays. The higher terrace alluvial soils are predominately loamy sands overlying yellow medium to heavy clays.

The project site sits within a relatively small catchment that is bounded to the west by Concongella Creek (approximately 10 kilometres to the west) and the Wimmera River (adjacent to the eastern boundary of the project site). Both the Six Mile Creek and Seven Mile Creek and a number of smaller tributaries run through the project site. Surface flows are suitable for stock and domestic water supply. Farm businesses rely primarily on catchment dams. Surface water resources can be limited when dry seasons prevail or during drought conditions. During these times many farmers rely on groundwater for livestock water.

Various parts of the project site intersect with an area of cultural heritage sensitivity due to the presence of several registered cultural heritage places and named waterways as defined in the *Aboriginal Heritage Regulations 2007* (refer **Appendix A – Figure 5** (Areas of Cultural Heritage Sensitivity)). The Barenji Gadjin Land Council Aboriginal Corporation are the Registered Aboriginal Party (RAP) within the region pursuant to the *Aboriginal Heritage Act 2006*.

Much of the project site is highly modified due to extensive historically clearing, ongoing agricultural practices and is dominated by crops (i.e., wheat, canola, barley) or pasture supporting non-indigenous grasses and weeds. In 2011, the area of vegetation removed since European settlement within the bioregion was estimated to be 1,671,024 hectares (83.1 percent) (VEAC 2011). Additional species (often Australian natives not indigenous to the region) have also been planted along shelterbelts and parcel boundaries. A total of 137.131 hectares of native vegetation was recorded within the biodiversity assessment area, representing seven Ecological Vegetation Classes (EVCs). The biodiversity assessment area adopted for the Ecological Assessment (**Appendix C**) included the proposed Project infrastructure impact footprint, plus a 100 metre buffer around each turbine, a 25 metre buffer along each side of all tracks and reticulation, and a 50 metre buffer around all other infrastructure. Where present, native vegetation, is predominantly present via numerous stands of trees scattered throughout paddocks, within roadside reserves and along creek lines and property boundaries.

Typical farming infrastructure present on the project site includes:

- Sheds for livestock, shearing and hay bales
- Fencing for both internal and external boundaries
- Other farm sheds
- Catchment dams, bores, and water troughs for water supply
- Farm tracks and gateways

An existing 220kV transmission line transects the project site from the south-east to the north-west and connects into the Bulgana Terminal Station.

Refer **Appendix B** for photographs and images of the project site and **Appendix A – Figure 4** (Project Site Existing Conditions) for existing conditions of the project site.

**Wind farm site area** (if known): 5,100 hectares of which, approximately 2 percent of the land area will be utilised by infrastructure

**Solar farm site area** (if known): 170 hectares

**BESS site area** (if known): 12 hectares

**Route length** (for linear infrastructure) ..... (km) **and width** ..... (m)



- 220kV overhead transmission line to connect into Bulgana Terminal Station, up to 600 metres in length (depending on the final location of substations within the project site boundary) and 40 metres wide
- Internal access tracks up to 60 kilometres in length and up to 7.5 metres wide including required erosion and sediment controls either side

**Current land use and development:**

The project site is currently used for dryland mixed farming, predominantly sheep for wool and meat (estimated to be 30 percent wool and 70 percent prime lamb) and cropping; mostly cereals for grain and hay. Some cattle grazing and cropping growing oil seeds, vetch and pasture seed also occurs.

The Victorian Land Use Information System indicates that the project site and surrounding land is all classified as 'mixed farming and grazing'.

The Bulgana Terminal Station operated by AusNet is located within the project site boundary in the south-east of the site with a 220kV overhead transmission line extending south-east to north-west across the project site.

**Description of local setting** (e.g., adjoining land uses, road access, infrastructure, proximity to residences & urban centres):

The local setting surrounding the project site is characterised by agricultural land uses associated with mixed farming grazing. The nearest urban centre is Stawell, approximately 16 kilometres south-west of the project site, whilst Ararat lies approximately 30 kilometres south of the project site. Several small agricultural communities lie in proximity to the project site including: Concongella approximately 6 kilometres to the south-west, Joel Joel approximately 8 kilometres to the east, Greens Creek approximately 6 kilometres to the north and Landsborough approximately 15 kilometres east.

There is a number of public land sites located within close proximity of the project site including:

- Joel Joel Nature Conservation Reserve is located adjacent to the south of the project site.
- Seven Mile Creek Streamside Reserve and Gravel Reserve is located within the centre of the project site however, not included within the project site boundary.
- Watta Wella I18 Bushland Reserve is located to the west of the project site.
- Greens Creek Streamside Reserve and Vinelea Bushland Reserve is located to the north of the project site.

Concongella Hill is located to the west of the project site and is at an altitude of approximately 410 metres above sea level, relative to the project site which generally lies between 220 metres to 240 metres above sea level.

There is a network of local roads throughout the project site that are primarily used by local residents and landholders of the nearby properties. Road access to the project site will be from Vineyard Road (to the west of the project site), Vances Crossing Road (to the south-east of the project site), Potter Road (north of the project site) or Landsborough Road which traverses through the south-eastern corner of the project site (refer **Appendix A – Figure 1b** (Project Location)). It is assumed that the primary haulage access to the project site will be from the east via Joel Joel Road, following a similar route used in the construction of many other wind farms nearby (Crowlands and Bulgana).

The area within and immediately surrounding the project site is lightly populated. Most nearby dwellings are clustered to the western side of the project with a few more properties spread around the perimeter. Many of these properties belong to landowners who are hosting WTGs or infrastructure on their land.

Distance to Nearest Turbine	Associated Landowners	Non-Associated Landowners
<2000 metres	5	12
2001 – 3000 metres	2	13
3001 – 5000 metres	3	26
>5000 metres	0	2

**Planning context** (e.g., strategic planning, zoning & overlays, management plans):

The project site is located within the municipal boundary of the Northern Grampians Shire Council and is therefore subject to the provisions of the Northern Grampians Planning Scheme (the Planning Scheme). The Planning Scheme sets out the relevant planning policies that a responsible authority must consider when administering the use and development of land.

**Municipal Planning Strategy**

The Planning Scheme contains the Municipal Planning Strategy at **Clause 02**, which sets out the vision, strategic directions, and strategic framework plan for the municipality. It is divided into four parts, of which all are relevant to the Project:

- **Clause 02.01** Context
- **Clause 02.02** Vision
- **Clause 02.03** Strategic Directions
- **Clause 02.04** Strategic Framework Plan

**Planning Policy Framework**

The Planning Policy Framework (PPF) is the policy content of the Planning Scheme and is presented in a three-tier integrated policy structure as follows:

- **Statewide (S):** Policies of state significance that apply in all planning schemes in Victoria
- **Regional (R):** Policies of state significance that apply to allied planning schemes based on geographic and thematic policy groupings
- **Local (L):** Policies of local significance that apply in an individual local planning scheme.

The PPF clauses that are most relevant to the Project are detailed below:

- **Clause 11.01-1R** Settlement – Wimmera Southern Mallee
- **Clause 11.03-6S** Regional and local places
- **Clause 12.01-1S** Protection of biodiversity
- **Clause 12.01-2S** Native vegetation management
- **Clause 12.03-1S** River corridors, waterways, lakes, and wetlands
- **Clause 12.05-2S** Landscapes
- **Clause 13.02-1S** Bushfire planning
- **Clause 13.03-1S** Floodplain management
- **Clause 13.03-1L** Floodplain management – Northern Grampians
- **Clause 13.04-2S** Erosion and landslip
- **Clause 13.05-1S** Noise abatement
- **Clause 13.07-1S** Land use compatibility
- **Clause 14.01-1S** Protection of agricultural land
- **Clause 14.02-1S** Catchment planning and management
- **Clause 15.02-1S** Energy and resource efficiency
- **Clause 15.03-1S** Heritage conservation
- **Clause 15.03-2S** Aboriginal cultural heritage
- **Clause 19.01-2S** Renewable energy
- **Clause 19.01-2R** Renewable energy – Wimmera Southern Mallee

**Land Use Terms**

In accordance with **Clause 73.03** (Land Use Terms) of the Planning Scheme, the Project components are defined as follows.

- A wind farm and solar farm can be categorised as a *renewable energy facility*, which is defined as:

*'land used to generate energy using resources that can be rapidly replaced by an ongoing natural process. Renewable energy resources include the sun, wind, the ocean, water flows, organic matter and the earth's heat.*

*It includes any building or other structure or thing use in or in connection with the generation of energy by a renewable resource'.*

The *renewable energy facility* land use term includes other terms, which are relevant to the wind farm and solar farm components of the Project individually and can be categorised as follows:

- The wind farm component of the Project is classified as a *wind energy facility*, which is defined as *'land used to generate electricity by wind force. It includes land used for:*
  - a) *Any turbine, building or other structure or thing used in or in connection with the generation of electricity by wind force*
  - b) *An anemometer.*  
*It does not include turbines principally used to supply electricity for domestic or rural use of the land.'*
- The solar farm component of the Project is classified as a *solar energy facility*, which is defined as *'land used to generate electricity from solar energy using ground-mounted photovoltaic and thermal technology, where the primary role is to export power to the electricity network'.*

- A battery energy storage system is classified as a *utility installation*, which is defined as:

*'land used:*

- a) *for telecommunications;*
- b) *to transmit or distribute gas, oil or power;*
- c) *to collect, treat, transmit, store, or distribute water; or*
- d) *to collect, treat, or dispose of storm or flood water, sewage, or sullage.*

*It includes any associated flow measurement device or a structure to gauge waterway flow.'*

## **Planning Zones**

The project site is located in the Farming Zone (FZ) and the Public Conservation and Resource Zone (PCRZ) under the Planning Scheme, as shown on **Appendix A – Figure 6** (Zones).

- Farming Zone

Pursuant to **Clause 35.07** of the Planning Scheme, the use of the land for a *wind energy facility*, *solar energy facility* and *utility installation* in the FZ is classified as a Section 2 use, which requires a permit. A permit is required to construct or carry out buildings and works associated with a Section 2 use of this clause.

Additionally, Schedule 1 to **Clause 35.07** requires a planning permit for earthworks which change the rate of flow or the discharge point of water across a property boundary and/or earthworks which increase the discharge of saline groundwater. Depending on the final project site layout and construction methodology, this may also trigger the requirement for a planning permit.

- Public Conservation and Resource Zone

Pursuant to **Clause 36.03** of the Planning Scheme, the use of the land for a *wind energy facility* and a *solar energy facility* in the PCRZ is classified as a Section 2 use, which requires a permit. The use of land for a *utility installation* is considered a Section 1 use

where a permit is not required. However, the use must be conducted by or on behalf of a public land manager or Parks Victoria or the Great Ocean Road Coast and Parks Authority under the relevant provisions of several Acts or be specified in an Incorporated plan in a schedule to this zone. If the Project cannot meet these conditions, the use for a *utility installation* is prohibited. It is noted there is currently no Project infrastructure located within the PCRZ.

### Planning Overlays

The project site is affected by the Land Subject to Inundation Overlay (LSIO), Floodway Overlay (FO), Bushfire Management Overlay (BMO), Environmental Significance Overlay (ESO) and Specific Controls Overlay (SCO), as shown on **Appendix A – Figure 7a** (Flood Overlays), **Appendix A – Figure 7b** (Bushfire and Environmental Overlays) and **Appendix A – Figure 7c** (Specific Controls Overlay).

- Land Subject to Inundation Overlay  
Pursuant to **Clause 44.04** of the Planning Scheme, a permit is required to construct a building or construct or carry out works within the LSIO. Therefore, the Project will require a planning permit should buildings and works occur within the LSIO.
- Floodway Overlay  
Pursuant to **Clause 44.03** of the Planning Scheme, a permit is required to construct a building or construct or carry out works within the FO. Therefore, the Project will require a planning permit should buildings and works occur within the FO.
- Bushfire Management Overlay  
Pursuant to **Clause 44.06** of the Planning Scheme, a permit is required to construct a building or construct or carry out works associated with the land uses specified under Clause 44.06-2. Renewable energy facilities are not listed under this clause and as such, a permit is not required for buildings and works under the BMO.
- Environmental Significance Overlay  
Pursuant to **Clause 42.01** of the Planning Scheme, a permit is required to construct a building or to construct or carry out works within the ESO. Therefore, the Project will require a planning permit should buildings and works occur within the ESO. Schedule 1 to Clause 42.01 specifies a permit is not required for the removal, lopping or destruction of non-native vegetation, nor for buildings and works if the slope of the land where the buildings and works are to be carried out is less than 10%.
- Specific Controls Overlay

Pursuant to the Schedule to **Clause 45.12** of the Planning Scheme, the notation on the Planning Scheme map relevant to the project site is SCO2 relates to the *East Grampians Rural Pipeline Project Incorporated Document, December 2022*. As the Project is not being undertaken as part of works subject to this project, the controls outlined in the Incorporated Document do not apply and the Project is still subject to the permit requirements of the applicable zoning and overlay provisions. It is noted there is currently no Project infrastructure located within the SCO2.

### Particular Provisions

The following particular provisions apply to the Project:

- Clause 52.17 – Native vegetation  
This clause seeks to ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation, by applying the three-step approach in accordance with the native vegetation guidelines (avoidance of impact, minimisation of impacts, and provision of offsets). This clause requires a planning permit to remove, destroy or lop native vegetation, including dead native vegetation.
- Clause 52.32 – Wind Energy Facility  
This clause seeks to facilitate the establishment and expansion of wind energy facilities, in appropriate locations, with minimal impact on the amenity of the area. **Clause 52.32-2**

stipulates a permit is required to use and develop land for a wind energy facility. Therefore, a planning permit will be required for the use and development of the wind farm within the project site.

**Clause 52.32-2** also stipulates the use and development of land for a wind energy facility is prohibited on land where any turbine (measured from the centre of the tower at ground level) that forms part of the facility is located within one kilometre of an existing dwelling. Should a turbine be located within one kilometre of a dwelling, the application must meet the requirements of **Clause 52.32-3**, which requires the following to accompany the planning permit application:

- 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.

Pursuant to **Clause 52.32-4**, a planning permit for the use and development of land for a wind energy facility must be accompanied by information relating to site and context analysis, design response and a mandatory noise assessment. The planning permit application will also be required to consider the *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria* (DELWP, 2021).

**Clause 53.13 Renewable Energy Facility (other than Wind Energy Facility)** – This clause seeks to facilitate the establishment and expansion of renewable energy facilities, in appropriate locations, with minimal impact on the amenity of the area. **Clause 53.13-1** applies to an application under any provisions of this planning scheme to use or develop land for a renewable energy facility (other than a wind energy facility). Therefore, a planning permit will be required for the use and development of the solar farm within the project site.

Pursuant to **Clause 53.13-2**, a planning permit for the use and development of land for a renewable energy facility (other than wind energy facility) must be accompanied by information relating to a site and context analysis and a design response. The planning permit application will also be required to consider the *Solar Energy Facilities Design and Development Guideline* (DELWP, 2019).

### Operational Provisions

In accordance with **Clause 72.01-1** (Minister is Responsible Authority) the Minister for Planning is the responsible authority for the use and development of land for a:

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

**Local government area(s):** Northern Grampians Shire

## 8. Existing environment

### Overview of key environmental assets/sensitivities in project area and vicinity

(cf. general description of project site/study area under section 7):

The project site is located in the upper catchment of the Wimmera River and comprises predominantly agricultural land (cropping and grazing), with scattered dams, sheds and dwellings present. Key environmental assets and sensitivities located within the project site include:

- Native Vegetation, and Flora and Fauna (refer **Section 12** for further information)

- Aboriginal and historic heritage (refer **Section 15** for further information)
- Hydrology (refer **Section 13** for further information)

#### Native vegetation

The project site intersects both the Goldfields and Wimmera bioregions. It has been highly modified due to agricultural practices and is dominated by crops or pasture supporting non-indigenous grasses and weeds. Additional species have also been planted along shelterbelts and parcel boundaries.

Native vegetation recorded within the project site is representative of seven EVCs. Native vegetation present on the project site is predominantly located within road reserves, along creek lines and property boundaries and numerous stands of trees scattered throughout paddocks.

Six nationally listed ecological communities and one State significant ecological community are predicted to occur within 10 kilometres of the project site. Ecological assessments determined five of the six nationally listed communities as being absent from the project site however, some patches of Low Rises Grassy Woodland EVC, Box Ironbark Forest EVC and Plains Woodland EVC meet the thresholds that define the Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of Southeastern Australia (GBGW) ecological community and as such, are considered present.

The one State significant community, the Victorian Temperate Woodland Bird Community is considered present within the project site.

#### Flora

The Victorian Biodiversity Atlas (VBA) contains records of three nationally significant flora species and 21 state-significant flora species previously recorded within 10 kilometres of the study area. The Commonwealth Protected Matters Search Tool (PMST) nominated an additional 18 nationally significant species which have not been previously recorded but have the potential to occur in the locality. Of the 21 nationally significant flora species that have previously been recorded, or are predicted to occur within the locality, the Tawny Spider-Orchid and River Swamp Wallaby-grass have the highest likelihood of occurrence within the project site.

Recent targeted surveys recorded no Tawny Spider-orchids and given the condition of potential habitats present, it is considered highly unlikely that a population of Tawny Spider-orchid is present within the project site.

Initial targeted surveys undertaken in 2020 recorded River Swamp Wallaby-grass however, since then additional surveys have been undertaken and mature seeds were collected, which identified the presence of multiple *Amphibromus species* however, none of the seeds collected were able to be confirmed as River Swamp Wallaby-grass. A polygon has been provided showing the location of *Amphibromus species* although it is unknown how many individuals of River Swamp Wallaby-grass are present.

Two State significant flora species; Buloke *Allocasuarina luehmannii* and Hairy Tails *Ptilotis erebescens* were recorded within the project site during the field surveys.

#### Fauna

The VBA contains records of three nationally significant fauna species and 15 state significant fauna species previously recorded within 10 km of the study area. The Commonwealth PMST nominated an additional 14 nationally significant species which have not been previously recorded but have the potential to occur in the locality. Of the 17 nationally significant fauna species that have previously been recorded, or are predicted to occur within the locality, the Golden Sun Moth and Swift Parrot have the highest likelihood of occurrence within the project site.

Systematic surveys identified approximately 164 hectares of Golden Sun Moth habitat in five discrete areas within the project site. There was no swift parrot observed during targeted surveys however, the project site is identified to support suitable foraging habitat for the species.

Three State significant fauna: Hardhead *Aythya australis*, Speckled Warbler *Chthonicola sagittate* and Hooded Robin *Melanodryas cucullata cucullata* were recorded during bird utilisation surveys.

#### Aboriginal and Historic Heritage

Various parts of the project site intersect with an area of cultural heritage sensitivity due to the presence of several registered cultural heritage places and named waterways as defined in the *Aboriginal Heritage Regulations 2007* (refer **Appendix A – Figure 5** (Areas of Cultural Heritage Sensitivity)). The project site contains 24 previously registered Aboriginal cultural heritage places and an additional seven places within very close proximity to the project site. Seven Mile Creek and the Wimmera River extend through the project site with all land within 200 metres of a waterway considered an area of cultural heritage sensitivity. The Barenji Gadjin Land Council Aboriginal Corporation are the Registered Aboriginal Party (RAP) within the region pursuant to the *Aboriginal Heritage Act 2006*. There are no Native Title Claims intersecting with the project site.

There are no registered historical heritage places within the project site. A study undertaken in 2021 recorded one historic place of local historic significance. The place was described to include a chimney base, scatter of handmade bricks, fragmented historic artefacts (e.g., ceramics), exotic trees and a dilapidated cart. A site card was submitted to Heritage Victoria and has been added to the Victorian Heritage Inventory (Heritage Inventory (HI) Number H7423-0085).

#### Hydrology

The project site is located within a relatively small catchment that is bound by Concongella Creek approximately 10 kilometres to the west and the Wimmera River directly to the east. The terrain is generally flat to moderately undulating with a number of defined hillocks rising to between 20 to 50 metres above the underlying terrain. Both the Six- and Seven-Mile creeks, and a number of smaller tributaries run through the project site. Most creeks within the project site are ephemeral however seasonal flooding does occur in this locality and has been a consideration in the Project layout to avoid areas of inundation where possible.

## 9. Land availability and control

### Is the proposal on, or partly on, Crown land?

No  Yes If yes, please provide details.

### Current land tenure (provide plan, if practicable):

The land required for the Project is private freehold land, comprising 13 landholdings.

### Intended land tenure (tenure over or access to project land):

The private freehold land required for the Project will be leased from the landholders through commercial land leases and agreements with individual landowners for the operational life of the Project.

**Other interests in affected land** (eg. easements, native title claims):

The project site is not subject to any Native Title claims. A CHMP is being prepared in full consultation and participation with the Registered Aboriginal Party with responsibility for the project site, the Barenji Gadjin Land Council Aboriginal Corporation (BGLCAC), pursuant to the *Aboriginal Heritage Act 2006* and *Aboriginal Heritage Regulations 2018*.

An existing 220kV electricity transmission easement is located on land within the project site, operated by Ausnet Services, running north-west to south-east across the site from/to the Bulgana terminal station which lies to the southeast.

The Project will connect into the Bulgana Terminal Station, located at the south-eastern end of the project boundary. The existing 220kV line is heavily constrained and the project is reliant on the completion of the Western Renewables Link Project to unlock additional capacity for renewable energy generation. As part of the Western Renewables Link Project, Ausnet is building an additional 220kV line between Bulgana and Ballarat as well as infrastructure to assist the connection of the Project into the terminal station.

**10. Required approvals****State and Commonwealth approvals required for project components** (if known):**Commonwealth**

The Project is being referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for a decision as to whether it is a 'controlled action' requiring formal assessment and approval under the EPBC Act. The EPBC Act referral is taking place in parallel to this EES referral.

**State**

Planning approval will be required in accordance with the *Planning and Environment Act 1978* (P&E Act) to allow for the use and development of land for a *wind energy facility, solar energy facility* and *utility installation* (BESS) under the Northern Grampians Planning Scheme in accordance with the P&E Act.

The following approval will be required under the *Aboriginal Heritage Act 2006*:

- An approved CHMP is required for planning determination

The following approval will be required under the *Mineral Resources (Sustainable Development) Act 1990* (MRSD Act) should an onsite quarry be established:

- An approved Work Authority for establishment of the onsite quarry/borrow pit, being an extractive activity

Should an EES be required for the Project, a planning permit will not be required for any on-site borrow pits pursuant to Section 77T of the MRSD Act, which states that a permit is not required if an EES has been prepared for the proposed extractive activities and the work authority has been granted by the Minister for Resources following their consideration of the Minister's Assessment of the EES. Should an EES not be required, planning approval will be sought for on-site borrow pits under the P&E Act.

To obtain a work authority, a work plan must be prepared for the proposed borrow pits under Section 77G of the MRSD Act which includes a rehabilitation plan and a community consultation plan. This work plan requires statutory endorsement by Earth Resources Regulation (ERR), Victoria's regulator of quarrying activities, in consultation with relevant agencies before any quarrying can commence.



The Project may also require the following approvals:

- Permit pursuant to the *Flora and Fauna Guarantee Act 1988* (FFG Act) for removal of flora species on public land
- Authorisation pursuant to the *Wildlife Act 1988* for taking of wildlife
- Permit pursuant to the *Water Act 1989* for works on or within 20 metres of a designated waterway
- Consents under the *Road Management Act 2004* for any works associated with new access to public roads.

The requirements of other acts, including approvals, which may be applicable to the project include, but are not limited to the following:

- *Civil Aviation Act 1988*
- *Electrical Industry Act 2000*
- *Electrical Safety Act 1988*
- *Environmental Protection Act 2017*
- *Heritage Act 2017*.

**Have any applications for approval been lodged?**

No  Yes If yes, please provide details.

**Approval agency consultation** (agencies with whom the proposal has been discussed):

Consultation has been undertaken to date with the following agencies:

- Department of Environment, Land, Water and Planning (Victoria) – Planning and Environment Impact Assessment Unit
- Barenji Gadjin Land Council Aboriginal Corporation
- Department of Agriculture, Water and the Environment (Commonwealth) – EPBC Act referral
- VicRoads

**Other agencies consulted:**

- Northern Grampians Shire Council
- Ausnet Services
- Australian Energy Market Operator
- Regional Roads Victoria
- Airservices Australia
- Civil Aviation Safety Authority (CASA)
- Wimmera Catchment Management Authority
- Various MPs (Briefing Letters)

## PART 2 POTENTIAL ENVIRONMENTAL EFFECTS

### 11. Potentially significant environmental effects

**Overview of potentially significant environmental effects** (identify key potential effects and comment on their significance and likelihood, as well as key uncertainties):

A number of environmental assessments have been completed to identify and determine potential impacts as a result of the construction and operation of the Project.

Environmental assessments completed to date and included as part of this referral are:

- Ecological Assessment, prepared by Ecology and Heritage Partners (EHP) (2022) (**Appendix C**)
- Hydrology and Flood Assessment, prepared by Afflux Consulting (2022) (**Appendix D**)
- Landscape Character and Probable Visual Effect Assessment, prepared by Wax Design (2022) (**Appendix E**)
- Aviation Impact Assessment and Solar Glare Report, prepared by Aviation Projects (2022) (**Appendix F**)
- Environmental Noise Assessment, prepared by Marshall Day (2022) (**Appendix G**)
- Background Noise Monitoring Assessment, prepared by Marshall Day (2022) (**Appendix H**)
- Historic Heritage Assessment, prepared by Tardis (2022) (**Appendix I**)
- EMI Assessment, prepared by DNV (2022) (**Appendix J**)
- Shadow Flicker Assessment, prepared by DNV (2022) (**Appendix K**)
- Agricultural Impact Assessment, prepared by RMCG (2022) (**Appendix L**)
- Stakeholder Engagement and Communications Plan, prepared by RES (**Appendix M**)
- Cultural Heritage Summary of Status letter, prepared by Tardis (**Appendix N**)

The main anticipated and potential effects from the Project are described below.

- **Native vegetation and threatened flora and fauna**

The Ecological Assessment (EHP 2022) involved desktop assessments and an ecological field program undertaken over the period from July 2019 to February 2022.

Native vegetation and flora

Vegetation and flora surveys undertaken within the defined assessment area (see definition in Section 12) recorded a total of 137.131 hectares of native vegetation, representing seven Ecological Vegetation Classes (EVCs). Where present, native vegetation is predominantly present in numerous stands of trees scattered throughout paddocks, within roadside reserves and along creek lines and property boundaries.

The current site layout will result in the removal of 5.45 hectares of native vegetation patches and 34 large trees in patches. An additional 37 scattered trees (30 large trees and seven small trees) are also proposed to be removed. The EVCs and potential effects are listed in **Table 2** of Section 12.

During field surveys, the nationally significant River Swamp Wallaby-grass was recorded, as well as the Grey Box Grassy Woodland nationally significant ecological community. The Victorian Temperate Woodland Bird Community is also present throughout the defined assessment area. Despite Tawny Spider-orchid being restricted to approximately four sites near Ararat and Stawell in Victoria, targeted surveys did not record this species within the assessment area. Two State significant flora species; Buloke *Allocasuarina luehmannii* and Hairy Tails *Ptilotis erebescens* were recorded within the study area during the field surveys.

The Project has undergone multiple design refinements to avoid and minimise effects to the native vegetation and listed flora species by re-siting Project infrastructure, whilst also

ensuring other impacts such as noise and shadow flicker, etc were not exacerbated. Through this process, impacts have been reduced from 9.51 hectares, including 62 large trees in patches, and 83 scattered trees (74 large and nine small) to the current impacts outlined above. It is noted further minimisations is likely to be achieved through the refinement of buffers surrounding infrastructure, and further re-siting of Project infrastructure away from areas of ecological value.

The native vegetation and targeted flora survey areas are shown in **Appendix C – Figure 3a** and **Figure 3b**. **Appendix C – Figure 2a to 2n** illustrates where the EVCs, ecological communities and flora species are impacted by the proposed Project infrastructure.

### Fauna

Following a review of online databases for EPBC Act and FFG Act listed species occurring in the region (up to 10 kilometres from the project site boundary), 32 listed species under the EPBC Act and/or FFG Act have been recorded or have suitable habitat modelled.

Of the 17 nationally significant fauna species that have previously been recorded, or are predicted to occur within the locality, the Golden Sun Moth and Swift Parrot have the highest likelihood of occurrence within the project site.

The outcomes of the targeted surveys identified:

- 164.53 hectares of Golden Sun Moth habitat in five discrete areas within the assessment area. Of this, approximately 9.75 hectares are proposed to be impacted.
- No Swift Parrots were observed however, a total of nine sites were considered to support potential foraging habitat for the species. These sites were assessed, and, due to their small size or discrete nature, and distance from other larger areas of suitable habitat, it is considered that these would likely be used on an occasional basis only and would not be relied upon for foraging purposes given the presence of higher quality, larger habitat present within the locality.
- Three State significant fauna: Hardhead *Aythya australis*, Speckled Warbler *Chthonicola sagittate* and Hooded Robin *Melanodryas cucullata cucullata* were recorded during bird utilisation surveys.
- No DNA from Growling Grass Frog or Platypus were detected in any of the samples analysed from 13 waterbodies.
- No significant bats were recorded.
- Based on the Level 1 Brolga Assessment there is no requirement for a Level 2 Assessment.

Details about the presence of, and effects to, native fauna species is provided in Section 12 of this referral. Details on all listed species and likelihood of occurrence are provided in the Ecological Assessment (**Appendix C – Table A3.1.3**).

- **Noise**

The Environmental Noise Assessment, prepared by Marshall Day (**Appendix G**) undertook an assessment of operational noise for the Project and in accordance with the New Zealand Standard 6808:2010 Acoustics – *Wind farm noise* (NZS 6808), as required by the Victorian Government's *Development of Wind Energy Facilities in Victoria – Policy and Planning Guidelines* dated March 2019 and current Victorian guidance detailed in EPA Publication 1411 *Noise from Industry in Regional Victoria* (NIRV) dated 2011.

Noise modelling was undertaken for the wind farm component, which demonstrated the Project is predicted to achieve compliance with the applicable noise limits determined in accordance with the abovementioned standard. The nearest WTG to a dwelling is approximately one kilometre for an associated, and 1.5 kilometres for an un-associated dwelling.

The assessment also considered the cumulative impacts from nearby existing wind farms. The only wind farm in close proximity to the project site is the operational Bulgana

Green Power Hub, located to the south of the Project. It was demonstrated that cumulative wind farms noise levels do not affect the compliance outcomes for either of the projects. The operational noise of the BESS facility and substation was included in the Environmental Noise Assessment and concluded noise levels will be lower than the recommended levels determined in the accordance with NIRV.

A noise assessment is currently under preparation for the solar farm component of the Project.

- **Landscape and Visual**

The Landscape Character and Probable Visual Effect Assessment, prepared by Wax Design (2022) identified that the Project is located within a well-vegetated agricultural landscape that extends across the Wimmera River floodplain.

The assessment identified that the degree of visual change as a result of the wind turbines within the visually contained agricultural landscape varies from substantial to the north and northeast through to moderate in the south and southwest, and slight throughout the regional locality at distances greater than 10 kilometres.

At distances exceeding 10 to 15 kilometres, local ridgelines and tree belts screen the visual effects of the Project. It concluded, the compact layout of the wind turbines in combination with the topography and vegetation reduces the visual effect significantly over fifteen kilometres and is described as slight to negligible.

The solar farm, substations, transmission lines and associated infrastructure are anticipated to provide localised visual impacts within their immediate site localities however, local ridgelines and existing vegetation will reduce the visual effects.

The cumulative visual effects are mitigated by the local topography and existing vegetation. The cumulative visual effect of the existing and proposed wind farms is experienced as defined clusters of wind turbines fragmented by the landscape character of the regional locality.

The assessment noted whilst the visual effect is likely to be moderate to substantial, decreasing to slight, within the subregional and regional areas, the containment of the visual impact can be attributed to the visual character of the landscape coupled with the uniformity of the agricultural character. As such, the assessment concluded the Project can be accommodated without significantly altering the underlying landscape and visual character.

A Residential Visual Assessment is currently being prepared to assess the visual effects of the Project on residential properties and support the planning permit applications for the Project.

- **Aboriginal Cultural Heritage**

Aboriginal cultural heritage is being managed through the preparation of a CHMP (CHMP 17482) under the *Aboriginal Heritage Act 2006* and *Aboriginal Heritage Regulations 2018*. The CHMP is being prepared by Tardis Archaeology, in consultation with the Registered Aboriginal Party for the project site, the Barenji Gadjin Land Council Aboriginal Corporation (BGLCAC).

Investigations to date include a desktop assessment (undertaken in 2020) and standard assessment field surveys (completed in 2021). The desktop assessment identified previously registered Aboriginal places in the project site, formulated a site prediction model and identified areas of archaeological potential. The standard assessment recorded surface stone artefacts in several locations in the project site and previously registered Aboriginal places potentially impacted by the Project were inspected. A complex assessment comprising archaeological subsurface testing has commenced and is ongoing. Refer **Appendix N** for a letter, prepared by Tardis Archaeology providing details on the cultural investigations being undertaken for the Project.

Of the remaining assessments completed, it is anticipated these effects will not be significant. These effects are described below:

- **Aviation and Solar Glare**

Aviation Impact Assessment and Solar Glare Report, prepared by Aviation Projects (**Appendix F**) concluded there to be no major effects as a result of the wind farm component of the Project including (but not limited to) impacts to any nearby designated air routes, nearby airstrips, impact on prescribed airspace and will not result in a glare hazard to aircraft. Based on the proposed configuration of the solar farm component of the Project, there is no 'green' glare (low potential to cause an after image) or 'yellow' glare (potential to cause temporary after image) for aircraft operating within the area or for nearby dwellings and along proximal local roads.

- **Hydrology**

A Hydrology and Flood Assessment was undertaken by Afflux (**Appendix D**) who considered the operational effects of the Project on the volume and flow of surface water within the local catchment. The project site lies within the Wimmera Catchment Management Authority (Wimmera CMA) area and the catchment is dominated by flows along the Wimmera River which intersects the northeast of the project site, whilst Six Mile Creek and Seven Mile Creek flow through the project site.

A project specific TUFLOW catchment model was created for the project site to determine peak flows and areas of inundation (depths and velocity) during a 1% AEP (annual exceedance probability) flood event (1 in 100-year event). The 1% AEP flood discharge for the site was estimated using the *Australian Rainfall and Runoff, 2019* processes and included a Rainfall on Grid methodology for the local catchment. A 10% AEP and 39.35% AEP were also modelled and reported based on road and culvert design requirements, and wind farm and solar farm design standards respectively, to help inform the design and location of Project infrastructure (including freeboard) but is not required for planning purposes.

Initial flood modelling for the 1% AEP has enabled further refinement of the infrastructure layout for the Project to avoid and minimise interference with flood water flow and storage capacity to limit effects from the Project.

Further assessment is being undertaken to determine potential afflux to nearby properties and potential flood impacts to the solar farm which may result in minor design changes. Landowner agreements will also likely be sought in relation to any afflux that may occur (as recommended by Wimmera CMA), although this is expected to be minimal based on the modelling to date.

- **Agriculture**

The Agricultural Impact Assessment, prepared by RMCG (**Appendix L**) identified that the Project is not located on agriculturally significant land with potential agricultural production losses to be small at both a regional and state-wide level. Disruption to farming activities during the construction phase was determined to be manageable and temporary.

- **Historic Heritage**

The Historic Heritage Assessment, prepared by Tardis (**Appendix I**) identified no registered historic places within the activity area however, there was potential for the Project to impact unknown historic heritage places. During the survey assessment, one historic place (Ruined House, Landsborough Road Joel Joel) was recorded outside of the infrastructure footprint. This historic place was assessed as having local historic significance, no social or aesthetic significance, low scientific significance and low archaeological potential. A site card was submitted to Heritage Victoria and the site has since been added to the Victorian Heritage Inventory (HI Number H7423-0085). The site will be fenced off during construction to ensure its preservation. The assessment

concluded from the background research and ground surface survey completed that no known historic heritage or archaeological deposits will be harmed by the Project.

- **Shadow Flicker**

The Shadow Flicker Assessment, prepared by DNV (**Appendix K**) identified four dwellings expected to experience some shadow flicker above a moderate level of intensity (three associated dwellings and one non-associated dwellings). When considering the likely shadow flicker reduction due to cloud cover and rotor orientation, the shadow flicker at three of the four dwellings is predicted to be below the recommended limit of 10 hours per year within 50 metres of the dwelling. One associated dwelling has predicted actual annual shadow flicker above 10 hours per year. Further engagement will be necessary with owners of all associated and non-associated landowners to assess the actual shadow flicker based on existing vegetation, house/window orientation and nearby obstructions. Turbines may be re-sited to reduce shadow flicker or vegetative screening provided to mitigate impacts. Agreements will also be established with landowners where shadow flicker is expected.

A non-reflective finish will be applied to the wind turbine blades; therefore, blade glint is not expected to be an issue for the Project.

- **Electromagnetic Interference (EMI)**

The EMI Assessment, prepared by DNV (**Appendix J**) concluded no wind turbines are located within the exclusion zones for the two fixed point-to-point links passing over the Project boundaries. One turbine originally was located close to the exclusion zone, or the link operated by Optus Mobile, who requested the turbine was relocated 50 metres away from the link path. This design change has been adopted by RES. Potential EMI impacts are considered to be minor, however it identified there might be a risk of cumulative EMI-related impacts as a result of the number of wind farm developments in the area. Additional consultation is to be undertaken with service providers to determine the potential for the Project to cause interference to some services. Consultation is ongoing with multiple stakeholders.

- **Transport and access**

A preliminary transport route assessment was prepared for the Project. It acknowledged the transport of materials and equipment associated with the solar farm component of the Project will not require any oversize or overmass vehicles and as such, the assessment focused on the larger non-standard vehicle configurations required to transport the oversize / overmass wind turbine components.

The assessment determined the feasibility of transporting the wind turbine components by road from port facilities in either the Portland or Geelong to the project site. The preliminary swept path analysis indicated that for each of the proposed transport routes there were a number of pinch points and conflict areas (including rail crossings) through which the nominated vehicle configurations would have to traverse.

The preliminary assessment concluded it is considered both the Port of Portland and the Port of Geelong are considered feasible transport routes subject to resolving the potential conflicts with the relevant stakeholders and conducting the identified works and implementing appropriate mitigation measures where required.

A Traffic Impact Assessment and Route Assessment are currently under preparation to support the approvals of the Project.

## 12. Native vegetation, flora and fauna

**Native vegetation**

**Is any native vegetation likely to be cleared or otherwise affected by the project?**

NYD  No  Yes If yes, answer the following questions and attach details.

**What investigation of native vegetation in the project area has been done? (briefly describe)**

An Ecological Assessment has been undertaken by EHP (provided in **Attachment C**) to identify the ecological values present within the project site. For the purpose of the native vegetation assessment, the ‘assessment area’ refers to the proposed Project impact footprint with a 100-metre buffer around each turbine, a 25-metre buffer along each side of all tracks and reticulation, and a 50-metre buffer around all other infrastructure (including the solar farm infrastructure and BESS facility).

The Ecological Assessment involved desktop assessments and an ecological field program undertaken over the period from July 2019 to February 2022. The field assessment sought to assess the extent and condition of native vegetation communities and potential flora and fauna habitat present.

Habitat hectare and large tree field assessments were undertaken from 5 to 9 October 2020, 23 to 25 June 2021 and 18 to 21 October 2021. Native vegetation, scattered trees, and large trees within 50 metres of each iteration of the infrastructure design disturbance areas were assessed to ensure that all indirect impacts of the project footprint alignments could be fully assessed.

The assessment was conducted by ecologists accredited by DELWP in the habitat hectare methodology to quantify the condition and extent of native vegetation values within the assessment area. Native vegetation in the local area was also investigated to assist in determining the pre-European vegetation within the project site.

A total of 137.131 hectares of native vegetation was recorded within the assessment area, representing seven EVCs. Where present, native vegetation is predominantly present in numerous stands of trees scattered throughout paddocks, within roadside reserves and along creek lines and property boundaries. Table 1 (below) provides an overview of the EVCs present.

**Table 1 EVCs mapped within the infrastructure footprint**

<b>EVC</b>	<b>Conservation Status</b>	<b>Extent (ha)</b>	<b>Large trees in patches</b>
Alluvial Terraces Herb-rich Woodland (EVC 67)	Endangered	3.699	19
Box Ironbark Forest (EVC 61)	Depleted	9.844	38
Creepline Grassy Woodland (EVC 68)	Endangered	16.670	81
Grassy Woodland (EVC 175_61)	Vulnerable	70.689	292
Heathy Woodland (EVC 48)	Depleted	17.556	79
Plains Grassy Wetland (EVC 125)	Endangered	0.083	0
Plains Woodland (EVC 803)	Endangered	18.590	114
<b>Total</b>		<b>137.131</b>	<b>619</b>

**What is the maximum area of native vegetation that may need to be cleared?**

NYD Estimated area:

The proposed infrastructure footprint for the Project would result in the removal of 5.45 hectares of native vegetation patches and 34 large trees in patches. An additional 37 scattered trees (30 large and 7 small) are also proposed to be removed.

**How much of this clearing would be authorised under a Forest Management Plan or Fire Protection Plan?**

N/A ..... approx. percent (if applicable)

**Which Ecological Vegetation Classes may be affected? (if not authorised as above)**

NYD  Preliminary/detailed assessment completed. If assessed, please list.

The EVCs that would be affected by the project are identified in Table 2, along with the conservation status of each and the area (ha) proposed to be removed.

**Table 2 EVCs affected by the project**

<b>EVC</b>	<b>Conservation Status</b>	<b>Area to be removed (patches of native vegetation)</b>
Alluvial Terraces Herb-rich Woodland (EVC 67)	Endangered	0.1186
Creekline Grassy Woodland (EVC 68)	Endangered	0.4476
Low Rises Grassy Woodland (EVC 175_61)	Vulnerable	3.0858
Heathy Woodland (EVC 48)	Depleted	1.0398
Plains Grassy Wetland (EVC 125)	Endangered	0.0147
Plains Woodland (EVC 803)	Endangered	0.7471
<b>Total</b>		<b>5.4536</b>

The extent of native vegetation proposed to be removed is shown in **Appendix C – Figure 2a to 2n**.

**Have potential vegetation offsets been identified as yet?**

NYD  Yes If yes, please briefly describe.

**Other information/comments?** (e.g. accuracy of information)

Avoidance and minimisation of impacts to native vegetation has been a priority for the Project and through multiple design iterations the Project infrastructure has been repositioned to avoid major groups of trees or high value native vegetation where possible. Use of existing roads, farm tracks and open fields away from tree lines/clusters has been prioritised.

Through the design iteration process, impacts have been reduced from 9.51 hectares, including 62 large trees in patches, and 83 scattered trees (74 large and nine small) to the current impacts outlined above. It is noted further minimisations is likely to be achieved through the refinement of infrastructure buffers, and micro-siting of Project infrastructure away from areas of ecological value.

NYD = not yet determined

**Flora and fauna**

**What investigations of flora and fauna in the project area have been done?**

(provide overview here and attach details of method and results of any surveys for the project & describe their accuracy)

An Ecological Assessment has been undertaken by EHP (provided in **Attachment C**) to determine the ecological values present within the project site, including the likelihood of significant flora and fauna species and/or ecological communities being present.

The Ecological Assessment involved desktop assessments and an ecological field program undertaken over the period from July 2019 to February 2022. The desktop assessment involved searches of relevant databases for species listed under the EPBC Act and the FFG Act, as well as a review of previous assessments undertaken for the project site. The field assessments sought primarily to assess the potential for flora and fauna habitat to be present, with particular consideration given to significant ecological communities and species of conservation concern, such as threatened and migratory species. The survey program was designed to optimise the survey timing, methods, and frequency to enable sampling of those flora and fauna species which occur seasonally.

Preliminary ecological investigations were undertaken for the Project by Emerge Associates in 2019 and 2020, including a range of targeted surveys. The findings of these investigations and



the desktop assessment informed the targeted surveys undertaken for the Ecological Assessment by EHP in 2020 to 2022 (EHP, 2022).

DELWP (Planning, Impact Assessment and Regional teams) and Department of Climate Change, Energy, the Environment and Water (DCCEEW) (formerly Department of Agriculture, Water and the Environment) were consulted with regarding the ecological survey program in 2020 and 2021. **Appendix C – Table 1** (Ecological Assessment) summarises stakeholder engagement undertaken to date in relation to the ecological investigations.

A summary of the field surveys undertaken is provided in Table 3.

**Table 3 Field survey summary**

Category	Survey dates
Targeted surveys for Tawny Spider-orchid	5 to 9 October 2020 18 to 21 October 2021
Targeted surveys for River Swamp Wallaby-grass	5 to 9 October 2020 19 October 2021 4 March 2022
Targeted flora surveys – other significant flora species	5 to 9 October 2020 23 to 25 June 2021 18 to 21 October 2021
Targeted Golden Sun Moth surveys	26 November 2020 11, 13 and 15 December 2020 2, 10, 17 and 20 December 2021
eDNA sampling for Platypus and Growling Grass Frog	18 to 21 October 2021
Bird Utilisation surveys	11 to 15 May 2020 23 to 27 November 2020 22 to 25 February 2021
Targeted Swift Parrot Habitat Assessment	11 to 15 May 2020 19 to 21 August 2020
Targets Bat surveys	9 April 2020 to 6 May 2020
Brolga Level 1 Assessment (roaming survey component)	22 to 26 June 2020

## Flora

Based on the findings of the desktop assessment, targeted surveys for the EPBC Act-listed Tawny Spider-orchid *Caladenia fulva* and River Swamp Wallaby-grass *Amphibromus fluitans* were undertaken.

Targeted surveys for Tawny Spider-orchid were undertaken by two botanists between five and 10 October 2020 in areas of potential habitat within the assessment area (i.e. undisturbed roadsides, creeklines, patches of vegetation with moderate to high quality understorey) at five metre intervals. Reliable line of sight was at least 2.5 metres either side of each surveyor to enable sufficient coverage of habitat between transects. Targeted surveys were also undertaken in additional areas of potential habitat between 18 to 21 October 2021 that were not surveyed in 2021.

Targeted surveys for River Swamp Wallaby-grass were undertaken by two botanists between 5 to 9 October 2020 within the assessment area in locations where the species has previously been recorded by Emerge Associates (2019) at five metre intervals. Reliable line of sight was at least 2.5 metres either side of each surveyor to enable sufficient coverage of habitat between transects. Additional surveys were undertaken on 19 October 2021 and 4 March 2022 for the species immediately to the west of Six Mile Creek, and north of the proposed BESS where the infrastructure footprint was located in close proximity to confirmed records of the species previously recorded by Emerge Associates (2020).

Several State significant species known to occur, or those considered to have a high likelihood of occurrence were surveyed for in areas of potential habitat concurrently with the habitat hectare assessments, including:

- Buloke *Allocasuarina luehmannii*
- Buloke Mistletoe *Amyema linophylla* subsp. *orientalis*
- Flax-lily *Dianella longifolia* var. *grandis*
- Broad-lip Diuris *Diuris X palochila*
- Golden Cowslips *Diuris behrii*
- Hairy Tails *Ptilotus erubescens*
- Grassland Bindweed *Convolvulus graminetinus*

## Fauna

Based on the findings of the desktop assessment, targeted surveys for the EPBC Act-listed Golden Sun Moth *Synemon plana* and Swift Parrot *Lathamus discolor* were undertaken.

Golden Sun Moth surveys were previously completed within several areas of potential habitat in the project site (Emerge Associates 2020). As such, additional targeted surveys focused on all areas of potential habitat for Golden Sun Moth previously identified, as well as additional areas of potential habitat identified during the habitat hectare assessments that are proposed to be directly impacted, or have the potential to be indirectly impacted by windfarm infrastructure. A total of four days of surveys were undertaken during 2020 in areas of potential habitat, with additional areas of potential habitat surveyed in 2021 following a change in the project design footprint.

To determine the extent of potential site utilisation of the project site by Swift Parrot, a series of assessments were undertaken over several months. This included Autumn bird utilisation survey during a period when the species was confirmed to be on mainland Australia, and a detailed habitat assessment and roaming survey. Roaming surveys focussed on areas supporting preferred habitat characteristics (i.e. woodlands supporting typical foraging species) including Yellow Gum, Grey Box, Red Ironbark and Mugga. Call playback was undertaken along slow moving vehicle transects in areas supporting potential habitats within the study area, as well as in areas within the broader locality where the species has previously been recorded. Active searching and call playback for 60 minutes at dusk (twice) and dawn (twice) were also undertaken within areas identified as supporting preferred habitat suitability.

The potential presence of habitat for several State significant fauna species that have previously been recorded within, or in close proximity to the project site, were also investigated during habitat hectare assessment and other field surveys, including:

- Platypus *Ornithorhynchus anatinus*
- Powerful Owl *Ninox strenua*
- Barking Owl *Ninox connivens*
- Squirrel Glider *Petaurus norfolcensis*

## Bird utilisation surveys

The bird utilisation surveys for the project were designed to comply with the guidelines described in *AusWEA – Wind Farms and Birds: Interim Standards for Risk Assessment* (2005). The total number of point counts was determined based on both the habitat conditions of the study area and the number of turbines proposed, in addition to any existing data that has already been collected. As agreed with DELWP at the pre-application meeting, a total of three bird utilisation survey events were conducted, as per Table 3, with nine fixed point count locations (seven within the project site, and two outside the project site boundary).

Further details on the methodology used for bird utilisation surveys is provided in the Ecological Assessment in **Attachment C**.

## Brolga

The *Interim Guidelines for the Assessment of Potential Windfarm Impacts on the Brolga* (DSE 2012) (Brolga guidelines) establish a stepped approach to determining the use of a proposed wind farm site by Brolga to assess the likely impact of the development on this species. As there is one confirmed record of Brolga from 2008 in the project site, with additional records

approximately two kilometres to the north-east, a Level 1 Assessment was required according to the Brolga guidelines. The Draft Brolga Assessment and Mitigation Standards for Wind Energy Facilities (DELWP, 2020) were also consulted for this assessment.

Level 1 assessments were undertaken utilising a combination of roaming Brolga surveys and database searches and consultation with local residents, and stakeholders. The roaming survey was undertaken between 22 to 26 June 2020 to visit locations within 20 kilometres of the project site where the species has previously been recorded, or sites that have the potential to support flocking or breeding habitat.

### Bat surveys

Bat surveys were undertaken in accordance with the *Survey guidelines for Australia's threatened bats* (Department of Environment, Water, Heritage and the Arts, 2010), however no significant bat species have previously been documented in the Victorian Biodiversity Atlas (VBA) within or in close proximity to the project site boundary. The purpose of the microbat survey was not to undertake targeted surveys for any specific species, but rather, to gain an understanding of the diversity of species that are likely to utilise habitat within and adjacent to the project site.

Nine Song Meter SM4 (Wildlife Acoustics™) sound recorders were deployed on 9 April 2020 and retrieved on 6 May 2020 (left out for 28 days). As one round of microbat surveys was previously completed by Emerge Associates in November – December 2019, Ecology and Heritage Partners undertook a second survey between 9 April and 6 May 2020. Bat detector locations were chosen based on geography and habitat type to capture a representative sample of the project site. Detectors were placed at a height of 1.4 metres. Data was then analysed by a recognised expert in bat call analysis to identify any bat calls collected.

### Have any threatened or migratory species or listed communities been recorded from the local area?

NYD  No  Yes If yes, please:

- List species/communities recorded in recent surveys and/or past observations.
- Indicate which of these have been recorded from the project site or nearby.

The following EPBC Act listed species and communities were recorded within the project site during field surveys:

- Golden Sun Moth
- River Swamp Wallaby-grass
- Grey Box (*Eucalyptus macrocarpa*) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia ecological community

The following FFG Act listed species and communities were recorded within the project site during field surveys:

- Golden Sun Moth
- Hardhead
- Hooded Robin
- Speckled Warbler
- Buloke
- Hairy Tails
- Victorian Temperate Woodland Bird Community ecological community.

Other listed species that have previously been recorded, or that have a high a likelihood of occurrence are also identified and discussed below.

### Flora

Databases searches identified 21 nationally significant species that have previously been recorded or are predicted to occur within the project's locality (within 10 kilometres of the project site). Of these, two species are considered to have a high likelihood of occurrence, as outlined in Table 4.

**Table 4 Nationally significant flora with a high likelihood of occurrence**

Species	Suitable habitat within the project site	Closest known records
<b>Tawny Spider-orchid</b>	Undisturbed woodland within the infrastructure footprint provide potential habitat for the nationally significant Tawny Spider-orchid. Surveys focussed on undisturbed roadsides, waterways and private land with an intact canopy present and evidence of an undisturbed ground layer.	Approximately 500 metres to the northwest within the Watta Wella 118 Bushland Reserve north near Natimuk.
<b>River Swamp Wallaby-grass</b>	Within swampy / wetland vegetation within the Infrastructure Footprint.	Previously recorded within the project site by Emerge Associates (2020)

*Tawny Spider-orchid*

Despite targeted surveys being undertaken in areas of potential habitat within the assessment area at an appropriate time of year when the species was known to be flowering, no Tawny Spider-orchids were recorded. Based on the results of the targeted surveys, the condition of potential habitats present, and the confirmed presence of the species flowering in the nearby reference site, it is considered highly unlikely that a population of Tawny Spider-orchid is present within the assessment area.

*River Swamp Wallaby-grass*

Initial targeted surveys for River Swamp Wallaby-grass undertaken in October 2020 and October 2021 where the species had previously been recorded by Emerge Associates were not able to confirm the presence of the species due to the absence of flowering material or mature seeds.

Additional surveys for the species undertaken in March 2022 were able to collect mature seed and identified the presence of multiple *Amphibromus* species, however, none of the seed collected were able to be confirmed as River Swamp Wallaby-grass. Given the previously confirmed presence of the species in this location, it is considered highly likely that the species was present within the broader patch of *Amphibromus* spp. located in the survey area, as shown in **Appendix C – Figure 4 and Figure 5**.

Two State significant flora species; Buloke *Allocasuarina luehmannii* and Hairy Tails *Ptilotis erebescens* were recorded within the project site during the field survey.

**Fauna**

Databases searches identified 17 nationally significant species that have previously been recorded or are predicted to occur within the project's locality (within 10 kilometres of the project site). Of these, two species are considered to have a high likelihood of occurrence, as outlined in Table 5.

**Table 5 Nationally significant fauna with a high likelihood of occurrence**

Species	Suitable habitat within the project site	Closest known records
<b>Swift Parrot</b>	Box-Ironbark woodland within the project site and broader locality. Surveys focussed on woodlands that support preferred foraging habitat for the species with an intact canopy present.	Previous records from within Joel Joel Conservation Reserve.
<b>Golden Sun Moth</b>	Woodland/grassland with a ground layer comprising a cover of at least 20 percent Wallaby-grass	Previously recorded within the project site by Emerge Associates (2020)

*Golden Sun Moth*

Systematic surveys for Golden Sun Moth identified low numbers of the species in five discrete areas within, or immediately adjacent to the assessment area (**Appendix C – Figure 5**). The limited dispersal ability of the Golden Sun Moth means that these discrete areas of confirmed

habitat where separated by 200 metres or more are effectively isolated and should be considered as separate habitat area. Where Golden Sun Moth are present, moderate quality habitat in the form of scattered Wallaby-grass *Rytidosperma* spp., and Spear-grass *Austrostipa* spp., is present. In many cases, a secondary grassland is present where a cover of Wallaby-grass has regrown following past disturbance (i.e. ploughing/scalping). Based on the recorded presence of Golden Sun Moth, a total of 164.53 hectares of confirmed Golden Sun Moth habitat is present within the assessment area (**Appendix C – Figure 5**).

#### Swift Parrot

According to the VBA database, Swift Parrot *Lathamus discolor* was recently recorded immediately adjacent to the project site in Joel Joel Nature Conservation Reserve. Targeted searches for Swift Parrot were undertaken concurrently to the autumn bird utilisation surveys in May 2020, as well as the habitat assessment undertaken in August 2020 in order to coincide with the Swift Parrot over-wintering period on mainland Australia. No Swift Parrots were detected during either survey event in 2020. Despite this there is potential for the species to utilise habitat adjacent to the site, therefore the ecological report recommends that a 400-metre buffer is applied around the Joel Joel Nature Reserve (where possible) to exclude wind turbines.

Nine sites of potential Swift Parrot foraging habitat were identified within and surrounding the project site. Of these sites, Glynwylln State Forest, Joel Joel Nature Conservation Reserve and Deep Lead Nature Conservation Reserve are considered to support the highest quality foraging habitat, where these areas are likely to be regularly utilised for foraging purposes when the species is present within the broader locality, and the eucalypts are flowering.

Glynwylln State Forest is located approximately 7.9 kilometres north-west of the nearest WTG, and Deep Lead Nature Conservation Reserve is approximately 10.5 kilometres east of the nearest WTG. Therefore, continued use of these areas of foraging habitat by Swift Parrot is highly unlikely to be adversely impacted by the project.

The project site surrounds the Joel Joel Nature Reserve on three-sides to the west, north and east, with both wind farm and battery energy storage infrastructure located in adjacent land parcels. Where possible, a 400-metre buffer zone has been applied, however currently two WTGs are proposed within approximately 250 metres of the reserve to the west and south. The potential for further re-siting opportunities of these turbines will be considered post-referral.

Of the other nine sites assessed, while many supported mature eucalypts that would provide potential foraging habitat for Swift Parrot, due to their small size or discrete nature and distance from other areas of larger areas of suitable habitat, it is considered that these areas would likely be used on an occasional basis only. They would not be relied upon for foraging purposes given the presence of higher quality, larger areas present within the locality.

#### Other fauna

- Three State significant fauna: Hardhead *Aythya australis*, Speckled Warbler *Chthonicola sagittate* and Hooded Robin *Melanodryas cucullata cucullata* were recorded during bird utilisation surveys.
- **Powerful Owl and Barking Owl:** No evidence of Powerful Owl or Barking Owl roosting or breeding activity was found during surveys, but there is a moderate likelihood that Powerful Owl uses native vegetation within the project site for foraging and roosting activities, as there exists a high number of large hollow-bearing trees in the project site, and records exist in the Joel Joel Nature Conservation Reserve. Areas of the Barking Owls preferred foraging habitat within the project site is largely proposed to be retained, and given the lack of recent nearby records of Barking Owl, there is a low likelihood that Barking Owl uses native vegetation within the project site for foraging and roosting activities.
- **Squirrel Glider:** Squirrel Glider has previously been recorded in the project site, most recently in 1988. The project site contains suitable habitat for the species, particularly along roadsides and waterbodies. It is therefore considered there is a moderate likelihood of Squirrel Glider occupying the project site.

- **Growling Grass Frog:** No DNA from Growling Grass Frog were detected in any of the samples analysed from the 13 waterbodies. Sampling was undertaken during early Spring (October) within the known active breeding and calling season for the species. It is considered highly unlikely that an extant population of Growling Grass Frog is currently utilising waterbodies within the catchment for breeding purposes given the time of year sampling was undertaken.
- **Platypus:** No DNA from Platypus were detected in any of the samples analysed from the 13 waterbodies. Sampling was undertaken during early Spring (October) which is during a period when Platypus is known to be active (day and night). It is considered highly unlikely that an extant population of Platypus is currently utilising waterbodies within the catchment.
- **Brolga:** Database searches identified one confirmed record of Brolga from 2009 within the project site. However, the project site is located on the mid-northern extent of the Victorian distribution range, limiting the likelihood of Brolgas flying across the site when moving between areas of suitable habitat. A roaming survey was undertaken between 22 to 26 June 2020 to visit locations within 20 kilometres of the project site where the Brolga has previously been recorded, or sites that have the potential to support flocking or breeding habitat. The survey was undertaken during the known flocking season of the Brolga and is considered to be a high period of detectability for the species. All areas assessed for Brolga during the roaming survey were dry or near dry at the time of visit. No habitats within the project site or broader locality are considered to support moderate or high-quality breeding or flocking habitat for Brolga. No Brolga were observed during the surveys and as such, there is no requirement for a Level 2 Assessment.

#### Listed ecological communities

##### Grey Box (*Eucalyptus macrocarpa*) Grassy Woodlands and Derived Native Grasslands of Southeastern Australia - EPBC Act listed

Some patches of Low Rises Grassy Woodland EVC, Box Ironbark Forest EVC and Plains Woodland EVC meet the thresholds that define the *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of Southeastern Australia* (GBGW) ecological community. Several patches of these EVCs that are dominated by Grey Box were assessed against the condition thresholds that define the GBGW ecological community, and it was determined to be present. These habitat zones are generally located within or adjacent to the road reserve of Watta Wella Road, Porters Road, Vineyard Road, Landsborough Road and Vances Crossing Road. A total of 85.99 hectares of the GBGW ecological community is present within the assessment area. Of this, a total of 1.67 hectares is proposed to be impacted.

##### Temperate Woodland Bird Community - FFG Act listed

The Victorian Temperate Woodland Bird Community is defined by an assemblage of 24 bird species. The project site is located within the geographic region of the community, with suitable habitat present along roadside, watercourses, and the Joel Joel Nature Conservation Reserve. A total of 1.32 hectares of the Victorian Temperate Woodland Bird ecological community is proposed to be impacted out of a total of 48.23 hectares mapping in the assessment area.

Of the 24 birds that comprise the community, seven species were recorded within patches of native vegetation in the project site, with several additional woodland dependent birds listed in this threatened community likely to use this habitat. These bird species are listed in Table 6.

**Table 6 Bird species associated with Temperate Woodland Bird Community**

Common name	Scientific name	Conservation Status		Recorded in current survey
		EPBC	FFG	
Apostlebird	<i>Struthidea cinerea</i>		Vu	

Barking Owl	<i>Ninox connivens</i>		CE	
Back-chinned Honeyeater	<i>Melithripterus gularis gularis</i>			
Brown Treecreeper (south-eastern subspecies)	<i>Climacteris picumnus victoriae</i>			Yes
Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>			Yes
Bush Stone-curlew	<i>Burhinus grallarius</i>		CE	
Diamond Firetail	<i>Stagonopleura guttata</i>		Vu	
Fuscous Honeyeater	<i>Lichenostomus fuscus</i>			Yes
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>		Vu	
Ground Cuckoo-shrike	<i>Coracina maxima</i>		En	
Hooded Robin	<i>Melanodryas cucullata cucullata</i>		Vu	Yes
Jacky Winter	<i>Microeca fascinans</i>			Yes
Little Lorikeet	<i>Glossopsitta pusilla</i>			
Painted Button-quail	<i>Turnix varia</i>			
Painted Honeyeater	<i>Grantiella picta</i>		Vu	
Red-capped Robin	<i>Petroica goodenovii</i>			
Red-tailed Black-cockatoo	<i>Calyptorhynchus banksi</i>	En	En	
Speckled Warbler	<i>Chthonicola sagittata</i>		En	Yes
Superb Parrot	<i>Polytelis swainsonii</i>	Vu	En	
Swift Parrot	<i>Lathamus discolor</i>	En	CE	
Turquoise Parrot	<i>Neophema splendida</i>		Vu	
Regent Honeyeater	<i>Anthochaera phrygia</i>	En	CE	
Western Greygone	<i>Gerygone fusca</i>			
Yellow-tufted Honeyeater	<i>Lichenostomus melanops</i>			Yes

Note: CE = Critically Endangered, En = Endangered, Vu = Vulnerable

### Migratory species

The VBA database indicates that two migratory bird species (White-throated Needle-tail and Swift Parrot) have been recorded within the project locality, however, the project site would not be classed as 'important habitat' for migratory species as defined under the EPBC Act Policy Statement 1.1 Principal Significant Impact Guidelines. The proposed wind farm is not located between, or in close proximity to, either migratory bird feeding areas, or important, regularly used, feeding and roosting sites, hence the likelihood of migratory birds moving through the project site when moving between wetlands in the local area is low.

### If known, what threatening processes affecting these species or communities may be exacerbated by the project? (e.g. loss or fragmentation of habitats) Please describe briefly.

The following threatening processes as identified under the FFG Act, may be exacerbated by construction and operation of the Project:

- Habitat fragmentation as a threatening process for fauna in Victoria
- Increase in sediment input into Victorian rivers and streams due to human activities
- Invasion of native vegetation by 'environmental weeds'
- The spread of *Phytophthora cinnamomi* from infected sites into parks and reserves, including roadsides, under the control of a state or local government authority.
- Use of *Phytophthora*-infected gravel in construction of roads, bridges, and reservoirs.

The proposed infrastructure footprint for the Project would result in the removal of 5.45 hectares of native vegetation patches, which may result in fragmentation of habitat. On a broad landscape scale, there are several habitat features that provide connectivity to and from larger core areas of habitat such as Joel Joel Nature Conservation Reserve, Deep Lead Nature Conservation Reserve

Glynwylln State Forest, Watta Wella Bushland Reserve, St Arnaud-Pyrenees State Forest and Ararat Regional Park.

There are several habitat corridors to and from these areas of core habitat. Vegetated road reserves, particularly along Landsborough Road, Joel South Road, Vineyard Road and Stawell-Avooca Road provide good habitat corridors for a variety of woodland dependent species, including woodland birds, arboreal mammals, small ground-dwelling mammals and reptiles. These roadside reserves provide connectivity (via habitat corridors and stepping stones) with large areas of native bushland located within, as well as west, and north of the project site boundary. Scattered trees within paddocks throughout the project site act as 'stepping stones' as a means of connection for more mobile fauna, including birds, microbats and arboreal mammals. Identifying these areas of native vegetation that provide habitat corridors would be undertaken as detailed design of the project progresses, and will be avoided as far as practicable to minimise potential habitat fragmentation. Hollow-bearing trees would also be identified and avoided where practical through micro siting and detailed design of project infrastructure.

Construction of the Project may also result in increased sedimentation within drainage lines and creek lines. Locations where downstream sedimentation may impact on waterways will be identified, and best-practice construction management techniques, including sediment control measures, would be implemented across the project to minimise potential sediment input into nearby rivers and streams.

During construction, there is potential for vehicles travelling to and from site to spread *Phytophthora cinnamomi*, particularly into parks and reserves located within and adjacent to the project site. Industry standard measures and hygiene protocols such as wheel washing facilities for vehicles would be implemented during construction to avoid the spread of *Phytophthora cinnamomi*.

While it is not a threatening process identified under the FFG Act, the loss of some individual birds from collision with turbines may occur during operation of the Project.

Three bird utilisation surveys were conducted, including nine point count locations, to characterise bird use of the wind farm component of the project site. The majority of bird species observed (92 percent) during the point counts were either recorded on the ground or flying below the Rotor Swept Area (RSA). Just over two percent of bird species were in the RSA, consisting primarily of Wedge-tailed Eagle and Long-billed Corella. Wedge-tailed Eagles are likely to fly at and above RSA when foraging, while large parrots, including several recorded in the RSA during surveys such as Galah, Sulphur-crested Cockatoo and Long-billed Corella, tend to fly in the RSA as they move daily between roosts and feeding areas.

Generally, non-passerine birds such as raptors, wetland/waterbirds and parrots have flight characteristics that make them prone to collisions with wind turbines. These species are usually larger, less mobile, occur in flocks (particularly parrots) and forage in more open areas. Some minor changes in local distribution and abundance of these species may be expected as a result of the project's operation. Although these impacts are not expected to be significant and would be minimal in line with the stated AusWEA (2005), collision potential and post construction monitoring would be established to further assess the impact of the Project on bird species and populations.

**Are any threatened or migratory species, other species of conservation significance or listed communities potentially affected by the project?**

NYD  No  Yes If yes, please:

- List these species/communities:
- Indicate which species or communities could be subject to a major or extensive impact (including the loss of a genetically important population of a species listed or nominated for listing) Comment on likelihood of effects and associated uncertainties, if practicable.

Potential effects on threatened or migratory species, or threatened ecological communities are summarised below. Further detail is provided in the Ecological Assessment in **Attachment C**.

**Flora**



Removal of native vegetation would be required during construction of the Project, primarily associated with construction of the solar farm and widening of existing roads to facilitate access and egress. As part of these works, two specimens of FFG Act listed Buloke would be impacted. Potential impacts to River Swamp Wallaby-grass from construction works will be avoided through micro-siting of Project infrastructure. Impacts to threatened flora species is considered to be low, with implementation of a Construction Environmental Management Plan (CEMP) to ensure the protection of retained vegetation prior to, and during construction (including the application of TPZs during construction).

## **Fauna**

The Project is estimated to impact on 9.75 hectares of confirmed Golden Sun Moth habitat, based on the current Project design. However, the loss of vegetation as part of the Project would not result in the long-term loss of a significant proportion of the species' habitat (i.e., one to five percent) given the species occupies a large habitat range across much of the Victorian Volcanic Plain north and west of Melbourne.

Due to the minimal presence of Swift Parrot habitat in the project site, and the failure to detect the species during targeted surveys, a precautionary and broad scale approach to the management of Swift Parrot within the project site would reduce the risk to the species. The low number of species records within 10 kilometres of the project site means turbine collision with Swift Parrot is unlikely but cannot be ruled out. The risk of collision can be reduced by ensuring turbines are configured to provide a buffer between possible Swift Parrot feeding grounds (i.e., large or contiguous patches of remnant eucalypt forests) and active turbines in the project site. The current project infrastructure layout provides a clearance of approximately 225 metres between the nearest wind turbine and Joel Joel Conservation Reserve. Further opportunity to micro-site the wind turbines to maximise a turbine-free buffer distance around Joel Joel Nature Conservation Reserve to mitigate potential impacts to Swift Parrot will be explored as the project develops. Given the species' total population is low and in decline, any impacts to Swift Parrot through turbine collision could potentially represent a significant impact to the species. While turbines can be configured to reduce the risk of collision to the species, overall, there is a low to moderate risk to the species from turbine collision.

Although no evidence of Powerful Owl or Barking Owl roosting or breeding activity was found during surveys, there is a moderate likelihood that Powerful Owl uses native vegetation within the project site for foraging and roosting activities, as there exists a high number of large hollow-bearing trees in the project site. Removal of these hollow-bearing trees would result in indirect impacts on this species, however, construction of the Project would not result in the loss of a significant proportion of this species habitat. Areas of the Barking Owls preferred foraging habitat within the project site is largely proposed to be retained, and given the lack of recent nearby records of Barking Owl, there is a low likelihood that Barking Owl uses native vegetation within the project site for foraging and roosting activities. Powerful Owls and Barking Owls have a very low collision risk with wind turbines as they are a canopy foraging species that rarely ascend beyond canopy height during foraging activities. They also tend to avoid flying through open areas.

While there is a moderate likelihood of Squirrel Gliders occupying the project site, there is no risk of turbine collision as this species does not occupy the RSA. While there may be some Squirrel Glider habitat loss in the project site due to vegetation clearing, there is a low overall risk to the species as most critical habitat containing hollow-bearing trees will be retained.

Hardhead, Hooded Robin and Speckled Warbler were recorded during bird utilisation surveys, however based on their typical behaviour none are likely to fly in the RSA and therefore not likely to be impacted by the Project.

No habitats within the project site or broader locality are considered to support moderate or high-quality breeding or flocking habitat for Brolga, and no Brolga were observed during the surveys. The Brolga Guidelines (DSE 2012) recommend that a 3.2 kilometre and five kilometre radius turbine-free buffer from breeding sites and flock roost sites, respectively, will adequately meet the objectives set for these habitats. Given the lack of breeding or flocking habitat for Brolga, these

buffer distances would be achieved, and any potential impact to Brolga is considered to be low to negligible.

Some patches of Low Rises Grassy Woodland EVC, Box Ironbark Forest EVC and Plains Woodland EVC meet the thresholds that define the GBGW ecological community. Several patches of these EVCs that are dominated by Grey Box were assessed against the condition thresholds that define the GBGW ecological community, and it was determined to be present. These habitat zones are generally located within or adjacent to the road reserve of Watta Wella Road, Porters Road, Vineyard Road, Landsborough Road and Vances Crossing Road. A total of 85.99 hectares of the GBGW ecological community is present within the assessment area. Of this, a total of 1.67 hectares is proposed to be impacted.

### **Migratory species**

While it is possible that small numbers of migratory birds could fly over the project site during migration, it has been well documented that shorebirds typically fly between 0.5 and six kilometres in elevation during migration, which well above the tip of the proposed turbines. It is therefore considered that the likelihood of migratory bird mortality through turbine collision is low and that the proposed wind farm is unlikely to have a significant impact on any migratory species.

### **Is mitigation of potential effects on indigenous flora and fauna proposed?**

NYD  No  Yes If yes, please briefly describe.

The following mitigation measures have been recommended as part of the Ecological Assessment to mitigate potential impacts within the project site:

- Minimise impacts to native vegetation and habitats through construction management measures and micro-siting techniques, including fencing retained areas of native vegetation. If indeed necessary, trees should be lopped or trimmed rather than removed. Similarly, soil disturbance and sedimentation within wetlands should be avoided or kept to a minimum, to avoid, or minimise impacts to fauna habitats.
- All contractors should be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention. Native vegetation (areas of sensitivity) should be included as a mapping overlay on any construction plans.
- TPZs should be implemented to prevent indirect losses of native vegetation during construction activities (DSE 2011). A TPZ applies to a tree that is to be retained and protected from Project impact and is a specific area above and below the ground, with a radius of the Diameter at Breast Height (DBH) multiplied by 12. At a minimum standard a TPZ should consider the following:
  - A TPZ of trees should be a radius no less than two metres or greater than 15 metres;
  - Construction, related activities and encroachment (i.e., earthworks such as trenching that disturb the root zone) should be excluded from the TPZ;
  - Where encroachment is 10% or more of the total area of the TPZ, the tree should be considered as lost and offset accordingly (unless an arboricultural report specifies otherwise);
  - Directional drilling may be used for works within the TPZ without being considered encroachment. The directional bore should be at least 600 millimetres deep;
  - The above guidelines may be varied if a qualified arborist confirms the works will not significantly damage the tree (including stags / dead trees). In this case the tree would be retained, and no offset would be required; and
  - Where the minimum standard for a TPZ has not been met an offset may be required.
- Removal of any habitat trees or shrubs (particularly hollow-bearing trees or trees/shrubs with nests) should be undertaken between February and September to avoid the breeding season for most fauna species. If any habitat trees or shrubs are proposed to be removed, this should be undertaken under the supervision of an appropriately qualified zoologist to salvage and translocate any displaced fauna. A Fauna Management Plan may be required to guide the salvage and translocation process.

- Where possible, construction stockpiles, machinery, roads, and other infrastructure should be placed away from areas supporting native vegetation, Large Trees and/or wetlands.
- Ensure that best practice sedimentation and pollution control measures are undertaken at all times, in accordance with Environment Protection Authority guidelines to prevent offsite impacts to waterways and wetlands.
- As indigenous flora provides valuable habitat for indigenous fauna, it is recommended that any landscape planting that are undertaken as part of the proposed works are conducted using indigenous species sourced from a local provenance, rather than exotic deciduous trees and shrubs.

**Other information/comments?** (e.g. accuracy of information)

Additional ecological assessments will be undertaken in areas where the development footprint has been re-located outside of the assessment area to ensure all on-ground ecological values with the potential to be impacted are quantified. However, it is not anticipated to substantially alter the impacts concluded in the Ecological Assessment and specifically the assessment against the EES referral thresholds (**Appendix C**).

### 13. Water environments

**Will the project require significant volumes of fresh water (eg. > 1 GI/yr)?**

NYD  No  Yes If yes, indicate approximate volume and likely source.

A water supply is required for the 27 month construction period primarily for dust suppression, road construction and concrete production for infrastructure foundations. The water supply volume for the construction period is approximately 0.5 megalitre per day, equating to yields of approximately 5.8 L/s and total licensable take of 280 megalitre per year. Therefore, even under a conservative estimate the Project would not require significant volumes of fresh water and would be significantly less than 1 gigalitre per year.

Twelve sites have been identified within the project site that could be used as a water supply with a potential yield ranging between 1 megalitre and 9.6 megalitre, based on mean rainfall. There are over 100 existing farm dams within the project site that could potentially be utilised or transferred.

During the operational period, a small potable water supply is required for the operation and maintenance office and ablution facilities on the project site.

Water sources for the construction and operation of the Project will be confirmed during detailed design.

Operational water requirements for the wind farm will be very minimal, limited to a small potable water supply for the operation and maintenance office and ablution facilities on-site. It is anticipated that potable water will be supplied from off-site sources and stored on site in tanks, whilst wastewater will also be captured in tanks and then disposed of offsite.

The solar farm arrays are designed to be self-cleaning. The tracking movement of the panels allows rainwater to run off the panels and clean any dirt or particulate build up. In very rare instances, the solar panels may need to be cleaned if the output is considerably impacted by solar panel soiling.

**Will the project discharge waste water or runoff to water environments?**

NYD  No  Yes If yes, specify types of discharges and which environments.

There is potential for construction of the Project to generate small volumes of discharge wastewater and surface water runoff. Construction of the internal access track network and hardstands has the potential to generate runoff during rainfall events from the affected areas. It is anticipated relatively low volumes of waste water would be generated during construction, and would likely be retained for appropriate disposal offsite, or re-use onsite, subject to meeting water quality standards.

A CEMP would be prepared for the Project, including a Sediment, Erosion and Water Quality Management Plan which would utilise industry standard mitigation measures such as flow diversion banks and sediment basins to manage potential impacts from runoff. This would be developed in accordance with relevant EPA publications including, *Construction Techniques for Sediment Pollution Control* (EPA Publication 275) and *Civil Construction, Building and Demolition Guide* (EPA Publication 1834). The Wimmera CMA will also be consulted throughout the Project.

**Are any waterways, wetlands, estuaries or marine environments likely to be affected?**

NYD  No  Yes If yes, specify which water environments, answer the following questions and attach any relevant details.

The Wimmera River intersects with the north-eastern corner of the project site and borders part of the eastern boundary of the project site. Both the Six Mile Creek and Seven Mile Creek and a number of smaller tributaries run through the project site, as shown on **Figure 4**.

Several drainage lines and creek lines, as well as artificially constructed farm dams occur throughout the proposed impact footprint of the Project, providing habitat of varying quality for a range of waterbirds and frog species. Most of the farm dams are in very poor condition, with livestock having unrestricted access. The network of drainage lines and creek lines are spatially well connected.

Some access tracks and underground cabling are proposed to cross Six Mile Creek and Seven Mile Creek however the Project isn't anticipated to have a significant impact on these waterways. The most common method for reticulation crossing a waterway is via trenching. The ephemeral nature of the creeks and other tributaries means that works can occur during dry periods and impacts on waterways can be reduced. Access tracks across waterways are typically done with suitably sized and engineered culverts so flows are not disrupted.

The following table summarises the number of approximate waterway crossings expected for the Project.

Waterway	Reticulation	Access Track
Seven Mile Creek	3	1
Six Mile Creek	1	0
Other small tributary feeding into creeks	3	3

**Are any of these water environments likely to support threatened or migratory species?**

NYD  No  Yes If yes, specify which water environments.

During the assessments undertaken by Emerge Associates in 2020, most of the drainage lines and creek lines were dry and few refuge pools remained, while aquatic vegetation had deteriorated. However, when inundated and connected, the network of waterbodies is likely to provide dispersal opportunities for fauna, particularly frogs and fish that may be residing, refuging and/or breeding in the dams and creek lines throughout the proposed impact footprint of the Project. The Ecological Assessment (**Appendix E**) concluded it is unlikely that an extant population of Growling Grass Frog is currently utilising waterbodies within the catchment for breeding purposes. Therefore, it is unlikely these drainage lines and creek lines would support threatened fauna species.

Suitable habitat is present within the project site for River Swamp Wallaby-grass (listed as vulnerable under the EPBC Act) in swampy / wetland vegetation identified within the proposed impact footprint. The species was recorded within the project site by Emerge Associates in 2020 near Six Mile Creek. However, direct impacts to this species and its habitat would be avoided by micro siting of infrastructure around this area.

The Victorian Biodiversity Atlas (VBA) indicates that two migratory bird species have been recorded within the project locality (White-throated Needle-tail and Swift Parrot). The project site would not be classed as 'important habitat' for Migratory species as defined under the EPBC Act Policy Statement 1.1 Principal Significant Impact Guidelines (DoE 2013). The proposed wind farm is not located between, or in close proximity to, either migratory bird feeding areas, or important,

regularly used, feeding and roosting sites, hence the likelihood of migratory birds moving through the study area when moving between wetlands in the local area is low.

**Are any potentially affected wetlands listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'?**

NYD  No  Yes If yes, please specify.

An assessment of recent aerial photography (NearMap), and a review of the Directory of Important Wetlands database (Department of Agriculture, Water and the Environment, 2021) and Current Wetland layer (DELWP) determined that the local area within and around the project site is highly modified due to agricultural activity and no longer supports any important wetland habitat.

The nearest wetland of international importance is the Lake Albacutya Ramsar site, located approximately 150 kilometres upstream of the Project. The project would not impact any wetlands of international significance.

**Could the project affect streamflows?**

NYD  No  Yes If yes, briefly describe implications for streamflows.

A Hydrology and Flood Assessment has been undertaken for the Project by Afflux Consulting to assess the likely impacts of floodwaters and the siting of infrastructure items (**Appendix D**). Given the nature of the Project infrastructure it is not expected that there will be adverse impacts on the functioning of the floodplain and river system from a flood management perspective. Relative to the floodplain, the footprint of the Project infrastructure is negligible. The only project infrastructure proposed within and in direct interaction with a waterway will be access track or cable crossing points.

Waterway crossings will be required within the project site for both access tracks and cabling to enable Project operation. These will be assessed for impacts to water flow and quality and designed in accordance with industry standards. A Works on Waterway (WoW) permit will be sought from the Wimmera CMA for approval of these works prior to construction. Standard culvert designs for waterway crossings have been assumed in the Hydrology and Flood Assessment (**Appendix D**) to date which will be further developed for the WoW permit application.

Further assessment is being undertaken to determine potential afflux to nearby properties and flood impacts to the solar farm which may result in minor design changes. Landowner agreements will also likely be sought in relation to any afflux that may occur, although this is expected to be minimal based on the modelling to date.

**Could regional groundwater resources be affected by the project?**

NYD  No  Yes If yes, describe in what way.

Visualising Victoria's Groundwater data maps the depth to groundwater across the project site as ranging from 20 metres to less than five metres below ground level. Deeper groundwater (approximately 50 metres to 100 metres below the surface) is indicated in the southwest section of the project site. Groundwater depths are shown in **Appendix A – Figure 8**.

The Phase 1 Assessment completed for the Project identified the groundwater table is not expected to be encountered within typical excavation depths for shallow footings or services, although it is possible that perched water (a saturated zone which has been captured on a low permeability layer) may exist at some locations. However, clayey sand and sand lenses can result in excavation stability problems, particularly in areas where shallow groundwater could be encountered. Provision should be made for shoring or battering of any proposed excavations/trenches. Groundwater may be encountered during bored pile excavations, depending on the depth of the foundations and additional excavation support measures may be needed if such conditions are encountered.

As the Project's design progresses, further consideration will be given to designing the turbine foundations in regard to the depth of groundwater across the wind farm portion of the project site.

Subject to geotechnical assessments to be completed, the turbine foundations would likely consist of concrete foundations to a depth of approximately 3.5 to five metres.

**Could environmental values (beneficial uses) of water environments be affected?**

NYD  No  Yes If yes, identify waterways/water bodies and beneficial uses (as recognised by State Environment Protection Policies)

Based on data obtained from Visualising Victoria's Groundwater, groundwater salinity across the project site is measured between 3,500 and 7,000 mg/L (as total dissolved solids). This classifies water quality as Segment C for groundwater within the EPA Environment Reference Standard (ERS). Environmental values (previously known as beneficial uses) associated with Segment C include:

- Water dependent ecosystems
- Potable mineral water supply
- Agriculture and irrigation (stock watering)
- Industrial and commercial use
- Water-based recreation (primary contact recreation)
- Traditional Owner cultural values
- Buildings and structures
- Geothermal properties.

According to the ERS, surface waters within and surrounding the project site are classified as part of the Murray and Western Plains segment. Environmental values associated with this segment include:

- Water dependent ecosystems and species that are slightly to moderately modified
- Agriculture and irrigation
- Human consumption of aquatic foods
- Industrial and commercial
- Water-based recreation (primary contact, secondary contact, and aesthetic enjoyment)
- Traditional Owner cultural values

Further assessments would be undertaken to determine the potential for impacts on groundwater and surface environmental values, however it is not anticipated at this stage that the Project would have significant effects. Depths to groundwater and siting of infrastructure away from surface water bodies would be considered in the detailed design phase of the Project to ensure environmental values are not affected. Construction methodologies to avoid or minimise impacts to surface water environments would also be considered and implemented where possible.

**Could aquatic, estuarine or marine ecosystems be affected by the project?**

NYD  No  Yes If yes, describe in what way.

The Project is not located within proximity to any estuarine or marine ecosystem and would therefore not be affected.

**Is there a potential for extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems over the long-term?**

No  Yes If yes, please describe. Comment on likelihood of effects and associated uncertainties, if practicable.

**Is mitigation of potential effects on water environments proposed?**

NYD  No  Yes If yes, please briefly describe.

The Hydrology and Flood Assessment (**Appendix D**) has considered the current site layout for the Project, which will be subject to further detailed design and development. The purpose of this assessment included a hydrological assessment and hydraulic modelling of major creek and rivers and systems in the region to characterise flood conditions and identify implications for the siting and operation of infrastructure.

Based on the assessment undertaken it identified parts of the project site are flood prone, and as such mitigation and management measures have been considered including:

<ul style="list-style-type: none"> <li>• Where wind turbines are found to be impacted by floodwaters, electrical connections/ junction boxes should be raised above the expected flood level or inside a suitably rated enclosure (e.g. IP57 or higher).</li> <li>• All conduits and cables under areas identified as being flood prone should be suitably waterproofed across the zone of inundation and extending in each direction either side.</li> <li>• Substations and battery storages should be set 300 millimetres above the applicable flood level (freeboard) where indicated.</li> <li>• Sections of roadways and access tracks that are constructed to provide access to infrastructure items should be provided with suitably sized culverts to relieve flows or constructed in such a manner to minimise the potential for washout in the event of inundation.</li> <li>• All waterway crossings will be designed in accordance with the Wimmera CMA Works on Waterway permit conditions and industry best practice guidelines to avoid impacts to waterflow and quality.</li> <li>• If roads are constructed to be raised above potential flood levels (not currently anticipated based on initial modelling) further assessment may be required to ensure ponding and backwatering do not detrimentally raise flood waters to levels where infrastructure may be compromised.</li> </ul>
<p><b>Other information/comments?</b> (e.g. accuracy of information)</p> <p>Additional assessment is being undertaken to determine afflux associated with the solar farm component of the Project. If impacts are identified, these will be assessed at the property boundary and any implications addressed through agreements with the relevant landholder.</p>

## 14. Landscape and soils

### Landscape

<p><b>Has a preliminary landscape assessment been prepared?</b></p> <p><input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, please attach.</p> <p>A Landscape Character and Probable Visual Effect Assessment has been undertaken by Wax Design (2021), provided in <b>Attachment E</b>.</p>
<p><b>Is the project to be located either within or near an area that is:</b></p> <ul style="list-style-type: none"> <li>• <b>Subject to a Landscape Significance Overlay or Environmental Significance Overlay?</b></li> </ul> <p><input type="checkbox"/> NYD <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, provide plan showing footprint relative to overlay.</p> <p>The south-western corner of the project site is affected by the Environmental Significance Overlay Schedule 1 (ESO1), as shown on <b>Appendix A – Figure 7a</b>. ESO1 relates to significant ridge environs and in relation to the project site is associated with the Concongella Ranges, which is located to the south-west of the project site.</p> <p>The purpose of the ESO is to identify areas where the development of land may be affected by environmental constraints and ensure that development is compatible with identified environmental values.</p> <p>ESO1 (Significant ridge environs) recognises the ‘<i>significant ridges on the highest land in the municipality which display erosion characteristics, and which are susceptible to further environmental degradation</i>’. ESO1 identifies the following environmental objectives to be achieved:</p> <ul style="list-style-type: none"> <li>• <i>‘To protect significant ridges from development which may accentuate erosion</i></li> <li>• <i>To maintain the natural beauty of the ridge system</i></li> <li>• <i>To protect the remnant native vegetation and to encourage the re-establishment of native communities in degraded area</i></li> <li>• <i>To prevent erosion of the ridge system</i></li> <li>• <i>To maintain the landscape qualities of the ridge system especially when viewed from surrounding areas.’</i></li> </ul>

Two turbines are proposed to be located within the outer extent of the ESO1 (T35 and T42) as well as associated hardstand areas, access tracks and underground cabling. It is noted the proposed infrastructure will be located approximately one kilometre from the peak of the Concongella Range, which is the area of landscape significance that is subject to this ESO1. Typically, the maximum gradient for siting wind turbines does not exceed 12 percent, which indirectly avoids turbines being placed along the tallest ridge lines..

The adjacent Concongella Ranges provide a significant backdrop to the Project when viewed from the northeast and east. While the wind farm will not be located on this land directly, the views towards the ranges will be impacted by the new development.

- **Identified as of regional or State significance in a reputable study of landscape values?**  
 NYD  No  Yes If yes, please specify.

- **Within or adjoining land reserved under the *National Parks Act 1975* ?**  
 NYD  No  Yes If yes, please specify.

The Project is not located within or adjoining land that is reserved under the *National Parks Act 1975*. The siting of the Project is therefore consistent with Section 2.1.4 of the *Development of Wind Energy Facilities Guidelines* (DELWP, 2019) and the *Solar Energy Facilities Design and Development Guideline* (DELWP, 2019).

- **Within or adjoining other public land used for conservation or recreational purposes?**  
 NYD  No  Yes If yes, please specify.

There are areas of public land surrounding the project site that are used for conservation and recreational purposes. The Project boundary extends along the western, northern, eastern (partial) and southern (partial) boundaries of the Joel Joel Nature Conservation Reserve. The Seven Mile Creek Streamside Reserve is located in the centre of the project site within an area not proposed for Project infrastructure. Both the Greens Creek Streamside Reserve and Vinelea Bushland Reserve are located on the northern edge of the project boundary on Vinelea Road. The Watta Wella Bushland Reserve is also located to the west of the project site. Other pockets of reserve areas are scattered in the surrounding area of the project site (refer **Appendix A – Figure 4**).

- **Is any clearing vegetation or alteration of landforms likely to affect landscape values?**  
 NYD  No  Yes If yes, please briefly describe.

In the context of the project site, proposed earthworks and vegetation removal, it is anticipated the Project will not likely effect landscape values. The Project will not require significant alterations to the existing landforms, with ground-level changes being limited to elements such as turbine bases, access tracks and electrical infrastructure such as substations and batteries requiring a freeboard of 300 or 600 millimetres above flood levels. Vegetation clearance will be minimal in the scale of the project site, and will not alter the existing context of cleared and cropped or grazed agricultural land.

While the wider landscape could be considered to display characteristics which are valued and have a degree of visual amenity, it is noted much of the project site is highly modified due to agricultural practices and is dominated by crops or pasture supporting non-indigenous grasses and weeds.

- **Is there a potential for effects on landscape values of regional or State importance?**  
 NYD  No  Yes Please briefly explain response.

The Project would not impact on landscape values of State importance as none have been identified within the surrounding area or locality of the Project. The significant ridge environments within the municipality are however recognised through the Planning Scheme, and could therefore be considered of regional importance.

Potential visual impacts from within the Project would be primarily associated with the wind farm component. The Zone of Theoretical Visual Influence (ZTVI) provides an indication of where the proposed wind farm component may be seen within the landscape. The ZTVI indicates that the



Project will be visible in the broader regional landscape with the topography of the Concongella Hills, the Black Ranges and the Pyrenees, creating visual envelopes to the southwest, south and east. However, an on-site assessment of the existing landscape and vegetation cover indicates a substantial amount of trees across the whole of the regional landscape. This vegetation will limit and, in some cases, screen the visibility of the proposed development mitigating the potential visual impacts considerably.

It is noted that surrounding the project site is the existing wind turbines of Bulgana, Ararat and Crowlands Wind Farms. The presence of these wind farms provides an existing land use and infrastructure context.

There is a degree of variance in visual impact associated with the wind farm ranging from substantial in areas to the north and northeast to moderate south and southwest and slight throughout the regional locality at distances greater than 10 kilometres. At distances exceeding 10 to 15 kilometres, local ridgelines and tree belts create visual screens that fragment or remove the visual effects of the proposed wind turbines. The combination of topography and vegetation increases the screening, reducing the visual effect. At distances of over fifteen kilometres, the visual effect reduces significantly and is describe as slight to negligible.

Although the visual effect is likely to be moderate to substantial, decreasing to slight, within the subregional and regional areas, the containment of the visual impact can be attributed to the visual character of the landscape coupled with the uniformity of the agricultural character. Therefore, it is considered that the project can be accommodated without significantly altering the underlying landscape and visual character.

**Is mitigation of potential landscape effects proposed?**

NYD  No  Yes If yes, please briefly describe.

The Landscape Character and Probable Visual Effect Assessment prepared by Wax Design (**Appendix E**) has considered a preliminary concept design and wind turbine layout for the Project, as it is still in the early stages of development and design.

Mitigation techniques have been proposed in the assessment prepared by Wax Design to manage the degree of visual impact in relation to the solar farm and BESS facility, which include:

- Scattered copse native eucalypt planting of trees along the solar and BESS boundaries. Trees to mature to eight to 10 metres as per existing vegetation that exists along boundaries
- Retain existing trees on-site or to the edges to achieve immediate visual management of the development.
- Vegetation to be offset from the arrays to mitigate any shadow casting.
- Plant a denser screen along the major road corridors. Suggested buffer planting depth to be five to 20 metres to support a layered screening approach to planting, building on existing vegetation belts within the locality in accordance with relevant bushfire standards and recommendations.

These mitigation measures will be considered during the detailed design phase of the Project.

**Other information/comments?** (eg. accuracy of information)

Refer **Appendix E** for full details of the Landscape Character and Probable Visual Effect Assessment prepared by Wax Design. In addition, a Residential Visual Assessment is currently being prepared to assess the visual effects of the Project on residential properties and support the planning permit applications for the Project.

**Note:** A preliminary landscape assessment is a specific requirement for a referral of a wind energy facility. This should provide a description of:

- The landscape character of the site and surrounding areas including landform, vegetation types and coverage, water features, any other notable features and current land use;

- The location of nearby dwellings, townships, recreation areas, major roads, above-ground utilities, tourist routes and walking tracks;
- Views to the site and to the proposed location of wind turbines from key vantage points (including views showing existing nearby dwellings and views from major roads, walking tracks and tourist routes) sufficient to give a sense of the overall site in its setting.

### Soils

<p><b>Is there a potential for effects on land stability, acid sulphate soils or highly erodible soils?</b>  <input type="checkbox"/> NYD   <input checked="" type="checkbox"/> No   <input type="checkbox"/> Yes   If yes, please briefly describe.</p> <p>In accordance with the Atlas of Australian Acid Sulfate Soils, the entire project site is classified as Class B, which means there is a low probability of acid sulfate soils occurring.</p> <p>The project site is largely flat land and proposed groundworks will be minimised to those areas within the Proposed Infrastructure Layout shown in <b>Appendix A – Figure 2</b>. A CEMP will be developed containing erosion and sediment control management measures according to best practice guidelines to apply at the project site to help manage potential erosion of soils during the construction phase.</p>
<p><b>Are there geotechnical hazards that may either affect the project or be affected by it?</b>  <input type="checkbox"/> NYD   <input checked="" type="checkbox"/> No   <input type="checkbox"/> Yes   If yes, please briefly describe.</p> <p>At this stage there are no known geotechnical hazards that may affect the Project or be affected by it. Further environmental investigations will be undertaken during the design and development phase of the Project.</p>
<p><b>Other information/comments?</b> (eg. accuracy of information)</p>

## 15. Social environments

<p><b>Is the project likely to generate significant volumes of road traffic, during construction or operation?</b>  <input checked="" type="checkbox"/> NYD   <input type="checkbox"/> No   <input type="checkbox"/> Yes   If yes, provide estimate of traffic volume(s) if practicable.</p> <p>A Traffic Impact Assessment and Route Assessment is currently under preparation to inform the planning permit applications. These assessments will identify the potential effects on the local and state road networks and recommend appropriate management and mitigation measures in consultation with the relevant regulator authorities including Northern Grampians Shire Council and Regional Roads Victoria (as required). These assessments will seek to inform the Traffic Management Plan to the satisfaction of the Responsible Authority.</p> <p>It is anticipated there will be increased volumes of traffic during the expected 27-month construction period however, impacts during operation are likely to be minor. Construction traffic volumes will be influenced by a number of factors, such as whether on-site borrow pits can be provided (subject to ongoing investigation) which would reduce the need for additional material delivery to the project site. An on-site batching plant for concrete reduces peak traffic flows into the project site, and delivery of concrete to turbine hardstands is limited to project access tracks.</p> <p>The Port of Geelong and Port of Portland are considered feasible delivery locations and transport routes for project components including over-sized turbine materials. The final route is subject to ongoing investigation and will be dependent on considering the needs of the relevant stakeholders and conducting the identified works and implementing appropriate mitigation measures where required. The suitability of existing over-dimensional vehicle haulage routes previously developed by other neighbouring wind farms will be considered and assessed as part of the Route Assessment.</p>
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**Is there a potential for significant effects on the amenity of residents, due to emissions of dust or odours or changes in visual, noise or traffic conditions?**

NYD  No  Yes If yes, briefly describe the nature of the changes in amenity conditions and the possible areas affected.

Effects on the amenity of residents during construction are anticipated however, the following measures have been/will be implemented to manage and minimise impacts where possible including (but not limited to):

- WTG will be located at least 1.5 kilometres from the nearest non-associated dwellings
- Internal tracks and cabling, access gates and other infrastructure will be positioned to minimise effects on the amenity of residents as far as practicably possible (during both construction and operation).
- Implementation of a CEMP to manage potential effects such as dust, traffic, visual and noise effects to the satisfaction of the Responsible Authority prior to construction. Specifically, a detailed TMP will be prepared to manage potential traffic impacts in accordance with relevant guidelines and in consultation with key stakeholders including VicRoads and Glenelg Shire Council.
- Regular watering down of access roads for dust suppression.
- Construction speed limits imposed to reduce dust & accelerated road degradation, increase safety to other road users.
- Organising construction and delivery schedules around planned stock movements along roads and shared tracks.
- Construction disruption payments.
- Measures may be implemented at nearby properties such as double glazing on windows, external blinds and vegetation screening and funded by RES.
- Newsletters and updates to neighbours on construction activities and timing to inform of anticipated impacts such as noise and traffic.

During operation, it is anticipated effects on the amenity of residents will be minor.

Potential operational noise effects have been assessed (refer **Appendix G** for the Environmental Noise Assessment). Noise modelling was undertaken for each of the Project components, which demonstrated the Project is predicted to achieve compliance with the applicable noise limits determined in accordance with the applicable standard.

A Residential Visual Assessment is currently underway and will assess the visual effect of the Project on residential properties. It is anticipated visual effects as a result of the BESS facility and solar farm can be minimised through vegetation screening. However, more broadly the Landscape Character and Probable Visual Effect Assessment (**Appendix E**) concluded the Project can be accommodated without significantly altering the underlying landscape and visual character.

The Shadow Flicker Assessment, prepared by DNV (**Appendix K**) identified four dwellings expected to experience some shadow flicker above a moderate level of intensity (three associated dwellings and one non-associated dwellings). When considering the likely shadow flicker reduction due to cloud cover and rotor orientation, the shadow flicker at three of the four dwellings is predicted to be below the recommended limit of 10 hours per year within 50 metres of the dwelling. One associated dwelling has predicted actual annual shadow flicker above 10 hours per year. Further engagement will be necessary with owners of all associated and non-associated landowners to assess the actual shadow flicker based on existing vegetation, house/window orientation and nearby obstructions. Turbines may be re-sited to reduce shadow flicker or vegetative screening provided to mitigate impacts. Agreements will also be established with landowners where shadow flicker is expected

Non-reflective finish is proposed for the wind turbine blades and as such, blade glint is not expected to be an issue for the Project.

**Is there a potential for exposure of a human community to health or safety hazards, due to emissions to air or water or noise or chemical hazards or associated transport?**

NYD  No  Yes If yes, briefly describe the hazards and possible implications.

Although no wind turbines are located within 1.5 kilometres of the nearest dwelling, construction works associated with the BESS, solar farm and wind farm infrastructure (excluding wind turbines) will occur within 500 metres. This construction is predominantly associated with access tracks and trenching for underground cable reticulation. It is not anticipated there will be potential for exposure to health or safety hazards. Appropriate construction techniques and best practice health and safety measures will be implemented to ensure potential human health or safety impacts during construction are minimised.

A CEMP will be prepared for the Project to include mitigation measures to further avoid or minimise risks and impacts associated with these emissions. In addition, a Traffic Management Plan will be prepared as required by the condition of the planning permit(s) and to the satisfaction of the Responsible Authority.

**Is there a potential for displacement of residences or severance of residential access to community resources due to the proposed development?**

NYD  No  Yes If yes, briefly describe potential effects.

No potential for displacement of residences or severance of residential access to community resources has been identified. The Project is predominantly located within the Farming Zone and area of relatively low population density.

The closest township with community facilities is Stawell located approximately 16 kilometres south-west of the project site. The design and siting of the Project will not affect residential access to community facilities and services. WTGs have been located to be at least 1.5 kilometres from non-associated dwellings and other infrastructure works (relating to the BESS, solar farm and wind farm (excluding wind turbines) are expected to be approximately 500 metres from these dwellings.

Any effects on traffic volumes would be short term during construction and a Traffic Management Plan will be prepared to the satisfaction of the Responsible Authority prior to construction and will be implemented accordingly.

Given the existing shortage of long-term accommodation in Stawell, a workforce accommodation strategy would be developed to minimise the risk of further displacement of local residents during construction and decommissioning of the Project. RES has already consulted with the Northern Grampians Shire Council regarding the local housing shortage and will work closely with them to develop a suitable plan.

**Are non-residential land use activities likely to be displaced as a result of the project?**

NYD  No  Yes If yes, briefly describe the likely effects.

The proposed wind farm infrastructure will account for approximately two percent of the total project site (5,100 hectares). It is anticipated land not required to be utilised for the proposed Project infrastructure will be able to continue its current use. RES is working with landowners to avoid interference with current operation where possible.

**Do any expected changes in non-residential land use activities have a potential to cause adverse effects on local residents/communities, social groups or industries?**

NYD  No  Yes If yes, briefly describe the potential effects.

Expected changes in non-residential land use activities are not expected to occur or cause potential adverse effects on local residents/communities, social groups or industries.

**Is mitigation of potential social effects proposed?**

NYD  No  Yes If yes, please briefly describe.

During construction, the social effects are typically related to increased traffic volumes and maintaining (or upgrading) the condition of local roads due to heavy vehicle use. The traffic and transport assessment will identify and propose mitigation measures for potential impacts, which will be included in a Traffic Management Plan for endorsement by the Regulatory Authority. A Construction Noise and Vibration Management Plan will also be produced to manage the timing, location and equipment selection for works to limit noise impacts.

As indicated in the Draft Stakeholder Engagement Plan (SEP) for the Project (refer **Appendix M**), a range of community engagement activities are proposed throughout the planning and construction phases, such as information sessions, community engagement committee meetings, newsletters and open days. The project website and communication (letter or emails) with the local community would also be used to advise of upcoming construction works and potential disruption in advance with details of how to seek more information or provide feedback to the project team.

During operation of the Project, mitigation of social effects will include:

- Vegetation screening both within the site and at residential dwellings (where deemed suitable) to mitigate visual effects
- Operational noise limits will be maintained to not exceed 35dB or background plus 5dB at nearby dwellings. This will be managed by the operation and maintenance staff on site.
- Community benefit sharing program to be developed such as neighbourhood benefit programs, community grant funds and community co-investment/co-ownership programs in line with the *Clean Energy Guidelines for Benefit Sharing* (2019). These programs will be developed in collaboration with the local community (as outlined in SEP).
- Measures to be implemented where appropriate at nearby properties such as double glazing on windows, external blinds and vegetation screening and funded by RES.
- Complaints register to be developed and implemented during all stages of the Project.

**Other information/comments?** (eg. accuracy of information)

## Cultural heritage

**Have relevant Indigenous organisations been consulted on the occurrence of Aboriginal cultural heritage within the project area?**

- No If no, list any organisations that it is proposed to consult.  
 Yes If yes, list the organisations so far consulted.

The Registered Aboriginal Party (RAP) is the Barengi Gadjin Land Council Aboriginal Council (BGLCAC). CHMP 17482 is being prepared in full consultation and participation with the BGLCAC. To date, the RAP has been represented and participated in the following:

- Project inception meeting
- Standard assessment
- Standard assessment result and complex assessment methodology meeting
- Complex assessment (commenced in April 2022)
- Attendance on-site for other any activities that may disturb artefacts (such as met mast installation and geotechnical investigations).

**What investigations of cultural heritage in the project area have been done?**

(attach details of method and results of any surveys for the project & describe their accuracy)

Aboriginal cultural heritage is being managed through the preparation of an Aboriginal Cultural Heritage Management Plan (CHMP 17482) under the *Aboriginal Heritage Act 2006* and *Aboriginal Heritage Regulations 2018*.

Investigations to date include a desktop assessment (undertaken in 2020) and standard assessment field surveys (completed in 2021).

- The desktop assessment identified previously registered Aboriginal places in the project site, formulated a site prediction model and identified areas of archaeological potential.
- The standard assessment recorded a total of 38 surface stone artefacts in several locations in the project site. In addition, previously registered Aboriginal places potentially impacted by the Project were inspected. The site prediction model and areas of archaeological potential were refined. The results of the standard assessment generally conformed to the expectation of the desktop assessment site prediction model.

A complex assessment comprising archaeological subsurface testing commenced in April 2022.

<p><b>Is any Aboriginal cultural heritage known from the project area?</b>  <input type="checkbox"/> NYD <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, briefly describe:</p> <ul style="list-style-type: none"> <li>• Any sites listed on the AAV Site Register</li> <li>• Sites or areas of sensitivity recorded in recent surveys from the project site or nearby</li> <li>• Sites or areas of sensitivity identified by representatives of Indigenous organisations</li> </ul> <p>The Aboriginal Cultural Heritage Register and Information Services (ACHRIS) identified there are 18 Aboriginal places recorded within the project site and eight places recorded within 50 metres of the project site (refer <b>Appendix A – Figure 5</b>).</p> <p>The outcomes of the standard assessment concluded that:</p> <ul style="list-style-type: none"> <li>• No surface evidence was found of previously registered mound sites</li> <li>• Surface stone artefacts are present in the project site and indicate that subsurface stone artefacts may also be present</li> <li>• There are areas of archaeological potential for subsurface stone artefacts</li> <li>• It is likely that additional cultural heritage is present</li> <li>• It was not possible to identify the extent, nature and significance of the Aboriginal cultural heritage</li> </ul>
<p><b>Are there any cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the <i>Heritage Act 1995</i> within the project area?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please list.</p> <p><b>Is mitigation of potential cultural heritage effects proposed?</b>  <input checked="" type="checkbox"/> NYD <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, please briefly describe.</p> <p>The complex assessment for CHMP 17482 will comprise archaeological subsurface testing to identify the extent, nature, and significance of Aboriginal cultural heritage likely to be impacted by the project.</p> <p>Once the assessment has been completed and the extent, nature and significance of the Aboriginal places in the project site has been determined, consultation will occur between RES and the BGLCAC to determine the management conditions of the Aboriginal places to the satisfaction of the BGLCAC. The CHMP will then be submitted to the BGLCAC for evaluation and approval.</p>
<p><b>Other information/comments?</b> (eg. accuracy of information)</p> <p><b>Appendix N</b> contains a letter from Tardis Archaeology providing details on the cultural heritage investigations being undertaken for the Project.</p>

## 16. Energy, wastes & greenhouse gas emissions

<p><b>What are the main sources of energy that the project facility would consume/generate?</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Electricity network. If possible, estimate power requirement/output .....</li> <li><input type="checkbox"/> Natural gas network. If possible, estimate gas requirement/output .....</li> <li><input checked="" type="checkbox"/> Generated on-site. If possible, estimate power capacity/output .....</li> <li><input type="checkbox"/> Other. Please describe.</li> </ul> <p>Please add any relevant additional information.</p> <p>The aim of the Project is to generate approximately 376 MW and 85 MWdc of renewable energy, from the wind farm and solar farm components of the Project respectively to supplement Victorian and Australian energy supply. The wind farm is expected to generate enough electricity to supply around 190,000 Victorian homes. These calculations are preliminary and subject to final design.</p>
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**What are the main forms of waste that would be generated by the project facility?**

- Wastewater. Describe briefly.
- Solid chemical wastes. Describe briefly.
- Excavated material. Describe briefly.
- Other. Describe briefly.

Please provide relevant further information, including proposed management of wastes.

The main forms of waste that would be generated from the Project will be as a result of the construction phase and may include the following:

- Wastewater in the form of grey water and sewerage will predominantly be generated in the site compounds and will be stored in tanks on site and pumped onto trucks before appropriate disposal from the project site.
- Materials excavated during construction will predominantly be re-used when backfilling turbine foundations, cable trenches or in areas of cut and fill. There is potential for spoil which will be removed and disposed of according to local disposal guidelines through a licensed landfill facility.
- Cardboard, timber and plastic from pallets associated with the construction of the solar farm.
- Other waste includes, but is not limited to:
  - Plastic from solar panel packaging, turbine component protection and general hardware/equipment packaging
  - Timber from palletised equipment such as solar panels and other ancillary infrastructure, propping/shoring of electrical equipment and transport of turbine components.
  - Metal offcuts from cables, fencing, turbine foundation reinforcement and other equipment.
  - Potential concrete waste from bad batches that don't meet specifications.

RES work closely with the contractor to identify final waste streams and devise methods to appropriately manage and dispose of material where identified. This is underpinned by a broader strategy to avoid, reuse, recycle and repurpose wherever possible. This approach has been particularly successful on RES' Dulacca Wind Farm Project where multiple strategies have been employed such as:

- Donation of waste timber to the local Men's shed. Timber donated by the Dulacca Win Farm Project went into the construction of picnic tables which were donated to the local school.
- Donation of waste timber to the local technology school, which was then repurposed into 'bat boxes' which were then erected on the project site to create additional habitat.
- Collection of glass bottles and aluminium cans and disposal through a return and earn scheme. The funds generated were then donated to a local school.

**What level of greenhouse gas emissions is expected to result directly from operation of the project facility?**

- Less than 50,000 tonnes of CO<sub>2</sub> equivalent per annum
- Between 50,000 and 100,000 tonnes of CO<sub>2</sub> equivalent per annum
- Between 100,000 and 200,000 tonnes of CO<sub>2</sub> equivalent per annum
- More than 200,000 tonnes of CO<sub>2</sub> equivalent per annum

Please add any relevant additional information, including any identified mitigation options.

Very low levels of CO<sub>2</sub> emissions would be generated by the Project during construction and operation from construction machinery and traffic. This would be heavily offset by the CO<sub>2</sub> savings gained by the Project through the renewable energy generation by wind and solar. The Project will reduce Australia's carbon emissions by more than one million tonnes of carbon dioxide annually.

**17. Other environmental issues**

**Are there any other environmental issues arising from the proposed project?**

No  Yes If yes, briefly describe.

No other environmental issues other than those discussed in this referral.



## 18. Environmental management

**What measures are currently proposed to avoid, minimise or manage the main potential adverse environmental effects?** (if not already described above)

Siting: Please describe briefly

The Project is located within close proximity to the existing transmission network via connection to AusNet's 220 kV transmission network at Bulgana Substation located within the project site. The Bulgana substation and associated transmission line is being updated as part of the Western Victoria Transmission Network Project. The proximity to the existing transmission network avoids the requirement for lengthy external overhead powerlines to connect the Project to the electricity network.

Much of the project site is highly modified due to agricultural practices and is dominated by crops (wheat, canola, barley) or pasture supporting non-indigenous grasses and weeds. The Ecological Assessment (**Appendix C**) noted the Wimmera bioregion is one of Victoria's most cleared bioregions. In addition, the area within and immediately surrounding the project site is lightly populated. The project site is therefore well located to host the proposed Project infrastructure with minimal impact to high-value vegetation through the use of previously cleared land and where possible existing access tracks and enabling ongoing agricultural uses.

Most nearby dwellings are clustered to the west of the project site with a few more properties located around the perimeter. Many of these properties are associated with the Project through hosting WTGs or infrastructure on their land. Within two kilometres of the nearest turbines, there are five associated properties and twelve non-associated properties.

Allowance for micro siting of turbines and other infrastructure by up to 100 metres to mitigate any unforeseen effects.

Design: Please describe briefly

Outcomes of the assessments completed to date have informed the design process to avoid and minimise effects. Alterations to the design have been undertaken based on design recommendations from the specialists, particularly ecology and hydrology along with consultation with local landowners and standard design approaches adopted by RES.

Avoid and minimisation measures that have been implemented (or will be by future assessments) using the outcomes of specialist reports and RES standard approaches include (but not limited to):

- Locating no WTGs within 1.5 kilometres of any neighbouring (non-participating) dwellings.
- Implementing a topple plus 10 percent buffer between turbine foundations and major roads or other sensitive areas.
- Avoiding terrain with a gradient of more than 12 percent wherever possible
- Locating all cable reticulation and any overhead powerlines within the project site.
- Establishing work exclusion areas to protect areas of ecological or cultural heritage values.
- Avoiding areas of high-quality native vegetation and listed flora species where possible through micro-sitting.
- Avoiding areas of cultural heritage values where possible (based on outcomes of CHMP 17482 complex assessment).
- Introducing construction buffers around infrastructure to ensure no unexpected environmental effects (such as removal of vegetation, impact on dams and exacerbating existing erosion)
- 200 metre exclusion zone applied either side of creeks within and adjacent to the project site to avoid areas of cultural heritage sensitivity.
- Utilise engineering/construction practices such as directional drilling, above-ground water crossings for underground cables and oversized access track bridges to appropriately avoid heritage constraints and maintain overland flow paths wherever possible.

- Environmental management: Please describe briefly.

Prior to commencement of Project construction (subject to obtaining all relevant approvals), a CEMP would be prepared to provide detailed measures to manage environmental effects during the construction of the Project. Other environmental managements plan (i.e., erosion control) may be required as conditions of the Planning Permit. In addition, there will be ongoing environmental monitoring and management during the operational phase in accordance with planning permit conditions and statutory requirements.

- Other: Please describe briefly

Add any relevant additional information.

## 19. Other activities

**Are there any other activities in the vicinity of the proposed project that have a potential for cumulative effects?**

- NYD  No  Yes If yes, briefly describe.

The assessments completed to date have provided a preliminary cumulative assessment as a result of the Project along with other renewable energy facilities nearby (Bulgana Green Power Hub, Crowlands Wind Farm, Ararat Wind Farm). The following provides a summary of the cumulative impact assessment outcomes completed to date:

- **Biodiversity**

The Ecological Assessment (**Appendix C**) has considered potential cumulative biodiversity effects. The assessment noted consideration must be made to the biodiversity impacts that have resulted from historic and predicted future human disturbances. Operational activities have the potential to lead to incremental and cumulative impacts such as changes to bird/bat behaviour however is considered unlikely to significantly increase cumulative pressures alongside nearby wind farms due to the project site being located in a setting within a predominantly cleared and uniform landscape, and located outside the likely common distribution range of key species potentially impacted by wind farm developments (i.e, Brolga and Southern Bent-wing Bat). The assessment recommends ongoing monitoring following the commissioning of the Project to identify and mitigate cumulative impacts as other renewable energy projects are constructed.

- **Hydrology**

The Hydrology and Flood Assessment (**Appendix D**) concluded given the nature of the Project and the scale of infrastructure items relative to the floodplain, it is not expected that there will be adverse impacts on adjoining lands from displaced floodwaters (i.e., afflux). Further assessment on the potential cumulative effects on hydrology will be considered in the final assessments provided as part of the planning permit applications.

- **Landscape and Visual**

The Landscape Character and Probable Visual Effect Assessment (**Appendix E**) concluded that the existing landscape character mitigates the cumulative visual effects associated with other wind farms in the nearby area. The cumulative visual effect of the existing and proposed wind farms is experienced as defined clusters of wind turbines fragmented by the landscape character of the regional locality.

In general, due to the regional landscape character area being contained to a viewshed of approximately 20 kilometres by surrounding ranges and ridgelines and extensive vegetation, the cumulative effects of the Project will be fragmented and seen within a sub-regional (three to 10 kilometre) context. Across the 20 kilometres regional locality, the scale of the underlying landscape and distances between townships further mitigate the cumulative visual effects.

- **Aviation and Solar Glare**

The potential cumulative effects on aviation and solar glare will be considered in the final assessments provided as part of the planning permit applications.

- **Noise**

The Environmental Noise Assessment (**Appendix G**) considered other approved and operational wind farm sites in the nearby vicinity in accordance with New Zealand Standard 6808:2010 *Acoustics – Wind farm noise*. The Bulgana Green Power Hub (BGPH) was identified as the only permitted or operational wind farm within 10 kilometres of the Project at the time of reporting, which is located approximately five kilometres south of the project site.

The assessment demonstrated that the compliance outcome for both the Project and BGPH would not be affected by the noise contribution from the other project. The predicted noise levels demonstrate that cumulative wind farm noise is not a material consideration of either project. The assessment noted that the noise contribution of the BGPH is sufficiently low to be inconsequential to the noise assessment for the Project.

The predicted noise contribution of the Project would also not affect the compliance outcomes at the receiver in the vicinity of the BGPH.

- **Aboriginal Cultural Heritage**

CHMP 17482 being prepared for the Project can effectively manage any potential cumulative impacts.

- **EMI**

The EMI Assessment (**Appendix J**) noted given the Project is located within an area of multiple operational wind farm development, it is possible that some radiocommunication services could experience cumulative impacts from the Project. It noted for services where impact from the Project itself is considered unlikely or non-existent, it is generally expected that there will be no cumulative effect.

However, the main potential cumulative effect is to broadcast digital television (DTV) signals received at nearby dwellings. The assessment suggests a pre-development survey could assist in providing greater detail of the DTV signal covering the surrounding area and the potential for cumulative impacts at the dwellings located between the Project and BGPH. If interference is determined to be a risk, the assessment suggests a number of mitigation options. The assessment also noted there is some potential for increased interference to other point-to-area style services, such as mobile phone and PM radio signals, in areas with marginal coverage or where there may be multiple wind turbines between the user and the transmission tower, however, the assessment suggests a number of mitigation options that may be applicable.

- **Shadow Flicker**

The Shadow Flicker Assessment (**Appendix K**) included a cumulative assessment, which assessed the Project and the BGHP wind turbines. It was noted only turbines from BGHP are close enough to the project site to potentially cause cumulative shadow flicker impacts in combination with the Project.

It was assumed in the assessment the BGHP turbines generate shadow flicker at similar distances to the Project turbines and subsequently up to two dwellings could potentially be affected by cumulative shadow flicker. Neither of these dwellings will be affected by shadow flicker generated from turbines at both wind farms if only shadow flicker above moderate levels of intensity are considered. However, it was noted if shadow flicker above and below a moderate level of intensity is considered, these dwellings could potentially be subject to shadow flicker from both wind farms, depending on the distance of each dwelling from the specific Project and BGHP turbines. Further assessment is being undertaken to determine if mitigation measures can reduce impacts such as existing or proposed screening.

- **Agriculture**

The Agricultural Impact Assessment (**Appendix L**) concluded based on the large area of land available in the surrounding area and across regional Victoria for prime lamb production and cropping, and the relatively small area of land that will be removed from agricultural production, the impact of the Project on agricultural activity in the area is relatively minor.

## 20. Investigation program

### Study program

**Have any environmental studies not referred to above been conducted for the project?**

No  Yes If yes, please list here and attach if relevant.

**Has a program for future environmental studies been developed?**

No  Yes If yes, briefly describe.

RES has a sound understanding of the studies required to ensure all potential impacts are appropriately assessed to enable the appropriate avoidance, mitigation and management measures are implemented. To achieve this, the studies provided in support of this referral will be updated and progressed to a greater level of detail suitable to support primary and secondary approvals, and to reflect the final design details.

Furthermore, several additional assessments have commenced or are planned to support the Project approvals:

- Traffic Impact Assessment
- Route Assessment
- Residential Visual Assessment
- On-site Resource Desktop Study
- CHMP 17482 is being progressed in consultation and participation with the BGLCAC

### Consultation program

**Has a consultation program conducted to date for the project?**

No  Yes If yes, outline the consultation activities and the stakeholder groups or organisations consulted.

The following engagement activities have been undertaken to inform this EES referral:

- Meetings, phone calls and emails with neighbouring landowners (refer **Appendix M – Table 7** for a summary of engagement to date with neighbouring landowners)
- Community drop-in information sessions held in Stawell on 27 and 28 May 2022.
- Desktop research using Geographic Information Systems (GIS) to identify potential dwellings within five kilometres of the project site followed by field visits to every property to verify actual dwelling locations;
- Developed a project webpage and accompanying project summary;
- Unaddressed mail deliveries in August 2021 and May 2022 to all residential addresses within the project site of influence providing updates on the project and information about future engagement sessions;
- Project briefing notes sent to local Ministers of Parliament, introducing RES and the Project, including high level development process overview and project details;
- Attended meetings and delivered presentations to Northern Grampians Shire Council officers in August 2021 and May 2022 to discuss the Project and better understand local community context, priorities and environmental and community groups;
- Meeting with VicRoads to explore transport and logistics options as well as gain insight into the local conditions, driver and road safety considerations and road access permits;
- Meeting with Northern Grampians Shire Council's consultant to identify areas within local industry that could be scaled up to meet the needs of this and other renewable developments in the region;

- Engagement with Traditional Owners through the Barengi Gadjin Land Council; and

Issues and opportunities identified during early engagement are recorded in Darzin and will be updated throughout the life of the Project (refer **Appendix M**).

A website has been established to provide easy access to information about the Project including the ability to provide feedback ('Have Your Say' form) and to contact RES for further engagement. The project website can be found at <http://wattawella-renewableenergy.com.au/> and will continue to be updated as the project develops.

**Has a program for future consultation been developed?**

NYD  No  Yes If yes, briefly describe.

RES recognises the importance of early and ongoing community and stakeholder engagement through the environmental and planning approval phase of the Project. RES has developed a Draft SEP which outlines the approach, strategy and implementation of community consultation for the Project moving forward (refer **Appendix M**).

The Draft SEP identifies the key project milestones through the environmental and planning approval phase and the associated planned engagement activities. Engagement mechanisms include (but not limited to) website, media releases, project information sheets, community information and feedback sessions.

Further activities planned in 2022 include:

- Contact all project neighbours within a five kilometre radius to introduce the RES project team, share preliminary information about the proposed project, provide contact details and gauge initial community sentiments;
- A written update to landholders and neighbours in late 2022, noting that the EES referral outcome;
- Engagement with interested local community and environmental groups to inform community benefit sharing opportunities;
- Meeting with local Councillors to discuss the Project and understand priorities and interests;
- Feedback surveys for various stakeholder groups to obtain feedback on the Project;
- Seeking opportunities for community sponsorship for local events and community groups; and
- Seeking opportunities for future engagement sessions at local events such as the Stawell Agricultural Show.

**Authorised person for proponent:**

I, Marton Kalocsay (full name),

Development Project Manager (RES) (position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature



Date 27/07/2022

**Person who prepared this referral:**

I, Caroline Funnell (full name),

Principal Environmental Consultant (Umwelt) (position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature



Date 27/07/2022