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

REFERRAL FORM

Stockyard Hill Wind Farm and Related Projects

25 July 2016

PART 1 PROPONENT DETAILS, PROJECT DESCRIPTION & LOCATION

1. Information on proponent and person making Referral

Name of Proponent:	Stockyard Hill Wind Farm Pty Ltd *(a subsidiary of Origin Energy)*
Authorised person for proponent: **Position:** **Postal address:** **Email address:** **Phone number:** **Facsimile number:**	Peter Marriott Generation Project Development Manager Level 12, 321 Exhibition St, Melbourne VIC 3000 peter.marriott@originenergy.com.au 03 9652 5203 -
Person who prepared Referral: **Position:** **Organisation:** **Postal address:** **Email address:** **Phone number:** **Facsimile number:**	Cara Layton Land Use and Approvals Planner Jacobs Group (Australia) Pty Ltd Level 11, 452 Flinders Street, Melbourne cara.layton@jacobs.com 03 8668 3444 -
Available industry & environmental expertise: *(areas of 'in-house' expertise & consultancy firms engaged for project)*	Origin Energy has experience in power infrastructure planning, project development, project implementation, environment management and consultation. Origin Energy has engaged suitably qualified consultants to undertake a range of investigations. Jacobs has been responsible for undertaking the environmental assessment and management and land use planning. Specialist investigations and studies have also been undertaken, as follows: <u>*Wind Energy Facility*</u> • Ecology Heritage and Partners, 'Biodiversity Assessment to Accompany an Application to Amend Planning Permit No. PL-SP/05/0548, Stockyard Hill' (May 2016) • Ecology Heritage and Partners, 'Biodiversity Assessment of Roadside and Intersection Upgrades, Stockyard Hill Wind Farm, Victoria' (May 2016) • Ecology and Heritage Partners, 'Preliminary Ecological Assessments for the Stockyard Hill Wind Farm, Stockyard Hill, Victoria' (2011). • Ecology and Heritage Partners, 'Stockyard Hill Wind Farm, Natural Temperate Grassland of the Victorian Volcanic Plain and Targeted Flora Surveys' (2011). • Ecology and Heritage Partners, 'Stockyard Hill Wind Farm targeted Spiny Rice-flower surveys' (2011).

	• Ecology and Heritage Partners, 'Targeted Striped Legless Lizard Delma impar surveys of the Stockyard Hill Wind Farm, Stockyard Hill, Victoria' (2012). • Ecology and Heritage Partners, 'Targeted Striped Legless Lizard surveys of proposed borrow pits within Stockyard Hill Wind Farm, Stockyard Hill, Victoria' (2013). • Ecology and Heritage Partners, 'Detailed Flora Investigations for the Stockyard Hill Wind Farm, Victoria' (2014). • Ecology and Heritage Partners, 'Targeted Golden Sun Moth *Synemon plana* Surveys for 2011/12 and 2012/13 at Stockyard Hill Wind Farm, Stockyard Hill, Victoria' (2014). • Biosis Research, 'Bird & Bat Impact Assessment to Accompany an Application to Amend Planning Permit No. PL-SP/05/0548', (May 2016) • Archaeology At Tardis, 'Stockyard Hill Wind Farm, Stockyard Hill, Cultural Heritage Management Plan, AAV CHMP No. 10530' (21 October 2009). Approved by Aboriginal Affairs Victoria on 22 October 2009. • Archaeology At Tardis, 'Cultural Heritage Management Plan No. 14281, Additional Wind Energy Facility Works' – *In preparation.* • Archaeology At Tardis, 'Cultural Heritage Management Plan No. 14279, Road and Intersection Upgrades' – *In preparation.* • GHD, 'Traffic Impact Assessment to Accompany an Application to Amend Planning Permit No. PL-SP/05/0548', (May 2016) • Sonus, 'Noise Impact Assessment to Accompany an Application to Amend Planning Permit No. PL-SP/05/0548', (May 2016) • DNV GL, 'Shadow Flicker and Blade Glint Assessment to Accompany an Application to Amend Planning Permit No. PL-SP/05/0548', (April 2016) • DNV GL, 'Electromagnetic Interference Assessment to Accompany an Application to Amend Planning Permit No. PL-SP/05/0548', (April 2016) • Environmental Resource Management, 'Landscape and Visual Impact Assessment to Accompany an Application to Amend Planning Permit No. PL-SP/05/0548', (April 2016) • Ambidji Group Pty Ltd, 'Final Report, Stockyard Hill Wind Farm, Aeronautical Impact Assessment, Aviation Impact Assessment, Qualitive Risk Assessment and Obstacle Lighting Review, 180m Turbines', (April 2016) <u>*External Overhead Powerlines*</u> • Ecology and Heritage Partners, 'Detailed Flora and Fauna Assessment of the Current Overhead

	Powerline Corridor, Stockyard Hill Wind Farm, Victoria', (May 2016). • Ecology and Heritage Partners, 'Detailed Flora and Fauna Assessment of Several Proposed Overhead Powerline Alignment Options, Stockyard Hill Wind Farm, Victoria' (January, 2013). • Ecology and Heritage Partners, 'Targeted Golden Sun Moth *Synemon plana* Surveys 2012/13, within the Transmission Line alignment options, Stockyard Hill Wind Farm, Stockyard Hill, Victoria', (March 2013). • Ecology and Heritage Partners, 'Preliminary Flora and Fauna Assessment for the Proposed Transmission Line Corridor at the Stockyard Hill Wind Farm' (March 2012). • Ecology and Heritage Partners, 'Flora and Fauna Assessment for the proposed Terminal Station at the Stockyard Hill Wind Farm, Victoria', (June 2012). • Ecology and Heritage Partners. 'Targeted Striped Legless Lizard Delma impar surveys of the Stockyard Hill Wind Farm, Stockyard Hill, Victoria', (March 2012). • Ecology and Heritage Partners, 'Targeted Golden Sun Moth Synemon plana surveys of the Stockyard Hill Wind Farm, Stockyard Hill, Victoria' (March 2012). • Archaeology At Tardis, 'Cultural Heritage Management Plan No. 12177, Stockyard Hill Wind Farm Transmission Line to Grid Lot 1 TP746129 Skipton Road Stockyard Hill' – *In preparation.* • Brolga Collision Risk Modelling, Biosis Research (May 2016) • Golder Associates, 'Preliminary Geotechnical Investigation Report, Stockyard Hill Wind Farm Transmission Line Lismore, Victoria', (2 July 2013) • Zinfra, 'Constructability Assessment, Stockyard Hill Wind Farm 132kV Transmission Line', (13 August 2012) *Quarry* • Ecology and Heritage Partners report 'Stockyard Hill Wind Farm: Detailed Flora and Fauna Investigation of the Proposed Quarry Site' (July 2013) • Golder Associates, 'Options for the Sourcing of Construction Materials for the Stockyard Hill Wind Farm' (29 October 2012) • Golder Associates report 'Stockyard Hill Borrow Pit Investigation' (5 February 2013) • Archaeology At Tardis Pty Ltd, 'Cultural Heritage Management Plan 12648, Stockyard Hill Wind Farm Quarry Lot 2 PS604561 143 Stockyard Hill- Wangatta Road Stockyard Hill' (9 May 2014). Approved by Wathaurung Aboriginal Corporation on 14 May 2014. • Golder Associates, 'Stockyard Hill Wind Farm Pty Ltd, Extractive Industry Work Authority 1218, Work Plan:

	Proposed Quarry' (5 December 2013). Endorsed by DEDJTR on 5 May 2014 • Jacobs, 'Stockyard Hill Wind Farm Quarry – Landscape and Visual Assessment' (June 2014) • Jacobs, 'Stockyard Hill Wind Farm Quarry – Desktop Social Impact Assessment' (June 2014) • Jacobs, 'Stockyard Hill Wind Farm, Quarry Traffic Assessment and Framework Management Plan' (June 2014)

2. Project – brief outline

Project title: Stockyard Hill Wind Farm and Related Projects

Project location: *(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)*

The Stockyard Hill Wind Farm (SHWF) wind energy facility (WEF) is situated in the Shire of Pyrenees, approximately 35 km west of Ballarat. It lies between the township of Beaufort (approximately 4 km to the north) and the Shire's southern boundary (near the northern outskirts of the Skipton township, which is located in the Shire of Corangamite).

The related external overhead powerlines are proposed to extend approximately 75 km (in total length) between the WEF and the terminal station in south west Victoria generally between:

- the WEF in Stockyard Hill to Mt Emu Creek, to the east of Skipton (Shire of Pyrenees); and
- Mt Emu Creek, to the permitted terminal station[1] site, on Lower Darlington Road, Lismore (Shire of Corangamite).

The related quarry is proposed to be is centrally located within the boundary of the WEF, on Stockyard Hill - Wangatta Road.

The coordinates for the SHWF and related projects are contained in the following table and shown on Related Projects Figure in Attachment A and Appendix A of Attachment D.

Table 1 - Coordinates

Project	Coordinates (MGA54)	
Wind Energy Facility	695,450 5,853,990 (NW)	717,240 5,827,635 (SE)
	695,135 5,836,285 (SW)	716,405 5,850,455 (NE)
External Overhead Powerlines	*From Western Sub to Terminal*	709,807 5,805,068
	702,688 5,840,931 (Western Sub.)	709,388 5,802,573
	702,668 5,840,881	710,144 5,802,465
	703,577 5,838,538	710,207 5,798,579
	707,952 5,837,685	703,978 5,793,225
	709,315 5,836,525	703,572 5,791,130
	710,930 5,836,214	703,343 5,790,882 (Terminal Station)
	710,763 5,834,541	
	710,439 5,833,142	*Eastern Sub to Main route*
	709,807 5,830,265	710,271.934 5,845,603 (Eastern Sub)
	710,861 5,826,538	711,055 5,845,449
	712,144 5,825,712	709,717 5,838,494

[1] A site to the south of Lismore on Lower Darlington Road has been identified as suitable for a terminal station and permitted (Planning Permit No. PP2012/152.A) by the Shire of Corangamite in 2013. The terminal station is discussed further in Section 3.

	711,731 5,823,407 712,970 5,821,312 712,290 5,817,495 711,439 5,817,660 710,538 5,812,225 710,690 5,811,945 710,322 5,809,602 709,972 5,808,719 709,509 5,805,856	708,896 5,838,653 707,952 5,837,685 *Southern Sub to Main Route* 712,784 5,832,726 (Southern Sub) 710,439 5,833,142.936 (End Point)
Quarry	701,865 5,842,735 (NW) 702,580 5,841,125 (SW)	703,520 5,840,935 (SE) 703,780 5,842,315 (NE)

Short project description *(few sentences)**:***

Stockyard Hill Wind Farm Pty Ltd (SHWFPL) is developing a wind farm of up to 149 turbines in south-west Victoria, known as the Stockyard Hill Wind Farm (SHWF). Projects that are related to the SHWF are:

1. External Overhead Powerlines
2. Quarry

3. Project description

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

The aim of this project is to provide a source of renewable energy to supplement Victorian and National energy needs.

The SHWF will support the Commonwealth Government's commitment to meeting its 2030 climate change target, to reduce greenhouse gas emissions by 26-28% on 2005 levels by 2030.

Additionally, the SHWF will support the Commonwealth Large Scale Renewable Energy Target (LRET). LRET builds upon the national renewable energy target first introduced by the Howard Government in 2000 and augmented in later years to absorb State schemes and expand. The LRET specifies the amount of renewable energy to be generated by renewables for each year, ramping up to 33,000 gigawatt hours by 2020.

The LRET creates a financial incentive for the establishment and growth of renewable energy power stations, such as wind farms. It does this through the creation of large-scale generation certificates. Certificates are created based on the amount of eligible renewable electricity produced and can be sold and traded in addition to the sale of electricity.

Victoria has a competitive advantage of a number of existing approvals (such as the SHWF) within excellent wind resource areas and in proximity to the electricity grid. Ensuring these sites are developed will enable investment to flow to the project sites that can deliver LRET at the lowest cost.

A preliminary energy estimate undertaken indicates that this project should produce approximately 1,900 GWh of electricity per year, which equates to providing the equivalent 326,600 average households powered per year[2]. It is anticipated that the production of this electricity from renewable sources will result in a reduction of approximately 1.9 million tonnes of CO_2 per annum[3].

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

[2] These calculations are based on a household average of 5.817 MWh per annum, sourced from ACIL Allen Consulting, A report to the Australian Energy Regulator Electricity Bill Benchmarks for Residential Customers, March 2015.
[3] These calculations are based on the formula provided in DELWP's "Greenhouse Benefits, A guide to calculating greenhouse benefits of wind energy facility proposals, April 2015".

On 8 July 2008, advice was sought from the Minister for Planning as to whether the SHWF and related projects, proposed at the time, would require assessment under the *Environment Effects Act 1978* (Referral No. 2008R00007). The Minister determined on 29 September 2008 that no Environment Effects Statement was required to be prepared, subject to three conditions, including:

- *A report is to be submitted to the Minister for Planning on the potential effects of the Stockyard Hill Wind Farm on the Victorian Brolga population and offsetting measures needed to address adverse effects. The report is to use a population viability analysis approach or other suitable methodology endorsed by the Department of Sustainability and Environment (DSE) and is to be prepared to the satisfaction of the Secretary of DSE or delegate.*

- *A report is to be submitted to the Minister for Planning on the potential effects of the Stockyard Hill Wind Farm on the cultural heritage significance of Mawallok. This report is to take into account the statement of cultural heritage significance prepared by Heritage Victoria and identified by Victorian Heritage Number PROV HO563 and must be prepared to the satisfaction of Heritage Victoria.*

- *A report, identifying corridor options for an extension of the national electricity grid to the Stockyard Hill Wind Farm site, and assessing sensitivities with respect to landscape and fauna values, including potential impacts on Brolga, is to be prepared to the satisfaction of the Secretary of the Department of Planning and Community Development, or delegate, and submitted to the Minister for Planning.*

These conditions were met through the planning permit process, which resulted in the Planning Permit No PL-SP/05/0548 (Pyrenees Planning Scheme) being issued by the Minister for Planning on 26 October 2010 to enable the use and development of the SHWF wind energy facility (the 'permitted' WEF). A copy of Planning Permit No. PL-SP/05/0548 is contained in Attachment B.

The permitted WEF layout is considered to be the layout shown on the indicative layout plan referenced within Condition 1 of Planning Permit No. PL-SP/05/0548 (*Map No. WF 02C; Rev. 01; dated 23/05/2010*)[4], but modified to show the deletion of turbines, removal of other infrastructure associated with the deleted turbines and re-siting of turbines as required by Condition 1(a), (b) and (c) of Planning Permit No. PL-SP/05/0548. The permitted layout is shown on the Permitted Wind Energy Facility Indicative Layout Plans contained in Attachment E.

Planning Permit No. 2009/104 and 2009/105 were also issued by the Minister for Planning on 26 October 2010 to enable the construction of a 132 kV / 500 kV terminal station near Berrybank and for the removal of native vegetation associated with the construction of a 132 kV overhead powerlines between the SHWF and the terminal station.

During the latter half of 2011, the 'permitted' overhead powerlines route and terminal station site were reviewed and it was determined that a terminal station site closer to the crossover of the 500 kV and 220 kV lines was preferable. A site to the south of Lismore on Lower Darlington Road was identified as suitable and terminal station permitted (Planning Permit No. PP2012/152.A) by the Shire of Corangamite in 2013[5]. SHWFPL are currently seeking planning permits (for native vegetation and create/alter access to Road Zone Category 1) associated with the external overhead 132 kV powerlines.

Between 2010 to mid 2014, further development activities were progressed, including additional wind monitoring and background noise monitoring (in accordance with Condition 19 of Planning Permit No. PL-SP/05/0548), flora and fauna surveys (in accordance with Conditions 3, 9, and 11 of Planning Permit No. PL-SP/05/0548), geotechnical testing and securing/amending the necessary land agreements for the project.

[4] This plan has not been endorsed under Condition 1 of the Permit.
[5] This permit remains current / no new planning permit application is being sought in respect to the terminal station related to the SHWF.

Stage 1 of the SHWF WEF development (the construction of 6 permanent anemometers) was undertaken in 2012 and constitutes the commencement of works in accordance with Planning Permit No. PL-SP/05/0548[6]. The purpose of Stage 1 was to allow the noise monitoring program required by Condition 19 of Planning Permit No. PL-SP/05/0548 to commence. As such, Planning Permit No. PL-SP/05/0548 is considered to be 'active' with an expiry date relating to the completion of development by 26 October 2020.

Following the commencement of the RET review in early 2014; the project was placed on hold. Since completion of the RET review in June 2015, policy certainty was restored to the large-scale renewable industry and works on the development have recommenced.

While the project was delayed, wind turbine technology available in the market has continued to evolve with newer wind turbines being developed which generate renewable energy at lower long-run average cost. As such, SHWFPL is currently seeking an amendment to Planning Permit No PL-SP/05/0548 to allow for the newer turbines, which would result in an increased tip height, blade length and tower height of each turbine. Figure 1 provides an illustration of indicative wind turbines utilising maximum turbine dimensions allowed for in the Planning Permit No PL-SP/05/0548 / proposed amended maximum dimensions described in Table 2.

Additionally, Planning Permit No PL-SP/05/0548 currently does not contemplate removal of native vegetation associated with roadworks for construction purposes. Detailed design has not been undertaken for the roadworks required to enable the construction of the WEF. However, enough information is known as to the maximum disturbance area that these works will require and has been included as a part of the current planning permit amendment application and this referral.

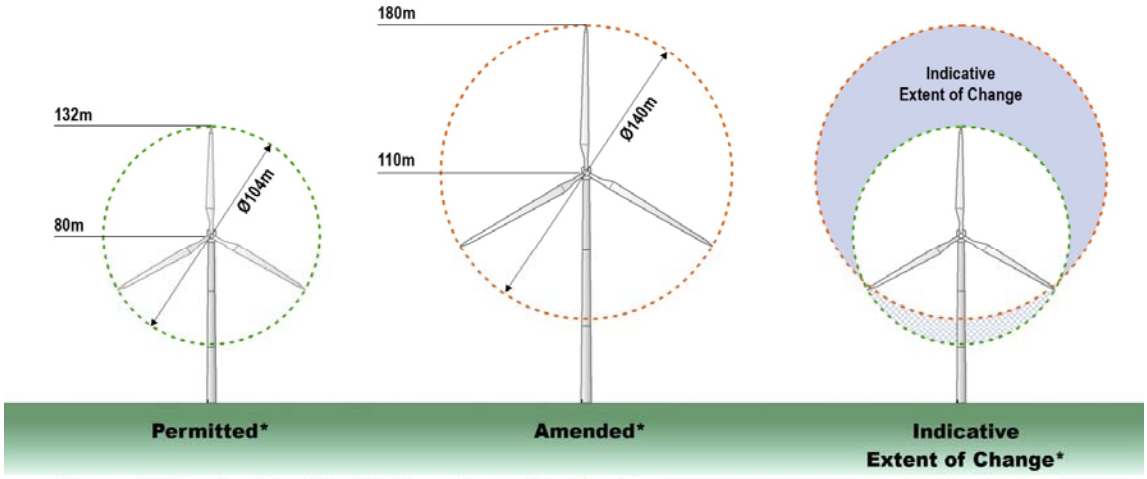

Figure 1 – Permitted and Proposed Amended Wind Turbines

Furthermore, since the original planning permit application was prepared, and Planning Permit No PL-SP/05/0548 was issued, the turbine layout and other civil and electrical infrastructure impact areas have been refined to ensure they accurately represent what will be required to construct the SHWF WEF. The design assumptions used for the revised infrastructure footprint have been determined using the most conservative design outcomes for:

- the potential wind turbine options available within the specified dimensions, including craneage requirements (i.e. for turbine foundations, hardstands, access road widths and turn swept-paths);
- hydrology and geotechnical conditions (which influence the level of cut and fill and drainage); and
- period of construction (i.e. ground breaking activities during wetter periods are likely to lead to an increased disturbance area).

[6] This has been confirmed by the Department of Environment, Land, Water and Planning in a letter dated 7 January 2015.

The actual area of disturbance associated with the construction and operation of the WEF will be optimised for minimal impact pending final major procurement decisions, detailed civil and electrical design and timing of project construction.

For the purpose of the application to amend Planning Permit No PL-SP/05/0548 an assessment of the WEF for of each of the following footprints has been assessed using current guidelines (specifically in relation to the impact on flora) to ensure a comparison can be made of the differing scenarios:

1. Permitted WEF, using original application design assumptions.
2. Permitted WEF, using current design assumptions.
3. Amended WEF, using current design assumptions and overhead powerlines aerial footprint.

It was decided in 2013 that the development of an on-site quarry would be beneficial to the development of the WEF. The purpose of the on-site quarry is to provide local material for road and track construction, maintenance and repair. Such a quarry will significantly reduce the overall traffic impacts of the project. SHWFPL are currently seeking a planning permit for the quarry.

The development of the quarry will provide the opportunity to source the following resources for the SHWF:

- Crushed rock for hardstand and access tracks.
- Concrete aggregate for the wind turbine foundations.
- Select crushed rock for repair and remediation of local roads.
- Bulk fill may be used for raising existing surface levels such as during hardstand or access track construction.

As part of a Work Authority process, a draft Work Plan (WA1518) was prepared and endorsed by the Department of State Development and Business Innovation, now the Department of Economic Development, Jobs, Transport and Resources under the *Mineral Resources (Sustainable Development) Act 1990*, on 5 May 2014.

The original referral (Referral No. 2008R00007) under the *Environment Effects Act 1978* proposed a much larger WEF project than the project proposed today (a total of 282 turbine locations, compared with the 149 turbines locations currently proposed).

A self-assessment of the current proposed SHWF and related projects has been undertaken against the criteria in the *Ministerial Guidelines for assessment of environmental effects under the Environment Effects Act 1978*. The assessment found that the SHWF and related projects is not likely to have a significant effect on the environment; however for risk mitigation purposes this referral has been prepared.

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

Wind Energy Facility

The WEF consists of a design for up to 149 wind turbine locations (as shown on the Amended WEF Indicative Layout Plan in Attachment C), including the infrastructure components described in Table 2 whilst a Table 3 compares the design assumptions of the amended WEF compared with the permitted WEF.

Table 2 – WEF Infrastructure Components

Infrastructure	Current Design
Turbine Dimensions	The turbine envelope proposed includes:

	• overall maximum tip height must not exceed 180 m above natural ground level; • hub-height of no greater than 120 m above natural ground level; and • rotor diameter no greater than 140 m.
Access Tracks	General – 12.5 m wide Trunk – 13.5 m wide
Underground Cable	3 m wide
Hardstands and Foundations	50 m x 70 m including foundations
Temporary Construction Facilities (Concrete Batching Plant / Staging Areas / Compound)	2 x 100 m x 100 m (north/east area and south) 1 x 130 m x 250 m construction compound (west area) 1 x 100 m x 200 m (south area)
Permanent Maintenance Facility	1 (100 m x 40 m)
Substations / Switchyards	4 (100 m x 100 m)
Internal Powerlines	Ground clearance - 10 m wide Aerial clearance – 30 m wide

Table 3 – WEF Footprint Assumptions

Infrastructure	Original Application	Current Design	Reason for difference
Access Tracks	5 m wide	General – 12.5 m wide Trunk – 13.5 m wide	Original design footprint assumed design as per minimal disturbance design (REpower MM92), being 4.4 m trafficable width with minimal verge. Revised design is based on largest design requirement for specified turbine dimensions, (5.5 m trafficable width) including allowance for road verges and drainage.
Underground Cable	Not specified	3 m wide	Original design footprint assumed cabling and access tracks followed the same alignment and did not account for their location side by side. Revised design assumes direct bury or open trenching construction outside of access track footprint.
Hardstands and Foundations	40 m x 25 m hardstands plus 16 m diameter foundations	50 m x 70 m including foundations	Original design footprint assumed design as per minimal disturbance design (REpower MM92). Revised design is based on largest design requirement for specified turbine dimensions.
Temporary Construction Facilities (Concrete Batching Plant / Staging Areas / Compound)	3 x 100 m x 100 m batch plants (north, south areas) 1 x 130 m x 250 m construction compound (west area)	2 x 100 m x 100 m (north/east area and south) 1 x 130 m x 250 m construction compound (west area) 1 x 100 m x 200 m (south area)	Original design assumes one batch plant located within main construction compound area. Revised design assumes west area batch plant located within quarry disturbance area (or alternatively within main compound). Revised design includes batching plant locations within other compound areas (i.e. substation construction area)
Permanent Maintenance Facility	1 (100 m x 40 m)	1 (100 m x 40 m)	No change.
Substations / Switchyards	5 x dimensions not specified	4 (100 m x 100 m)	One substation removed as part of project re-design. Revised design allows for temporary construction compound to be located adjacent to the substation site within the disturbance area.

Internal Powerlines	(dimensions not specified)	Ground clearance - 10 m wide Aerial clearance – 30 m wide	Revised design allows for a conservative disturbance corridor for access, temporary materials storage and foundation construction. Clearance of vegetation within a 30 m corridor (which has a height greater than 3m) to ensure appropriate safety clearance.

Additionally, a business identification sign is proposed on site. The siting, dimensions and other details of the sign is not proposed to change to that which was originally proposed and permitted by Planning Permit No PL-SP/05/0548.

The key differences between the permitted WEF and proposed amended WEF is summarised in the below table.

Table 4 – Key WEF Changes

Component	Permitted WEF	Amended WEF	Change
Proposed turbine numbers	157[7]	149	Reduction of 8 turbines.
Overall height	132 m	180 m	Increased height of up to 48m.
Generation capacity MW	Up to 524 MW	Up to 536 MW	Potential increase of up to 12 MW of installed nameplate capacity (based on current market offerings for dimensions defined for the permitted and amended specifications).
Gwh per year	Approximately 1350 GWh	Approximately 1900 GWh	Increase of approximately 550 GWh per year.
Average households powered per year[8]	Approximately 232,100 households	Approximately 326,600 households	Increase of approximately 94,500 householders.
Greenhouse benefits[9]	Approximately 1.35M tonnes of CO_2 savings per year	Approximately 1.9M tonnes of CO_2 savings per year	Increase of approximately 0.55M tonnes of CO_2 savings per year.
Length of access tracks	Approximately 116 km	Approximately 110 km	Reduction of approximately 6 km of access tracks.
Length of underground cable	Approximately 142 km	Approximately 138 km	Reduction of approximately 4 km of underground cable.
Length of internal overhead powerlines	Approximately 42 km	Approximately 11 km	Reduction of approximately 31 km of internal overhead powerlines.
WEF footprint area *(land impact by the construction of / occupied by physical WEF infrastructure)*	Original design assumptions - approximately 135.4ha Current design assumptions – approximately 227.5 ha	Approximately 230.7 ha	Comparison with original design assumptions – increase in approximately 95.3 ha. Comparison with current design assumptions - increase in footprint of approximately 3.2 ha.
Roadworks footprint area	Not quantified.	Approximately 47.4 ha	Whilst works were permitted, the maximum

[7] Note that the original referral under the *Environment Effects Act 1978* proposed 282 turbines.
[8] These calculations are based on a household average of 5.817 MWh per annum, sourced from ACIL Allen Consulting, A report to the Australian Energy Regulator Electricity Bill Benchmarks for Residential Customers, March 2015.
[9] These calculations are based on the formula provided in DELWP's "Greenhouse Benefits, A guide to calculating greenhouse benefits of wind energy facility proposals, April 2015".

(land impacted by roadworks and intersection upgrades required for construction)			footprint of 47.4 ha was not previously quantified. *(this area includes existing roads and road reserves)*
Native Vegetation Removal	The original referral made for the WEF included a 242 proposed turbines and corresponding infrastructure footprint (including access tracks and cabling). The planning permit was issued for 157 turbines and 5.28 ha (3.09Hha) of native vegetation removal. Additionally, the original referral / planning permit application was based on design assumptions (and footprint) which is no longer considered appropriate (e.g. often it does not allow for the area required for construction, only the footprint of the physical infrastructure). In order to assess the change 3 scenarios have been assessed to provide like for like comparison, including: • Scenario 1 - permitted layout (using original design assumptions) • Scenario 2 - permitted layout (using current design assumptions) • Scenario 3 - amended layout (using current design assumptions) Flora and fauna assessment found: • Scenario 1 – 15.915 ha hectares (1.993 general biodiversity equivalence units and specific offsets). • Scenario 2 – 31.991 hectares (4.172 general biodiversity equivalence units and specific offsets).	A maximum area of 38.267 ha of native vegetation to be impacted, including: • 34.415 ha (5.176 general biodiversity equivalence units) associated with the amended WEF (Scenario 3). • 3.852 ha (0.261 general biodiversity equivalence units and 0.202 specific units of habitat for Button Wrinklewort) associated with the proposed roadworks.	Increase of extent of native vegetation proposed to be impacted. *(Note: whilst the area of native vegetation is proposed to increase, the amended wind farm will reduce impacts on significant species and habitat)*

Related Projects

External Overhead Powerlines

The 132 kV overhead powerlines will include steel poles with a galvanized coating finish, and may including fixtures for climbing. The poles will support up to 3 main cross-arms (or 6 independent

arms) which will in turn each support up to 2 pairs of conductors/wires that may be marked for safety or visibility if necessary and the poles may support additional cross-arms to carry communication and aerial earth wires.

The construction of the powerlines will conform to the specifications as per Australian Standard AS/NZS7000:2010. The circumference at the base of each pole will be up to 2 m in diameter at their base, with an approximate height of between 18 - 40 m. The height of the pole is driven by a number of factors, typically relating to span lengths that have been designed to respond to environmental, technical and landowner considerations. The average distance between each pole location will be approximately 300 m and the lowest point of the line will not be lower than 8.6 m above ground.

One commonly used foundation option to support overhead powerlines of this type includes a mass concrete pad to which the pole is secured by anchor bolts. The anchor bolts sit within a concrete pedestal that connects to the pad beneath the surface. The pedestal usually rises above the ground by approximately 0.3 m and is typically the same width as the base of the pole. A narrow strip of metal used for earthing usually runs from the base of the pole to the ground via the foundation. The total width of the foundation may be up to ~10 m x 10 m and is located within the hardstand area of 20 m x 25 m at each pole location. Bored pole foundations may be constructed to a depth of 8 m.

Quarry

The design of the proposed quarry has been based on the following considerations:

- Suitable material is available for extraction
- At least one side of the quarry is at current grade as to allow the pit to drain and to prevent water ponding in the excavation during or after extraction
- Post extraction, the quarry will be remediated and returned to farmland. Therefore, batter slopes will be no steeper than 5H in 1V, which will be generally consistent with the gently undulating nature of the existing terrain.
- Operation of the proposed quarry does not conflict with the proposed wind turbine areas of internal access tracks
- Feedback from referral agencies and the property owner
- Minimisation of the potential risk to the environment i.e. groundwater and native vegetation.

The concept design has responded to these considerations and shows the proposed quarry to have the following features:

- Quarry pit to cater for the volume of basalt required (approximately 1.2M tonnes)
- An area of approximately 450m by 300m and a depth of up to 8m (approximately)
- Rock crushing and screening area
- Stockpiling areas
- A water dam for surface water management and sediment control
- Internal quarry access tracks
- Overburden and top soil storage areas.

It is estimated that the quarry will produce up to approximately 1.2 million tonnes of crushed rock. It is estimated that the volume of material required equates to up to approximately 380,000 to 480,000 cubic metres. The exact quantities of these materials will be confirmed after detailed design although the amount of material to be removed will not exceed 1.2 million tonnes.

Upon cessation of construction of the WEF, the quarry would be rehabilitated to return the site to agricultural use. The rehabilitated landform will be designed to ensure that water does not collect as a permanent waterbody and generally drains naturally.

Further details can be found in the endorsed Work Plan contained in Attachment D.

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

Wind Energy Facility

Based on prior WEF construction and operations experience, SHWFPL are proposing to adopt a traffic management principle of minimising use of the existing road network where possible to achieve the following outcomes:

- Minimise interaction between public road users and wind farm construction traffic, specifically high vehicle movements such as concrete trucks and earth haulage trucks;
- Provide greater certainty to public road users of which specific roads are expected to experience high traffic volumes by light and heavy vehicles associated with the wind farm construction during specific periods of the construction schedule;
- Minimise new entry points from existing roads to private land to access the wind turbine locations to improve safety for public road users and minimise upgrade requirements on road verges for safe turn in/out of wind farm traffic;
- Limit the roads used for wind farm traffic to enable clear accountability and responsibility for road condition assessment, management and rehabilitation between the Road Management Authority and the wind farm operator; and
- Allow for a 'loop' traffic flow system connecting the distinct areas accessing the wind turbines from the main construction compound (located on Stockyard Hill Road) to minimise truck overtaking/passing. A 'loop' traffic flow system will also provide flexibility in avoiding school bus routes during set times.

Based on this approach, SHWFPL propose limiting the use of construction traffic to the below roads with a concept approach to design improvements/upgrades based on our existing data for these roads.

- Skipton Road – use existing road and maintain in accordance with VicRoads. Key intersections are proposed to be upgraded to cater for the increased construction traffic movements and over sized wind turbine deliveries (as noted in the separate dot points below).
- Stockyard Hill Road (section between Thompsons Road and Dunnets Road) – remove seal from section between Thompsons Road and Lake Goldsmith-Stockyard Hill Road and upgrade entire section to 6.5 m trafficable width gravel pavement. Following the completion of the construction activities, the road will be reinstated using a bitumen spray seal to approximately 5.0 m cross section of the road (as per existing condition).
- Dunnets Road – build new road to 6.5 m trafficable width gravel pavement, with north-bound turn onto Stockyard Hill Road and south-bound turn onto Skipton Road for Over Dimensional vehicles.
- Mt Emu Settlement Road (section between Skipton Road and ~5.8 km east of Skipton Road intersection) – remove seal and widen road verge to allow total 6.5 m trafficable width, with south bound turn onto Skipton Road for Over Dimensional vehicles. Following the completion of the construction activities the road will be reinstated using a bitumen spray seal to approximately 5.0 m cross section of the road (as per existing condition).
- Dooleys Road (section between Skipton Road and ~0.8 km east of Skipton Road intersection) – upgrade entire section to 6.5 m trafficable width gravel pavement, with south bound turn onto Skipton Road for Over Dimensional vehicles.
- Thompson Road – build new road to 6.5 m trafficable width gravel pavement (including installation of new culverts), with south-bound turn onto Skipton Rd for Over Dimensional vehicles.

- Toppers Lane – build new road (eastern section only) to 6.5m trafficable width gravel pavement, with south-bound turn onto Stockyard Hill Road and south-bound turn onto Eurambeen-Streatham Road for Over Dimensional vehicles.
- Eurambeen-Settlement Road (section between Eurambeen-Streatham Road and ~1.8 km west of Eurambeen-Streatham Road intersection) – build new road to 6.5m trafficable width gravel pavement, with south-bound turn onto Eurambeen-Streatham Road for Over Dimensional vehicles.

The exact location and design of the road works within the disturbance footprint will be determined during detailed design and through the development of the Traffic Management Plan prepared in accordance with Condition 35 of Planning Permit No PL-SP/05/0548 and Development Plans prepared in accordance with Condition 1 of Planning Permit No PL-SP/05/0548.

However, preliminary engineering design has been prepared for road cross sections and key intersections to enable the determination of total maximum ground disturbance associated with the roadworks proposed. It is expected that the typical cross section of ground disturbance of roads will be between 13.5 - 15 m depending on the existing conditions; topography and hydrology of the various roadworks zones.

Importantly, the disturbance area is the maximum extent of impact and opportunities may exist to further reduce impacts to native vegetation through detailed design.

The total disturbance footprint of the roadworks (as shown on the Amended WEF Indicative Layout Plan in Attachment C) is proposed to comprise approximately 47.4 ha. The disturbance area has been selected to minimise impacts to native vegetation. For example, the disturbance area has been located on alternative sides of the road reserves to avoid significant vegetation impacts. However, some impacts on native vegetation have been unavoidable.

Related Projects

External Overhead Powerlines

The total disturbance footprint of the route comprises approximately 83.4 ha which is results from earthworks to accommodate pole foundations and ancillary powerlines installation activities including the creating of access tracks and hardstands (the exact location of these activities within the disturbance footprint will be determined during detailed design). Additionally, removal of vegetation within a 36 to 46 m corridor (which has a height greater than 3m) to ensure appropriate safety clearance has been taken into consideration.

Access tracks of up to ~10 m width and ~0.3 m depth will be required along the alignment; however an alternative low-disturbance construction methodology of applying geofabric on top of the existing ground surface and gravel will be used in areas of cultural heritage sensitivity. Additionally, a number of new or altered access points are proposed from public roads, to enter the powerlines access tracks.

Quarry

Ancillary components include:

- Portable site office, weighbridge and amenities to be located within the crushing and screening area for the life of the quarries
- A generator for the powering the site office and amenities.
- Car parking areas, work shop and amenities building
- Site security fencing

Key construction activities:

Wind Energy Facility

It is anticipated that the key construction activities of the proposed WEF will be undertaken in three phases as follows:

- Phase 1 - Civil Construction: Preparation of the site including public road and intersection upgrades, construction of access tracks, creation of turbine footings and other minor civil works.
- Phase 2 - Installation: This phase involves the installation of towers, turbines, substations, cabling and other wind farm specific equipment.
- Phase 3 – Commissioning: The commissioning phase of the works involves ensuring that the turbines are operational (i.e. final safety checks, network tests, etc.).

These phases may overlap with installation occurring at locations while civil works continue on the remainder of the site. In addition, it is anticipated that rehabilitation will occur on a 'rolling' basis as turbines are installed.

It is anticipated that all construction activities will be undertaken in approximately 36 month period.

Related Projects

External Overhead Powerlines

The key construction management activities to be undertaken, over approximately 18 months, are as follows:

- Site mobilisation and the erection of temporary facilities for construction staff
- Surveying the pole locations, project features, and work areas
- Upgrading or construction of temporary and permanent access roads to accommodate heavy vehicle movements during construction.
- Construction of hardstands required for cranes during the pole erection and stringing machine hardstands.
- Clearing activities of the alignment (where required)
- Fencing and signage
- Construction of foundations with anchor bolts installed in mass concrete.
- The transmission line will be constructed on steel poles and be of single or twin circuit duplex conductors configuration with one or two Optical Ground Wire (depending on section of alignment).

Transport of large items to the subject site is anticipated to be via the Hamilton Highway, Glenelg Highway, Rokewood-Skipton Road, and Skipton Road in accordance with VicRoads and Council requirements. It is not anticipated that any road upgrades (apart from the new access points identified) will be required.

Quarry

Up to approximately 1.2M tonnes of crushed rock will be required over approximately 3 years for the entire construction phase of the WEF, as such the construction of the quarry is required to be established prior to the commencement of the WEF.

The key construction management activities to be undertake are as follows:

- Construction of the internal haul roads with imported material
- Construction of the water dam and associated drains
- Remove top soil from the crushing and screening area and initial extraction area

- Initial extraction will commence in the west of the site with proposed crushing and screening area hardstand to be constructed
- Crushing and screening will be conducted with mobile crushers and screens (no fixed plant is proposed as part of the quarry).

Key operational activities:

Wind Energy Facility

The operation of a WEF is considered to be 'self-sufficient' with the operational activities limited to monitoring, maintenance and repairs.

The operational life of the WEF is anticipated to be 25 years.

Related Projects

External Overhead Powerlines

The operation arrangements of the external overhead powerlines are still to be confirmed. Staff will only make occasional visits along the alignment for the purpose of inspection and maintenance, as required.

Quarry

It is proposed to operate the quarry for the duration of the WEF construction period using conventional hard rock quarrying techniques. The process of the extraction will be dependent on project demands, starting in the west of the proposed excavation area and continuing to the east (with benches of approximately 2-3m). The following dot points provide a summary of the key activities relating to the extractive operations.

- *Topsoil and Overburden Handling* – Approximately 0.1 to 0.5m of top soil will be stripped and stockpiled for later use in the rehabilitation. Additionally, any overburden (rock and small quantity of soil) and reject from the crusher operation will be placed in an overburden stockpile.

  Topsoil and overburden will be progressively stripped to expose rock as extraction occurs. This is likely to involve an excavator loading dump trucks, but also may include bulldozers, scrapers and front end loaders. Topsoil stockpiles will be limited to approximately 2m to assist in maintaining soil viability, and will be vegetated to prevent erosion.

- *Rock Extraction* – Once the topsoil and overburden has been removed and stockpiled, the basalt will be drilled and blasted. Equipment used is likely to include a hydraulic percussion drill rig and non-electric blast initiation. Blasting frequency has not been determined at this stage.

  The blasted material will be excavated and hauled to stockpiles prior to crushing and screening using an excavator and dump trucks. The material will be separated into a crusher feed stockpile and bulk fill stockpile based on the quality of the material as it is excavated. Additionally, because different construction products are required, there will be corresponding stockpiles for the crushed and screened material. The size of each stockpile will depend on the peak usage of each material in the construction schedule.

  The final extraction limit will be surveyed and marked out with survey posts.

- *Working Faces* – Working faces in the overburden will be developed with an excavator (or a bulldozer) in approximately 0-1.5m high faces for soft material and 2-3m high for basalt. The batter slope of soft material will be approximately 1V to 1H with the slope of working faces in competent rock (i.e. blasted faces) will be between 15° from vertical and vertical (90°).

- *Final Face Treatment* – Faces will be progressively backfilled once terminal positions are reached. Final faces will be rehabilitated once sufficient distance to the working faces have been established (typically 50m). Final faces will be developed with bulldozers pushing and tracking overburden (or excavator and trucks placing) directly into the rehabilitation areas, then spread and tracked by a bulldozer or scraper.

- *Explosives Usage* – Bulk explosives will be used for the blasting activities (supplied by an external contractor), however no explosives or detonators will be stored at the quarry. Blasting will comply with Department of Economic Development, Jobs, Transport and Resources *Guidelines for Ground Vibration and Airblast Limits for Blasting in Mines and Quarries.*

  Appropriate exclusions zones will be maintained for plant, equipment and personnel. The Traffic Management Plan, which will be prepared to satisfy planning approvals, will ensure public roads with the exclusion zone will be guarded and closed during the blasting period.

- *Processing Operations* – Materials will be transported from the pit to the processing plant primarily via an off road dump truck. A front end loader or excavator will be used to load the dump trucks. For safety reasons, the crusher and screens will be located to the northwest of the quarry, to allow sufficient room to manage stockpiling and minimise equipment interaction.

  Transport of the material in the crushing and screening plant will be via conveyors and chutes until the product discharge onto the ground. The product will then be loaded by a front end loader into trucks to sized aggregate stockpiles away from the plant area. Product from the stockpile area will be loaded directly onto delivery trucks with a front end loader, with a weighbridge provided on site to ensure compliance with statutory vehicle loading requirements and to assess weights of material removed from site.

The production rates from the proposed quarry have been planned to align with the indicative scheduling of the SHWF WEF construction which anticipates a large proportion of the total quarry output to be required within the first 7-12 months of the quarry operating. This is primarily due to the construction of the access tracks which require a large amount of material.

Key decommissioning activities *(if applicable):*

Wind Energy Facility

The key decommissioning activities will comprise of the removal of above ground infrastructure (i.e. turbines, substations, etc) and rehabilitation of civil works (i.e. access tracks).

Decommissioning work will be undertaken in consultation with the landholders to ensure that the land can be returned to agricultural use (i.e. certain access tracks may be retained at the request of the landholder).

Furthermore, the Permit specifies that:

> *The wind energy facility operator must, no later than 1 month after all wind turbines have permanently ceased to generate electricity, notify the Minister for Planning in writing of the cessation of the use. Within a further 6 months of this notification (or in the absence of notification, unless with the consent of the Minister for Planning, within 12 months of all turbines ceasing to operate), the wind energy facility operator, or in the absence of the operator, the owner of the land on which the relevant turbine(s) is/are located, must prepare a decommissioning plan to the satisfaction of the Minister for Planning.*
>
> *The decommissioning plan must provide for the following:*
>
> *a) the removal of all above ground non-operational equipment;*
>
> *b) the removal and clean up any residual spills or contamination;*
>
> *c) the rehabilitation of all storage, construction, access tracks and other areas affected by the project closure or decommissioning, if not otherwise useful to the on-going management of the subject land;*
>
> *d) a decommissioning traffic management plan to the satisfaction of the Minister for Planning; and*
>
> *e) a post-decommissioning revegetation management plan, including a timetable of works to the satisfaction of the Minister for Planning.*

The decommissioning plan must be implemented to the satisfaction of the Minister for Planning within 24 months of approval of the plan or within such other timeframe as may be specified by the Minister for Planning.

Related Projects

External Overhead Powerlines

The powerlines will be decommissioned upon cessation of all WEF generation, if no further use for the lines is required as part of the regulated or non-regulated network to support new generation or load.

Quarry

At the completion of the life of the proposed quarry, the site will be rehabilitated to ensure the final land form is consistent with the following principles:

- A final profile that would generally blend into the surrounding landscape and is suitable for return to pasture; and
- Naturally draining to ensure water does not pond within the area of extraction.

The Work Plan identifies how the proposed quarry will be rehabilitated on completion of the operations (Attachment D).

The basic steps include:

- Battering back the excavated rock slops to no steeper than 5H in 1V, with weathered rock or crusher reject rock used to fill wedges against the excavated rock slopes
- The top surface of weathered rock will be covered with a layer of top soil which is proposed to be sourced from the stockpile area from the initial stages of the quarry
- Topsoil area will be grass seeded.

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).*

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

☐ No ☒ Yes *If yes, please identify related proposals.*

Referral No. 2008R00007

As previously discussed, the SHWF and related projects were referred to the Minister for Planning in 2008, and decision made that no EES was required to be prepared. The project referred included:

- Installation of approximately 282 turbines (with a maximum height 132m, hub height 83m, rotor diameter 103m).
- Capacity of approximately 2 - 3.3 MW resulting in an installed capacity of up to approximately 930MW.
- Associated infrastructure (including maintenance facilities, temporary batching plant, cabling, access tracks, substation / switchyard facilities and wind anemometers).
- Road upgrades (transportation of over-dimensional loads which may require certain upgrades to occur to the existing road network, as well as road upgrades to cater for the increased traffic flows during the construction).
- Grid connection (including 500kV transmission line approximately 40 km (route was yet to be determined) to the south of the project.

The locations of the above were proposed to be determined following the detailed specialist assessments, and were not known at the time the referral was made.

Permitted Terminal Station

The permitted terminal station project includes:

- the construction and operation of the terminal station; and
- the upgrade of the intersection of Camperdown-Lismore Road and Lower Darlington Road

Located approximately 5 km south of Lismore, adjacent to the existing Moorabool to Heywood double circuit 500 kV regulated transmission line, the terminal station will enable the delivery of renewable energy from the SHWF WEF to the national electricity grid.

The project was approved by the Shire of Corangamite via a planning permit issued in 2013 (Planning Permit No. PP2012/152.A), subject to conditions. Whilst the Department of Environment, Land, Water and Planning (DELWP) were advised (via letter dated 21 September 2012) of the outcomes of a self-assessment under the *Environment Effects Act 1978.*

Taking into consideration the disturbed nature of the site and avoidance of the small isolated areas of native vegetation on the site, the construction and operation of the terminal station is not expected to result in any significant environmental or community impacts for the following reasons:

- The majority of the site has been cleared for agriculture and at the time of assessment, supported a harvested crop of wheat (Triticum spp.). Grazing of sheep occurs post harvesting. The site supports two lattice towers for the existing 500kV transmission line.
- A complex CHMP has been prepared for the site and two stone artefacts were recovered on the subsurface and one artefact was found on the surface. Three new Aboriginal places were registered (VAHR 7522-0089, 7521-0130 & 7521-0131). All three places were assessed as having extremely low scientific significance and no harm avoidance, minimisation or management measures are required prior to the activity commencing.

  Additionally, voluntary CHMP 12402 has been prepared and approved for the intersection upgrade associated with the terminal station. Artefact scatter VAHR 7521-0133 was registered during the preparation of this CHMP. VAHR 7521-0133 was assessed as having extremely low scientific significance and no research potential. No harm is likely to occur to known tangible Aboriginal cultural heritage associated with the place because the stone artefacts have been removed from the place and the complex assessment has demonstrated that no additional archaeological component is likely to remain.

  All works on site will be in accordance with the recommendations of the CHMPs.
- The site assessment identified one, highly modified, small, patch (0.13 hectares) of 'Modified Treeless Vegetation', on the terminal station site, surrounding the verge of an artificial dam. This is well to the north of the area of the proposed development and will be avoided by the works. No threatened flora or fauna species, or ecological community listed under the *Environment Protection and Biodiversity Conservation Act 1999*, the *Flora and Fauna Guarantee Act 1988* or listed on the DSE Advisory lists of threatened species was identified at the site.
- Values identified within the road reserve include three small patches of Plains Grassland, two patches along Smiths Road and one at the intersection of Lower Darlington Road and Camperdown-Lismore Road. These areas have been identified as potential habitat for Striped Legless Lizard. These patches of native vegetation are not impacted by the project.
- Environmentally sensitive construction measures will be employed including sediment and erosion controls to ensure that the project does not lead to a decline in wetland health of the wetlands located downstream of the project site.

Additionally, CHMP 12081 was approved on 19 July 2012 and CHMP 12402 on 15 January 2013, under the *Aboriginal Heritage Act 2006*.

4. Project alternatives

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

Permitted Wind Energy Facility

As discussed in Section 3 of this referral, Planning Permit No. PL-SP/05/0548 was issued by the Minister for Planning in 2010 to enable the use and development of the SHWF WEF.

The permitted WEF is no longer economically efficient given the current technology available; as such SHWFPL is currently seeking an amendment to Planning Permit No PL-SP/05/0548 to allow for the newer turbines.

Berrybank Grid Connection

As discussed in Section 3 of this referral (above) Planning Permit No. 2009/104 and 2009/105 were issued by the Minister for Planning on 26 October 2010 to enable the construction of a 132 kV / 500 kV terminal station near Berrybank and for the removal of native vegetation associated with the construction of a 132 kV overhead powerlines between the SHWF and the terminal station near Berrybank.

However, during the latter half of 2011, the 'permitted' overhead powerlines route and terminal station site were reviewed and it was determined that a terminal station site closer to the crossover of the 500 kV and 220 kV lines was preferable.

Matters considered as part of the review included:

- The number of turbines allowed by the WEF planning permit (from the 242 contemplated in the planning permit application to the permitted 157 turbines) and how the project's transmission infrastructure could deliver the maximum amount of renewable energy to customers.
- AEMO advice that it would be preferable that wherever possible, terminal stations should be located in areas that provide greater flexibility for the future development of the transmission network.
- Updated electrical safety clearance guidelines to develop an improved overhead powerlines route to ensure that required vegetation clearances can be satisfied.
- The cost effectiveness of the various options to maintain or reduce the overall cost of the electricity supplied to customers.

As a result, using the criteria listed in AEMO's Victorian *Guidelines for Establishing Terminal Stations, June 2011* coupled with the review of potential environmental and social issues for a number of site options and consultation with planning agencies, SHWFPL identified a new site for the terminal station near the intersection of Lower Darlington Road and Smiths Road, Lismore. A permit was issued for the terminal station by the Shire of Corangamite in 2013.

A Multi-Criteria Analysis was undertaken to assess a number of corridor options to connect the WEF with the terminal station with overhead powerlines. The purpose of the Multi-Criteria Analysis was to identify a suitable 750 m corridor in which an overhead powerlines may be developed. The Multi-Criteria Analysis process is a proven means of simplifying complex decision-making tasks, serving both as a process and a tool to aid the identification of a preferred solution from a range of alternatives.

Preliminary environmental assessments were completed on the potential terminal station site and the preliminary overhead powerlines corridor options.

The analysis used a "triple bottom line" approach to addressing economic, social and environmental issues, and used a framework of goals, principles and weighted criteria to compile GIS datasets and assess corridor options spatially. These criteria informed the GIS route selection tool which

was run to find a series of corridors to be assessed by environmental specialists. A series of workshops were held with agencies and regulators in the region in 2011 to identify the environmental constraints and permitting requirements. The workshops assessed route alignments as well as pole locations.

Seven corridors were identified, including creating a 750m corridor buffer on the centreline or the permitted overhead powerline route in order to compare this option with the newly identified options. The assessment of options was then used to inform the final assessment against the Risk Assessment Framework to confirm the preferred corridor.

The preferred corridor was further refined to form the proposed overhead powerlines route and construction footprint, informed by detailed flora and fauna investigations and landowner negotiations.

Quarry Site Selection

SHWFPL assessed options for providing the necessary materials for the construction of the SHWF, including sourcing the material from quarries within 50 km of the WEF site and the establishment of a quarry within the WEF site boundary. It was determined that an option of an onsite quarry source of material would be preferred, with 8 areas within the vicinity of the WEF site initially being reviewed as potential quarry sites.

An assessment of the options for the sourcing of construction materials for the SHWF was prepared. This assessment looked at the geotechnical, environmental and planning constraints that affected the 8 possible areas for quarries and identified a number of options for sourcing of materials including:

- Entirely on-site sources (one centralised quarry)
- Entirely on-site sources (establishment of two quarries within the project area to service different areas of the SHWF site)
- A mixture of on-site and off-site sources
- Entirely off-site sources

To understand the availability, proximity and cost of material from local quarries, the following was undertaken:

- Obtained data from DPI (now DEDJTR) for established quarry sites within 65 km of Stockyard Hill (broadly equivalent to 50 km from the wind energy facility boundaries)
- Internet searches for quarries in the local area not included in DPI data
- Limited the search to those quarries over 20 hectares – these are more likely to have the capacity to produce the volumes required
- Limited the search to those quarries that produce the materials required
- Consulted with the Pyrenees Shire Council to confirm findings

This process identified 11 quarries in the area that could potentially supply required material (from basalt to hornfels) for use in the construction of the wind energy facility including access tracks and repair of local roads.

The large volumes required for the construction of the wind energy facility and the limited appropriate resource makes off-site sources less desirable than on-site sourcing. In addition, the impact of the increase in heavy vehicle traffic on local roads and traffic makes this option less desirable.

SHWFPL identified two sites within the wind energy facility site area that were selected for further assessment.

A geotechnical study provided input into the identification of the preferred quarry location. This report focused on an assessment of the quality of material available at two on site locations. This study assessed the suitability of land by conducting an assessment of the following site aspects:

- hydrogeological studies
- geotechnical studies
- planning assessments
- landowner support
- proximity to construction areas
- transport management

As a result, the preferred location for the proposed quarry was selected.

Ultimately, SHWFPL found that the subject site was the most appropriate site to establish a quarry as:

- The site could assist in the provision of the necessary quality and quantity of necessary materials for the construction of the SHWF.
- The site is located on developed farm land and the quarry will have minimal impact on remnant vegetation.
- The site has a topography which will assist in managing water related issues during operation and rehabilitation.
- There is limited potential conflict with surrounding land uses (agriculture or residential).
- Operation of the quarry does not conflict with the proposed turbine areas or access tracks.
- The site is within the boundaries of the WEF. The bulk of movements associated with the transport of aggregate will be confined to the internal road network, therefore minimising the potential for impacts to public roads and safety issues for other road users in the areas well as local material supplies.
- Post extraction, the quarry is able to be rehabilitated and returned to farm land.
- The use of the site was supported by relevant statutory agencies and the property owner.

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

Micro-siting of Turbine Locations

The turbine layout shown on Amended Wind Energy Facility Indicative Layout Plans (Attachment C) has been developed using the results of the specialist assessments undertaken, wind monitoring data collected and preliminary construction assessment.

Minor modification to the layout may occur in the future based on detailed design. In accordance with Condition 1 of Planning Permit No. PL-SP/05/0548, before the development starts, development plans which are generally in accordance with the indicative layout plans, must be prepared to the satisfaction of the Minister for Planning.

Turbine Selection

The final turbine selection will be dependent on commercial negotiations; however, the maximum turbine dimensions outlined in Section 3 of this referral will not be exceeded. Furthermore, specialist assessments undertaken to inform this referral are based on a worst case scenario turbine model for each study.

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, have been excluded from the scope of the SHWF related projects for assessment.

6. Project implementation

Implementing organisation *(ultimately responsible for project, i.e. not contractor)**:***

Stockyard Hill Wind Farm Pty Ltd

Implementation timeframe:

The anticipated implementation of the SHWF and related projects, with an overall expected timeframe of 36 months, is outlined in the table below.

Table 5 – Implementation Timeframe

Project	Timeframe
Detailed Design	**June 2017 – May 2018**
Wind Energy Facility	**June 2017 – May 2020**
▪ *Early works (site establishment)*	*July 2017 – November 2017*
▪ *Primary site civil and electrical works, turbine installation*	*December 2017 – May 2019*
▪ *Turbine installation and commissioning*	*June 2019 – May 2020*
External Overhead Powerlines	**February 2018 – August 2019**
▪ *Creation of access, clearing and foundations*	*February 2018 – July 2018*
▪ *Pole installation, stringing and commissioning*	*May 2018 – August 2019*
Quarry	**August 2017 – July 2019**
▪ *Site establishment*	*August 2017 – November 2017*
▪ *Operations*	*November 2017 – February 2019*
▪ *Rehabilitation*	*February 2019 – July 2019*

Proposed staging (if applicable):

See table above which provides details of the implementation timeframe staging of the SHWF and related projects.

7. Description of proposed site or area of investigation

Has a preferred site for the project been selected?

☐ No ☒ Yes *If no, please describe area for investigation.*
If yes, please describe the preferred site in the next items (if practicable).

General description of preferred site, *(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 & surrounds, showing project footprint):*

Wind Energy Facility

The WEF site is located within Pyrenees Shire, approximately 150 km west, north-west of Melbourne and approximately 35 km west of Ballarat.

The revised WEF site extent comprises approximately 109.5 km^2 (approximately 45.8 km^2 less than the Permitted WEF)[10] and is generally bound by Eurambeen-Streatham Road and Beaufort-Carranballac Road to the west, Stockyard Hill Road and Mt Emu Settlement Road in the south, Mount Emu Creek in the east and Ballyrogan Road, Long Gully Road and Dalgleishs Road in the north. Skipton Road runs north south and bisects the subject site.

The primary use of the site is agriculture with the majority cultivated for grazing and cropping. The site has a long history of agricultural use and accordingly is highly modified with little remnant vegetation remaining on the site.

There are a total of 15 dwellings within the WEF site boundary, owned by participants[11] or SHWFPL. Infrastructure on site is predominantly agricultural in nature and includes sheds, dams, access tracks and fencing. The site also contains water mains, electricity cables and telephone cables. Septic tanks are located at each dwelling.

There are six permanent anemometers located on site (constructed in accordance with Planning Permit No. PL-SP/05/0548), to allow the noise monitoring program required by Condition 19. Additionally, 1 temporary anemometer was constructed in late 2015 on the site, to validate the wind shear and wind conditions for the taller wind turbines proposed as part of this application.

The WEF site is located within the Victorian Volcanic Plain and the Central Victorian Uplands bioregions and within the jurisdiction of the Glenelg Hopkins Catchment Management Authority.

Several small wetlands (freshwater meadows and shallow freshwater marshes) are scattered within the site, in addition to minor drainage lines and creeks which traverse the site, mostly in the west and north. Some areas of pasture also become seasonally inundated or waterlogged. The shallow wetlands are ephemeral and do not hold water every year.

The local geology of the site (and the surrounding area) is quaternary basalt derived from ancient eruption points, such as Stockyard Hill, which is an extinct volcano. Its crater currently holds Black Lake which is an ephemeral semi-saline water body.

The site context is shown on the figure in Attachment F.

Related Projects

External Overhead Powerlines

The external overhead powerlines route has an area of approximately 83.4 ha and is located within the Shire of Pyrenees and Shire of Corangamite in south west Victoria generally between:

- the WEF in Stockyard Hill to Mt Emu Creek, to the east of Skipton (Shire of Pyrenees); and
- Mt Emu Creek, to the permitted terminal station site, on Lower Darlington Road, Lismore (Shire of Corangamite).

The route primarily traverses private properties, with the main land use being agriculture, including cropping and livestock. Dwellings in the surrounding area are associated with farming or rural living lots.

The topography of the route is gently undulating with creek valley systems dissecting the area, draining generally southwards. The valleys are not deeply incised and have relatively gentle slopes, with only cliff lines observed along the route located on the northern side of Mount Emu Creek valley which is to the east of the Skipton Township. A general decrease in elevation occurs from north to south along the route. Occasional isolated hills exist above the rest of the landscape in the vicinity

[10] These areas are the area of the 'Address of the Land' of the Permit. The footprint of the Amended WEF is approximately 2.5 km^2 (a reduction of approximately 0.2 km^2).

[11] A participant is a landowner whose land is listed in the Address of the Land in the Permit or where the landowner has a written agreement relating to their land and dealing with noise and/or shadow flicker from the permitted wind turbines. A non-participant is a landowner who is not a participant.

of the route. These hills are typically volcanic hills such as scoria cones, with some granite plutons. Some stony rises are present along the northern section of the overhead powerlines route.

Rows of planted trees are a common feature of the locality, with a number of creek watercourses traversing the landscape. The majority of the route supports cultivated heavily grazed land with introduced pasture grasses (greater than 70%). Planted trees and shrubs are present in the form of wind rows and wood lots, generally comprising of native Sugar Gums *Eucalyptus cladiocalyx* and Pine Trees *Pinus radiate.*

Protected vegetation is generally limited to road reserves with some areas of private land hosting vegetation and potential habitat for protected fauna. The majority of the vegetation patches impacted by the footprint of the powerlines include Plains Grassland, Higher Rainfall Plains Grassy Woodland, Plains Grassy Woodland, Plains Grassy Wetland and Creekline Tussock Grassland.

The external overhead powerlines route crosses a number of major roads including the Hamilton Highway, Glenelg Highway and Rokewood-Skipton Road. Other roads proposed to be crossed are generally unsealed with low traffic volume.

The route will intersect with privately owned properties, parcels of public land and will transect a number of used and unused government roads.

The site context is shown on the figure in Attachment F.

Quarry

The site is located within the bounds of the approved WEF to the west of Ballarat, approximately half way between the township of Beaufort (approximately 15 km to the north) and Skipton (approximately 15 km to the south). The site context is shown on the figure in Attachment F.

The site has an area of approximately 200 hectares and is described as Lot 2 PS 604561, accessed from Stockyard Hill-Wangatta Road, Stockyard Hill. The site is currently used for grazing (cattle and sheep).

The site is generally comprised of gently undulating farmland which falls from approximately RL 390m at the eastern boundary to RL 365 at the western boundary (over approximately 1.3 km). As such, the site drains generally toward the north west where a small dam exists at the corner of the property.

The site is predominately made up of pasture with isolated trees, windbreaks and an agricultural windmill. No streams or other watercourses intersect the property.

Table 6 – Site Area / Length

Project	Site Area / Length	
Wind Energy Facility	**Site Area:** 278.1 ha (land impacted by the construction / occupied by physical WEF infrastructure and roadworks and intersection upgrades)	
	Access Track Route Length: 110 km	**and Width:** 12.5-13.5 m
	Cable Route Length: 138 km	**and Width:** 3 m
	Internal Powerlines Route Length: 11 km	**and Width:** 10 m
External Overhead Powerlines	**Site Area:** 83.4 ha	
	Route length: 75 km	**and Width:** 36-46 m
Quarry	**Site Area:** The total site area is approximately 200 ha; however the development only occupies approximately 57 ha of the total land.	

Current land use and development:

Table 7 – Current land use and development

Project	Current land use and development
Wind Energy Facility	The site is currently used for agricultural uses (cropping / grazing) and road reserves (used and unused).
External Overhead Powerlines	The site is currently used for agricultural uses (cropping / grazing) and road reserves (used and unused).
Quarry	The site is currently used for grazing.

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

Wind Energy Facility

The surrounding landscape is generally comprised of flat farmland, and is covered by existing infrastructure including roads, rail, transmission lines, towers, powerlines, communication towers and fences.

The closest townships to the WEF site are Beaufort (approximately 4.5 km north of the site) and Skipton (approximately 4 km south of the site).

The surrounding area includes a number of State parks, namely Langi Ghiran State Park approximately 10 km north-west of the nearest site boundary and Mount Buangor State Park approximately 8 km north west of the nearest site boundary. The landscape also contains Monmot Hill, a volcanic cone and Mount Emu, which is a granite hill.

Wetlands close to the WEF site boundary or occurring within the site include Lake Goldsmith and Black Lake.

Existing WEFs closest to the site's boundary include Chepstowe Wind Farm approximately 4 km to the west, Challicum Hills Wind Farm approximately 7 km to the north-west, Mount Mercer Wind Farm approximately 40 km to the south-east and Waubra Wind Farm approximately 32 km to the north-east. Additionally, the Ararat Wind Farm is currently under construction approximately 21 km to the north-west.

Related Projects

External Overhead Powerlines

The area surrounding the subject site surrounding area is primarily used for agricultural purposes, cleared for grazing and cropping.

The topography of the surrounding area is generally similar to the route being subdued low relief terrain that is a product of the geologically recent volcanic regime of the Victorian Volcanic Plain and a relatively young drainage system that includes large lake systems and erratic drainage system in the heterogeneous volcanic terrain.

A number of watercourses traversing the landscape. Remnant native vegetation was largely restricted to roadside reserves, waterways (creeks) and natural depressions in the landscape (ephemeral wetlands and swamps).

The closest regional towns to external overhead powerlines are Lismore and Skipton, with Beaufort located to the north and Camperdown located further to the south of the proposed alignment. The economy of the area is largely agriculturally based, with these towns acting as service towns to the surrounding agricultural region.

Dwellings in the surrounding area are associated with farming or rural living lots, including 4 dwellings within 250 m of the alignment, 4 dwellings within 250 m to 500 m and 20 dwellings within 500 m and 1 km.

The surrounding area also supports a number of major infrastructure developments including the Hamilton Highway and Glenelg Highway, and existing 220 kV and 500 kV transmission lines. Existing electricity infrastructure in the surrounding area includes:

- The 500 kV (Moorabool – Heywood) transmission line and supporting towers that run in a generally east to west direction in the southern area of the overhead powerlines alignment, including across the south-east corner of the permitted terminal station site.
- The 220 kV (Ballarat – Terang) transmission line and supporting towers that run in a generally south-west to north-east direction in the southern area of the overhead powerlines alignment and pass just north of the permitted terminal station site.
- 22 kV overhead lines are located throughout the area providing local access to the electricity network.

Quarry

The subject site is bounded to north by Stockyard Hill – Wangatta Road, to the south and east by private property. The area is rural in nature.

The properties surrounding the site to the north, south, east and west are all used for farming purposes. A dwelling exists approximately 260 m to the north of the proposed quarry. SHWFPL has purchased this property and it will be vacant during the operation of the proposed quarry, or potentially used for caretaker accommodation associated with the proposed quarry or wind energy facility. A vacant church building exists approximately 1.3 km to the east of the subject site which is also owned by Origin Energy. This building will remain vacant during the operation of the proposed quarry or may be used in association with the SHWF for the purposes of storage.

The closest residential building is approximately 1.7 km to the west of the subject site.

No water courses traverse the site. Black Lake is located approximately 1.6 km to the southeast of the site and an unnamed water course is located approximately 1.2 km to the west of the site.

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

Table 8 – Planning Context

Project	Current land use and development
Wind Energy Facility	Clause 74 Land Use Terms of the Victorian Planning Provisions defines a 'wind energy facility 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 site is predominately located within the Farming Zone and a small area within the Road Zone – Category 1. Turbines are not proposed to be located within the Road Zone – Category 1 (Skipton Road and Old Geelong Road), however underground cables and new access points are proposed. The site is also partially affected by Clause 42.01 (Environmental Significance Overlay - Schedule 1 'Designated Water Supply Areas'), Clause 42.02 (Vegetation Protection Overlay – Schedule 1 ' Roadside Grassland Protection And Conservation'), and Clause 44.06 (Bushfire Management Overlay).

External Overhead Powerlines	In applying the Corangamite and Pyrenees Planning Schemes, the most appropriate or 'best fit' definition for the external overhead powerlines is a 'minor utility installation'. The external overhead powerlines alignment will traverse zones predominately Farming Zone, and small areas of Road Zone – Category 1. Planning approval is not required for a minor utility installation within these zones. It is not considered that the construction of the overhead powerlines will constitute earthworks.
Quarry	A quarry is best described as 'stone extraction' which is defined in Clause 72 (Land Use Terns) of the Pyrenees Planning Scheme as: *"Land used for the extraction or removal of stone in accordance with the Mineral Resources (Mineral Resources (Sustainable Development) Act 1990".* 'Stone extraction' is defined as 'Earth and Energy Resources Industry: *"Land used for the exploration, removal or processing of natural earth or energy resources. It includes any activity incidental to this purpose including the construction and use of temporary accommodation".* The site is located within the Farming Zone. No overlays apply to the quarry development area.

Local government area(s):

- *Shire of Pyrenees* – Wind Energy Facility, External Overhead Powerlines (northern section) and Quarry
- *Shire of Corangamite* – External Overhead Powerlines (southern section)

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)**:***

Wind Energy Facility

The project area largely comprises of cleared land for crops, and farming land grazed by cattle and sheep and is zoned for agricultural purposes.

The surrounding area includes Langi Ghiran State Park (approximately 10 km north-west of the nearest site boundary) and Mount Buangor State Park (approximately 8 km north west of the nearest site boundary). The landscape also contains Monmot Hill and Mount Emu.

Wetlands close to the WEF site boundary or occurring within the site include Lake Goldsmith and Black Lake.

The area falls within two Victorian bioregions. A small section of the area in the north is within the Central Victorian Uplands bioregion, and the remainder of the area is within the Victorian Volcanic Plains bioregion. The area falls within the Glenelg Hopkins Catchment Management Authority area.

Related Projects

External Overhead Powerlines

The external overhead powerlines alignment runs along some creek lines and water courses including Mount Emu Creek and Mundy Gully, and will traverse the following:

- Mount Emu Creek
- Mundy Gully
- Browns Waterholes
- Haunted Gully

- Oddie Swamp
- 18 unnamed waterways and 3 unnamed waterbodies

The alignment falls within the Victorian Volcanic Plan bioregion and is predominately zoned for agricultural activities. The alignment falls within two catchment management authorities, including the Corangamite Catchment Management Authority and the Glenelg Hopkins Catchment Management Authority.

Quarry

The subject site is located within the Victorian Volcanic Plain bioregion. The Victorian Volcanic Plain bioregion covers large areas of the south west of Victoria from Melbourne to Hamilton.

The landscape is characterised by an undulating plain consisting of grassy flats and associated stony rises dominated by protruding basalt rock formations.

9. Land availability and control

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

☐ No ☒ Yes If yes, please provide details.

The WEF and external overhead powerlines are partly located on public/Crown land. The proposed quarry is wholly located on freehold land.

Discussions with DELWP (and the relevant public land mangers) have commenced regarding the location of the proposed infrastructure and to obtain consent under the *Crown Land (Reserves) Act 1978 / Land Act 1958*.

Attachment G contains a list of the private and public properties affected by the SHWF and related projects.

Current land tenure (provide plan, if practicable):

Attachment G contains a list of the private and public properties affected by the SHWF and related projects.

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

Table 9 – Intended Land Tenure

Project	Current land use and development
Wind Energy Facility	Leases have been voluntarily negotiated with landowners on privately owned properties.
External Overhead Powerlines	Easements are being voluntarily negotiated with landowners on privately owned properties where the powerlines are located. A number of easement option agreements have been secured and the remaining agreements are proposed to be secured through voluntary negotiation by mid-2016.
Quarry	The land is owned freehold. A Caveat (AJ004127e) exists on the title in favour of future use for SHWFPL. The land is being leased from the landowner for the purposes of the project.

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

Table 10 – Other interests in affected land

Project	Current land use and development
Wind Energy Facility	The WEF infrastructure is designed to account for existing easements for utilities: electricity distribution, water, communications (including where services exist but no easement has been granted) to minimise any impacts on existing services. Any impacts through design and/or construction will be mitigated by SHWFPL,

External Overhead Powerlines	The powerlines cross rail reserves in two places, one ~3 km east of the Skipton township and one ~2 km south of the Lismore township. The alignment has been discussed with VicTrack to ensure design and use of the powerline will not be in conflict with the existing use. An 8 km section of the powerlines in the southern section of the alignment runs parallel to the existing 220kV line, including an undercrossing ~5 km north-east of the Lismore township. The design of the proposed powerlines has been undertaken by AusNet, the owner and operator of the 220 kV line, to ensure the use of the proposed line is not in conflict with existing land rights and the proposed easement does not overlap with the existing easement. Native title searches have been undertaken; no claims exist within the area.
Quarry	A powerline easement associated with Powercor crosses the quarry site but will not be negatively affected by the development.

10. Required approvals

State and Commonwealth approvals required for project components (if known):

Table 11 – State and Commonwealth approvals required

Key Approvals	Current requirements
Environment Protection and Biodiversity Conservation Act 1999	*Wind Energy Facility* EPBC decision 2009/4719 was made on 11 February 2011 under the *Environment Protection and Biodiversity Conservation Act 1999* to approve the WEF (as a controlled action). The WEF referral contemplated a range of activities to support the use and development of the WEF, however the proposed changes to the WEF now means that it is considered a different action as compared to the action described in the original referral for the project[12]. A referral was made (2012/6620) associated with the new terminal station however it was put on hold following discussions with the Commonwealth Department of Environment who advised that they would prefer to consider the grid connection in its entirety (terminal station and external overhead powerlines). As such, a self-assessment of the amended WEF (as well as the other project components) has been undertaken considering the *Significant Impact Guidelines 1.1: Matters of National Environmental Significance*, and in particular the 'significant impact criteria'. SHWFPL have submitted a combined referral for the SHWF and Related Projects under the *Environment Protection and Biodiversity Conservation Act 1999* to ensure risks are mitigated.
Mineral Resources (Sustainable Development) Act 1990	A Work Plan and Work Approval are required to be obtained under the *Mineral Resources (Sustainable Development) Act 1990* for the quarry. As part of a Work Authority process, a draft Work Plan (WA1518) was prepared and endorsed by the then Department of State Development and Business Innovation, now the Department of Economic Development, Jobs, Transport and Resources under the *Mineral Resources (Sustainable Development) Act 1990*, on 5 May 2014.
Planning and Environment Act 1987	Planning approval is required for: *Wind Energy Facility* • for the use and development of a wind energy facility (and associated activities), pursuant to Clause 35.07 (Farming Zone), Clause 36.04 (Road Zone, Category 1), Clause 42.01 (Environmental Significance Overlay (Schedule 1 - Designated Water Supply Areas)), Clause 52.17 (Native Vegetation), Clause 52.29 (Land Adjacent to a Road Zone, Category 1, or a Public Acquisition Overlay for a Category 1 Road), and Clause 52.32 (Wind Energy Facility) (Pyrenees Planning Scheme). *External Overhead Powerlines*

[12] The definition of an action within the EPBC Act includes an alteration of a project. As such, the revised WEF is a different action to the action approved, because it is an alteration to the project described in the original referral.

	• for native vegetation removal, pursuant to Clause 42.02 (Vegetation Protection Overlay – Schedule 2 'Roadside Vegetation Protection Area') (Pyrenees Planning Scheme) and Clause 52.17 (Native Vegetation) (Pyrenees and Corangamite Planning Schemes); and • to create and alter access to Road Zone Category 1, pursuant to Clause 52.29 (Land Adjacent to a Road Zone, Category 1, or a Public Acquisition Overlay for a Category) (Pyrenees and Corangamite Planning Schemes). *Quarry* • for the use and development of extractive industry, pursuant to Clause 35.07 (Farming Zone) and Clause 52.08 (Earth and Energy Resources Industry) (Pyrenees Planning Scheme).
Aboriginal Heritage Act 2006	On 22 October 2009 the Wathaurung Aboriginal Corporation approved a CHMP for the WEF (CHMP 10530) under the *Aboriginal Heritage Act 2006 (Vic)*. A review of CHMP 10530 found that that an additional two CHMPs should be prepared. One CHMP to include 2 new areas not currently included within the activity area (1 of which is not within an area of cultural heritage sensitivity) and to ensure that mitigation measures are appropriate for the proposed new layout (amend the management recommendations at two sites to ensure impact is minimised). The other CHMP will include the activities (and area) associated with the roadworks. As such, CHMP 14281 and CHMP 14279 are currently being prepared, in consultation with the Wathaurung Aboriginal Corporation. Additionally, CHMP 12177 and CHMP 14449 are currently being prepared for the external overhead powerlines. A voluntary CHMP (12648) was prepared for the Quarry, and approved by Wathaurung Aboriginal Corporation on 14 May 2014.
Other	The requirements of other relevant Acts, including (but not limited to) the following, will also be addressed through the development of the SHWF project: • *Native Title Act 1993 (Cth)* • *Civil Aviation Act 1988 (Vic)* • *Crown Land (Reserves) Act 1978 (Vic)* • *Land Act 1958 (Vic)* • *Electricity Industry Act 2000 (Vic)* • *Electricity Safety Act 1988 (Vic)* • *Environment Protection Act 1970 (Vic)* • *Flora and Fauna Guarantee Act 1988 (Vic)* • *Heritage Act 1995 (Vic)* • *Land Acquisition and Compensation Act 1986 (Vic)* • *Road Management Act 2004 (Vic)* • *Rail Corporation Act 1996 (Vic)* • *Water Act 1989 (Vic)* • *Wildlife Act 1975 (Vic)*

Have any applications for approval been lodged?

☐ No ☒ Yes If yes, please provide details.

Table 12 – Approval / Application Status

Project / Approval	Status
Wind Energy Facility	
Referral under the *Environment Protection and Biodiversity Conservation Act 1999.*	To be lodged imminently.
Application to amend Planning Permit PL-SP/05/0548	An application was lodged with the Minister for Planning on 12 May 2016.
Cultural Heritage Management Plan No. 10530	Approved on 22 October 2009 by the Wathaurung Aboriginal Corporation
Cultural Heritage Management Plan No. 14281	Currently being prepared.

Cultural Heritage Management Plan No. 14279	Currently being prepared.
External Overhead Powerlines	
Referral under the *Environment Protection and Biodiversity Conservation Act 1999.*	To be lodged imminently.
Application for native vegetation removal and to create and alter access to Road Zone Category 1	An application was lodged with the Minister for Planning on 12 May 2016.
Cultural Heritage Management Plan No. 12177 and Cultural Heritage Management Plan No. 14449	Currently being prepared.
Quarry	
Referral under the *Environment Protection and Biodiversity Conservation Act 1999.*	To be lodged imminently.
Work Plan / Work Authority (WA1518)	The Work Plan was endorsed by the Department of State Development and Business Innovation (now the Department of Economic Development, Jobs, Transport and Resources) on 5 May 2014.
Application for the use and development of extractive industry	An application was lodged with the Shire of Pyrenees on 13 May 2016.
Cultural Heritage Management Plan No. 12081	Approved by Wathaurung Aboriginal Corporation on 14 May 2014

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

It was important to work with government stakeholders in the preparation of the various approval applications and environmental referrals to obtain a common understanding of the different approval requirements and the level of detail documentation to accompany the applications.

An Approvals Working Group was established in March 2012 to provide guidance on approval related matters for all components of the SHWF project.

Table 13 outlines the members, and their matters of interest, of the Approvals Working Group.

Table 13 – Approvals Working Group

Stakeholder	Matters of Interest
Australian Rail Track Corporation (ARTC)	Impact of projects on rail corridor (e.g. overhead powerlines crossing and heavy vehicle crossings). Rail lessor.
CFA	The project design and mitigation measure response to fire and other emergencies.
Corangamite Catchment Management Authority (CCMA)	Impact of projects on waterways. Assessment and approval of Works on Waterways permit applications under the *Water Act 1989* within the CCMA area.
Department of Economic Development, Jobs, Transport and Resources (DEDJTR) *(Earth Resources and Economic Development Departments)*	Responsible authority for the quarry and the Work Plan and Work Authority process under the *Mineral Resources (Sustainable Development) Act 1990.* Impact of the projects on the transport network (including road and rail). Additionally, DEDJTR are responsible for the development of Victoria's Renewable Energy Roadmap.
Department of Environment, and Land, Water and Planning (DELWP)	Impact of the projects from a planning and land use perspective. Minster for Planning is the responsible authority for WEF planning permit. Responsible authority *for Environment Effects Act 1987*. Impact of projects on the environment. Referral authority and interested party in amendment application, work plan, and environmental approval processes.

(includes the Planning and Environment Departments)	Responsible Authority for approvals, and interest in species protected (e.g. avifauna etc.), under the *Flora and Fauna Guarantee Act 1988, Wildlife Act 1975, Crown Land (Reserves) Act 1978* and *Land Act 1958*.
Environment Protection Authority (EPA)	Impact of the projects on the environment. Responsible for the administration of the *Environment Protection Act 1970* and regulations such as the State Environment Protection Policies (SEPPs), industrial waste management policies, works approvals, licences, permits and pollution abatement notices, and implementing the National Environment Protection Measures.
Glenelg Hopkins Catchment Management Authority (GHCMA)	Impact of the projects on waterways. Assessment and approval of Works on Waterways permit applications under the *Water Act 1989* within the GHCMA area.
Heritage Victoria	Impact of projects on heritage objects and places. Responsible Authority for approval under the *Heritage Act 1995.*
OAAV	Impact of the projects on aboriginal heritage. Assessment and approval of CHMPs where there is no Registered Aboriginal Party (RAP) (the southern half of the project area.
Shire of Corangamite	Impact of the projects on the local community and environment (including use of local road network and road reserves, vegetation removal, land use and amenity etc.) Responsible Authority for planning approval for the terminal station, and approval under the *Road Management Act 2004*.
Shire of Pyrenees	Impact of the projects on the local community and environment (including local road network, vegetation, land use and amenity etc.) Responsible Authority for planning approval for the quarry and northern section of overhead powerlines, and approval under the *Road Management Act 2004*.
VicRoads	Determining referral authority for the amendment application. Impact of the projects on the arterial road network. Responsible Authority for approval under the *Road Management Act 2004*.
VicTrack	Impact of the projects on rail corridor (e.g. overhead powerlines crossing and heavy vehicle crossings). Responsibility Authority for approval under the *Rail Corporations Act 1996.*
V-Line	Impact of projects on rail corridor (e.g. overhead powerlines crossing and heavy vehicle crossings). Rail operator.

Consultation with these agencies has also undertaken on a targeted or individual level, as required, in regard to particular issues / application requirements. Regular briefings of the councillors and officers of the local councils (Pyrenees and Corangamite) continues to be undertaken on a quarterly (or otherwise as appropriate given the level of development progress) basis.

Other agencies consulted:

Additionally, SHWFPL has contacted the Civil Aviation Safety Authority in the attempt to undertake consultation on the proposal prior to lodgement of the application to amend Planning Permit No. PL-SP/05/0548, however the Civil Aviation Safety Authority declined, advising that they would review the proposal when the application is formally referred to them by the Minister for Planning. The Department of Defence and Airservices Australia were also consulted as part of the preparation of the aircraft safety assessment.

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):*

The SHWF and related projects is not anticipated to have a significant effect on the environment. An overview of the potentially significant environmental effects (or lack thereof) is as follows:

Native Vegetation

The SHWF and related projects will not result in the clearance of more than 10 ha of native vegetation from an area:

- is of an Ecological Vegetation Class identified as endangered;
- is, or is likely to be, of very high conservation significance; and
- is not authorised under an approved Forest Management Plan or Fire Protection Plan.

The majority of the remnant native vegetation within the WEF and external overhead powerlines footprints proposed to be impacted is of very low quality, whilst no native vegetation is proposed to be removed on the quarry site.

However, the SHWF and related projects will result in 10 ha of more of native vegetation proposed to be removed. A summary of the proposed maximum total extent of 41.82 ha native vegetation proposed to be impacted is as follows:

- The amended WEF (included WEF infrastructure and roadworks) will result in a total extent of 38.267 ha of native vegetation to be removed. The majority of the remnant native vegetation proposed to be impacted is of very low quality (e.g. approximately 60% of all remnant native vegetation impacted by the WEF infrastructure has a habitat score of 0.23).

  There were over 100 native vegetation patches mapped, ranging in quality from a site assessed condition score of 0.11 to 0.77. The Ecological Vegetation Classes recorded were: Creekline Grassy Woodland (0.005 ha), Grassy Dry Forest (0.691 ha), Grassy Woodland (11.577 ha), Heathy Dry Forest (0.083 ha), Plains Grassland (11.343 ha), Plains Grassy Wetland (0.00025 ha), Plains Grassy Woodland (0.075 ha), Stony Rises Woodland (8.864 ha) and Stony Knoll Shrubland (0.019 ha).

- The construction and aerial footprint of the proposed powerlines will result in the removal of 3.562 ha (total extent – patches and 38 scattered trees) of native vegetation.

  In total there were 42 native vegetation patches mapped within the external overhead powerlines alignment, ranging in quality from a site assessed condition score of 0.05 to 0.56. The majority of the vegetation patches impacted are Plains Grassland (0.531 hectares), followed by Higher Rainfall Plains Grassy Woodland (0.197), Plains Grassy Woodland (0.044 hectares), Plains Grassy Wetland (0.037 hectares) and Creekline Tussock Grassland (0.012 hectares).

It is understood that the offset obligations can be satisfied through existing credits registered through the over the counter scheme without difficulty

Flora and Fauna

The SHWF and related projects will not result in the potential for long term loss of a significant proportion of known remaining habitat or population of a threatened species within Victoria. Additionally, the projects will not result in the:

- potential loss of a significant area of a FFG listed ecological community;

- potential loss of a genetically important population of an endangered or threatened species (FFG listed or nominated for listing), including as a result of loss or fragmentation of habitats;
- potential loss of critical habitat; or
- potential significant effects on habitat values of a wetland supporting migratory bird species.

The projects will not result in a significant effects to flora and fauna, for the reasons as follows:

- It is not considered that threatened or migratory species, other species of conservation significance or listed communities will be affected by the WEF. Whilst there has been a number of listed species recorded in the WEF area and surrounds (e.g. Plump Swamp Wallaby-grass, Golden Cowslips, Arching Flax-lily etc.) the WEF will either avoid or impact only a small number of these species.
- Similarly, whilst there has been some listed species recorded within the external overhead powerlines area, due to the linear nature of the powerlines and minimal ground disturbance associated with the development, it is not considered that threatened or migratory species, other species of conservation significance or listed communities will be affected by the external overhead powerlines.
- Brolga collision risk modelling found that at 95% avoidance rate the modelled estimate for the amended WEF is for an annual average of 0.093 Brolga collisions. However, the estimated levels of risk under the assumptions used are so low that they require rounding to the same level in order to use population viability analysis.
- Additionally, Brolga collision risk modelling of the external overhead powerlines found that there is potential for a very low impact. The modelled estimate is for an annual average of 0.020 Brolga collisions. This estimate means that the level of effect on the Brolga population would be completely within natural variation and would thus not represent a measurable impact on the Victorian Brolga population.
- It is considered that implementation of mitigation and offset mechanisms to account for potential effects of Brolga collisions with turbines and internal powerlines at the WEF (in accordance with conditions of Planning Permit No. PL-SP/05/0548) will fully address any effects of the low likely impact of collisions with the WEF and external powerlines on the Victorian Brolga population.
- There are no threatened or migratory species, other species of conservation significance or listed communities potentially affected by the quarry.

Water Environments

There is no 'Ramsar Convention' or 'A Directory of Important Wetlands in Australia' wetlands that will be affected by the SHWF and related projects.

The WEF is located approximately 40 km north of Lake Gnarpurt, part of the Western Districts Lakes Ramsar Wetland, which comprises nine separate lakes. The overhead powerline are located at its closest point 5 km, and at its furthest point approximately 57 km north west of Lake Gnarpurt, whilst the quarry is located approximately 50 km north of Lake Gnarpurt. Significant impact to the Ramsar site is unlikely due to the localised nature of the proposed works and the distance between the Ramsar site and the project sites. Construction methods will employ appropriate controls to ensure that run-off from the site is contained.

The SHWF and related projects do not have potential to have extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems, over the long term, nor do they have potential to have extensive or major effects on beneficial uses of waterbodies over the long term due to changes in water quality steamflows or regional groundwater levels.

- The WEF site is in the vicinity of Lake Goldsmith. There will be adequate set-backs between proposed works areas and the lake shore so indirect impacts from runoff and sedimentation during construction will be avoided.
- Additionally, the WEF site is partially located within the Environmental Significance Overlay (Schedule 1 – 'Designated Water Supply Areas') (Pyrenees Planning Scheme) however the

purpose of this overlay does not related to the protection of significant landscape. Additionally, Central Highlands Water have verbally advised that the St Enochs Catchment Supply area (of which the schedule to the overlay protects) is not in use.

- The external overhead powerlines alignment runs along some creek lines and water courses including Mount Emu Creek and Mundy Gully, and will traverse the following:
  - Mount Emu Creek
  - Mundy Gully
  - Browns Waterholes
  - Haunted Gully
  - Oddie Swamp
  - 18 unnamed waterways and 3 unnamed waterbodies

  The final siting of the pole locations of the external overhead powerlines near waterways will be in consultation with the Glenelg Hopkins and Corangamite Catchment Management Authorities to ensure impact is minimised.
- There are no waterways on the quarry site, nor is not likely to affect any waterways, wetlands, estuaries or marine environments.
- Environmentally sensitive construction measures will be employed including sediment and erosion controls to ensure that the project does affect water environments. These measures will be outlined within the WEF Environmental Management Plan, including a sediment, erosion, and water quality management plan (in accordance with Condition 6b of Planning Permit No. PL-SP/05/0548), as well as the Quarry Environmental Management Plan (as part of the Work Plan (Attachment D)) and the Construction Environmental Management Plan for the external overhead powerlines.

Human Communities

The SHWF and related projects will not result in

- extensive or major effects on landscape values of regional importance;
- extensive or major effects on land stability or highly erodible soils on the site or surrounding areas;
- extensive or major effects on the health, safety or well-being of a human community, due to emissions to air or water or chemical hazards or displacement of residences;
- extensive or major effects on social or economic well-being due to direct or indirect displacement of non-residential land use activities or displacement of residences or severance of residential access to community resources;
- significant effects on the amenity of a substantial number of residents, due to extensive or major, long-term changes in visual, noise and traffic conditions; or
- significant exposure to severe or chronic health or safety hazards to the surrounding community due to emissions to air, water or noise from construction activities or associated vehicle movements.

Landscape and Soils

- It is not anticipated that the WEF will have a significant impact on the soil environment. Additionally, Condition 6b of Planning Permit PL-SP/05/0548 requires a sediment, erosion and water quality management plan to be prepared as part of the required Environmental Management Plan.
- There were no signs of slope instability along the external overhead powerlines alignment during the geotechnical assessments conducted, and the likelihood of an affect by or on natural slop instability is considered low. The external overhead powerlines are considered unlikely to intersect or disturbe areas of acid sulphate soils.

- Land clearance to enable quarrying may result in soil erosion impacts. However, the Environmental Management Plan (within the Work Plan) describes the mitigation measures that would be implemented to reduce potential erosion impacts at the site.
- The Landscape and Visual Impact Assessment Report prepared to accompany the original WEF planning permit application concluded that the then proposed project would have a generally low visual impact on its surrounds and that was considered that the site is a suitable landscape for the construction of a wind farm. Though the original planning permit assessment process the number of turbine locations were reduced, to a project which was deemed to have an acceptable landscape and visual impact.

  A subsequent landscape and visual impact assessment has been undertaken to assess the change to the landscape and visual impacts resulting from amended WEF, compared with the permitted WEF. The assessment found that the level of visual impact assessed for the permitted WEF (as part of the original Landscape and Visual Impact Assessment) do not (in this and the other examples within the landscape and visual impact assessment) change the level of impact as a result of the larger wind turbines.
- Part of the WEF site is located within the Vegetation Protection Overlay (Schedule 1 - 'Roadside Grassland Protection and Conservation) (Pyrenees Planning Scheme), which includes the purpose to "*recognise vegetation protection areas as locations of special significance, natural beauty, interest and importance*"; however no vegetation is proposed to be removed, destroyed or loped within this area.
- There will be negligible impacts to key landscape resources such as watercourses and volcanic plains as a result of the external overhead powerlines. The man made landscape features overhead powerlines and transmission lines are present within the landscape.
- The external overhead powerlines alignment will traverse the Vegetation Protection Overlay – Schedule 2 'Roadside vegetation protection area') (Corangamite Planning Scheme). The Vegetation Protection Overlay includes the purpose "*to recognise vegetation protection areas as locations of special significance, natural beauty, interest and importance*", however the vegetation proposed to be removed within this area (0.016 ha of native vegetation (Plains Grassland)) is not anticipated to have a significant impact on the area.
- The visual impact of the quarry has been assessed as low on the basis of visual exposure and landscape sensitivity. Additionally, the quarry will be established and in operation during the construction of the wind energy facility and is considered minor in the contact of these overall construction activities. The quarry site is not subject to a Landscape Significance Overlay or Environmental Significance Overlay.
- DELWP completed an assessment of the character and significance of landscapes throughout the south west of Victoria in 2014. The study recognises the change that this landscape has undergone since European settlement and the anticipated increased level of development suggesting lower landscape sensitivity. The SHWF and related projects are not within areas which have been identified as having a local, regional or state level of significance.

Road Capacity and Traffic

- The construction phase of the amended WEF is expected to generate no more than 102 one-way vehicle movements in the peak hour periods (80 light vehicles and 22 heavy vehicles).From a network and intersection capacity perspective, the impact of amended WEF construction traffic is not expected to warrant any upgrades to infrastructure, although some measures will be necessary in order to accommodate the swept paths of specific vehicle types.
- The presence of the external overhead powerlines will not lead to a large increase in the amount of traffic in the long term; however the construction process will bring larger volumes of vehicles and vehicles with heavier loads.
- Vehicles movements associated with the quarry will be limited to the quarry set up and the movement of employees on and off the site. A traffic impact assessment found that there would be a decrease in the total number of heavy vehicle trips on the surrounding network over the course of a workday by approximately 70 vehicles (compared with the construction of the wind energy facility without an onsite quarry).

Emissions

- The amended WEF will result in length of access tracks, underground cabling and overhead powerlines. Potential construction impacts (i.e. dust, noise) are therefore likely to be reduced when considering like for like design assumptions. Any resultant impact will be managed through the existing requirement for an Environmental Management Plan, pursuant to Condition 6 of the Planning Permit No. PL-SP/05/0548.
- An Environmental Noise Assessment of the amended WEF has been undertaken comparing predicted noise levels for 3 examples of turbine models against the noise limits of NZS6808:2010. The assessment indicates that the noise limits will be achieved at all participant and non-participant dwellings for the 3 example turbine models.
- It is not considered that there will be any amenity impacts from emissions, dust and odours during the operation of the external overhead powerlines. Environmentally sensitive construction measures will be employed (described within the Construction Environmental Management Plan) to ensure the potential amenity impacts during construction is minimised.
- The nearest residents to the proposed activity area are in excess of 1.5km from the site. It is expected, as identified in the Work Plan (which included air quality and noise assessments), that potential impacts relating to noise, dust, and odour from the proposed quarry to the nearest residence will be minimal and below the relevant standards.

Land Displacement

- There are four properties which have been purchased by SHWFPL. The dwellings on these properties will not be used as dwellings for the life of the projects.
- The WEF will permanently remove some land from agricultural production. However, the amended WEF will result in a similar footprint to that the permitted WEF, due to a reduced number of turbines and the optimisation of access tracks and cabling.

  Additionally, the WEF will support and enhance agricultural production, as the development of the WEF allows agricultural use to continue surrounding the WEF infrastructure within the WEF boundaries, whilst providing financial benefits to host landowners.
- Where the external overhead powerlines will be located within private property, it will temporary displace the use of land for agricultural purposes during construction, however once operational grazing activities can continue within the easements.
- The quarry will temporarily (3 years) occupy approximately 57 ha of the overall 200 ha site. Following the use of the quarry, the site will be rehabilitated back to a form suitable for farming purposes.

Greenhouse Gas Emissions

The SHWF and related projects do not have the potential to result in greenhouse gas emissions exceeding 200,000 tonnes of carbon dioxide equivalent per annum. A small amount of CO_2 may be generated during the construction and operation phase associated with the operation of machinery and vehicles. However, this generation is significantly offset by the ability to produce clean energy. The SHWF will result in approximately 1.9 million tonnes of CO_2 savings per year.

Cultural Heritage

The SHWF and related projects will not have a potential extensive or major effect on Aboriginal cultural heritage vales. A number of assessments have been undertaken and Cultural Heritage Management Plans have been prepared (or are currently in preparation) which have found that:

- A total of ten places (VAHR 7522-0021, VAHR 7522-0083, VAHR 7522-0082, VAHR 7523-0233, VAHR 7523-0234, VAHR 7522-0084, VAHR 7522-0086, VAHR 7522-0085, VAHR 7523-0235 and VAHR 7523-0236) have been recorded to date during the preparation of complex CHMP 10530 (approved in 2009) for the WEF. In the statement of significance, within this CHMP, the activity area was considered to have very low scientific or specific cultural

values. It is not considered likely that unknown Aboriginal cultural heritage with scientific significance is present in impact zones within the activity area.

Two additional CHMPs are currently being prepared for the WEF. One CHMP to include 2 new areas not currently included within the CHMP 10530 activity area (1 of which is not within an area of cultural heritage sensitivity) and to ensure that mitigation measures are appropriate for the proposed new layout (amend the management recommendations at two sites to ensure impact is minimised). The other CHMP will include the activities associated with the roadworks for the areas which require a mandatory CHMP to be prepared (Dooleys Road and Mt Emu Settlement Road). CHMP 14281 and CHMP 14279 are currently being prepared, in consultation with the Wathaurung Aboriginal Corporation.

- A total of eleven places (VAHR 7522-0090, 7522-0091, 7522-0092, 7522-0093, 7522-0094, 7522-0095, 7522-0096, 7522-0097, 7522-0098, 7522-0099 & 7522-0100) have been recorded to date during the preparation of CHMP 12177 and CHMP 14449 for the external overhead powerlines. The statement of cultural heritage significance assesses the activity area having low scientific Aboriginal cultural values compared to other known regional cultural heritage values, in particular, to the south of the project area (e.g. Lake Gnarpurt).

  CHMP 12177 and CHMP 14449 are still currently under preparation, however the majority of the field survey has been undertaken and it is anticipated that the final CHMPs will not result in considerably different conclusions to the draft CHMPs.

- A mandatory CHMP was not required for the quarry site as no part of the activity area is an area of cultural heritage sensitivity. However a voluntary CHMP (12648) was prepared (and approved) for risk mitigation.

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)*

A number of investigations have been undertaken for the SHWF and related projects as outlined in the following table.

Table 14 – Native Vegetation Investigations

Project	Investigations
Wind Energy Facility	• Ecology Heritage and Partners, 'Biodiversity Assessment to Accompany an Application to Amend Planning Permit No. PL-SP/05/0548, Stockyard Hill' (May 2016) • Ecology Heritage and Partners, 'Biodiversity Assessment of Roadside and Intersection Upgrades, Stockyard Hill Wind Farm, Victoria' (May 2016) • Ecology and Heritage Partners, 'Preliminary Ecological Assessments for the Stockyard Hill Wind Farm, Stockyard Hill, Victoria' (2011). • Ecology and Heritage Partners, 'Stockyard Hill Wind Farm, Natural Temperate Grassland of the Victorian Volcanic Plain and Targeted Flora Surveys' (2011). • Ecology and Heritage Partners, 'Stockyard Hill Wind Farm targeted Spiny Rice-flower surveys' (2011). • Ecology and Heritage Partners, 'Detailed Flora Investigations for the Stockyard Hill Wind Farm, Victoria' (2014).
External Overhead Powerlines	• Detailed Flora and Fauna Assessment of the Preferred Overhead Powerline Corridor and Alternative Alignment Options, Stockyard Hill Wind Farm, Victoria, Ecology and Heritage Partners (May 2016) • Ecology and Heritage Partners, 'Detailed Flora and Fauna Assessment of Several Proposed Overhead Powerline Alignment Options, Stockyard Hill Wind Farm, Victoria' (January, 2013).

	• Ecology and Heritage Partners, 'Preliminary Flora and Fauna Assessment for the Proposed Transmission Line Corridor at the Stockyard Hill Wind Farm' (March 2012).
Quarry	• Ecology and Heritage Partners report 'Stockyard Hill Wind Farm: Detailed Flora and Fauna Investigation of the Proposed Quarry Site' (July 2013)

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

☒ NYD *Estimated area:* 41.82 ha (total extent)

The estimated area of native vegetation that may need to be cleared for the WEF and external overhead powerlines is outlined in the table below. No native vegetation is being removed on the quarry site.

Table 15 – Estimated area

Project	Total Extent (ha)	Remnant Patch (ha)	Scattered Trees	Strategic Biodiversity Score	Offsets
Wind Energy Facility					
WEF Infrastructure	34.415	32.657	25	0.296	5.176 general biodiversity equivalence units
Roadworks	3.852	2.587	18	0.244	0.261 general biodiversity equivalence units 0.202 specific biodiversity equivalence units for Button Wrinklewort[13]
External Overhead Powerlines					
Pyrenees	3.562	0.528	32	0.136	0.041 general biodiversity equivalence units 0.614 specific units of habitat for Button Wrinklewort
Corangamite		0.363	6	0.265	0.088 general biodiversity equivalence units

The majority of the remnant native vegetation proposed to be impacted is of very low quality (e.g. approximately 60% of all remnant native vegetation impacted by the WEF infrastructure has a habitat score of 0.23).

A BIOR reports are contained in Attachment H, Attachment I and Attachment J.

For the purpose of the application to amend Planning Permit No. PL-SP/05/0548, an assessment (Attachment H) of each of the following footprints has been undertaken under the *Permitted Clearing of Native Vegetation – Biodiversity Assessment Guideline, September 2013* to provide a like for like comparison of the construction impact of all scenarios:

1. Permitted WEF, using original application design assumptions
2. Permitted WEF, using current design assumptions
3. Amended WEF, using current design assumptions and overhead powerlines aerial footprint

Additionally, the assessment discussed the likely outcomes if assessed under the old *Victoria's Native Vegetation Management - A Framework for Action*, to allow comparison with the quantity of native vegetation specified in Planning Permit No. PL-SP/05/0548.

A comparison of impacts to remnant native vegetation and associated offset requirements between the permitted WEF footprint and the amended WEF footprint is provided in Table 16.

[13] Despite an offset for Button Wrinklewort being required, there was no species recorded in the project areas.

Table 16 – Comparison of offset targets between the permitted WEF and amended WEF

	Permitted WEF	Permitted WEF	Amended WEF
	Original Design Assumptions	*Current Design Assumptions*	
Total Extent	15.915	31.991	34.415
Remnant Patch (ha)	15.071	30.936	32.657
Scattered Trees (no.)	12	15	25
Strategic Biodiversity Score	0.358	0.364	0.369
General Offsets Required	1.993 general biodiversity equivalence units	4.172 general biodiversity equivalence units	5.176 general biodiversity equivalence units
Specific Offsets Required	Button Wrinklewort (0.575 specific biodiversity equivalence units), White Sunray (1.010 specific biodiversity equivalence units)	Button Wrinklewort (1.044 specific biodiversity equivalence units), White Sunray (1.853 specific biodiversity equivalence units), Matted Flax-lily (1.252 specific biodiversity equivalence units)	None
Minimum Strategic Biodiversity Score	0.283	0.289	0.296

The most significant difference between the permitted WEF and the amended WEF is the extent of offsets required. The permitted WEF (original or current design assumptions) requires specific offsets for three species including Button Wrinklewort, White Sunray, and Matted Flax Lily, along with general offsets. In comparison, the amended WEF would only require general offsets and is therefore considered to have a reduced impact on biodiversity.

Additionally, while the total extent of remnant native vegetation proposed to be removed associated with the amended WEF footprint is greater than the area allowed for in Planning Permit No. PL-SP/05/0548, given the highly modified nature of the patches of vegetation and the subsequent low habitat score (i.e. the majority of patches have a habitat score of 0.23 or less), along with the low Strategic Biodiversity Score of the native vegetation proposed to be removed (i.e. 0.292) this has led to a similar offset requirement for the amended WEF footprint.

The design of the amended WEF (including roadworks) has taken into consideration a number of factors, including the avoidance of state and federal significant species and native vegetation. The disturbance area is considered to be the maximum extent of impact and there may be an opportunity to further reduce impact on native vegetation through detailed design and the implementation of Environmental Management Plan(s) (as required by Condition 6 of Planning Permit No. PL-SP/05/0548).

Specifically, the assessment of the WEF footprints found many of the proposed amendments have resulted in the avoidance of ecological impacts. A comparison of impacts to significant species and ecological communities between the permitted WEF footprint and the amended WEF footprint is as follows:

- Reduction of approximately 0.49 ha of Natural Temperate Grasslands of the Victoria Volcanic Plain (0.55 ha in the permitted WEF footprint compared with 0.06 ha for the amended WEF footprint) proposed to be impacted, including avoidance of remnant patches.
- The avoidance of populations of White Sunray and Matted Flax-lily;
- The avoidance of a small population of Plume Swamp Wallaby-grass, and Arching Flax-lily.
- A reduction in impact of small population of Golden Cowslips;
- The avoidance of scattered remnant trees along Mt Emu Settlement Road;

- A reduction of approximately 1.1 hectares of confirmed Golden Sun Moth habitat (2.67 ha in the permitted WEF footprint compared with 1.57 ha for the amended WEF footprint).

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.*

Wind Energy Facility

WEF Infrastructure

There were over 100 native vegetation patches mapped within total area of 32.657ha, ranging in quality from a site assessed condition score of 0.11 to 0.77. The Ecological Vegetation Classes recorded were: Creekline Grassy Woodland (0.005 ha), Grassy Dry Forest (0.691 ha), Grassy Woodland (11.577 ha), Heathy Dry Forest (0.083 ha), Plains Grassland (11.343 ha), Plains Grassy Wetland (0.00025 ha), Plains Grassy Woodland (0.075 ha), Stony Rises Woodland (8.864 ha) and Stony Knoll Shrubland (0.019 ha).

A BIOR report is contained in Attachment H.

Roadworks

A total of 135 patches of remnant native vegetation are mapped within total area of 2.587ha, ranging in quality from a site assessed condition score of 0.15 to 0.49. Areas proposed to be impacted include: Grassy Woodland (1.939 ha), Plains Grassland (0.522 ha), Higher Rainfall Plains Grassy Woodland (0.493 ha), Plains Grassy Woodland (0.143 ha), Heathy Dry Forest (0.001 ha) and Plains Grassy Wetland (< 0.001 ha).

A BIOR report is contained in Attachment I.

External Overhead Powerlines

In total there were 42 native vegetation patches mapped on area of 0.891ha within the external overhead powerlines alignment, ranging in quality from a site assessed condition score of 0.05 to 0.56. The majority of the vegetation patches impacted are Plains Grassland (0.531 ha), followed by Higher Rainfall Plains Grassy Woodland (0.197 ha), Plains Grassy Woodland (0.044 ha), Plains Grassy Wetland (0.037 ha) and Creekline Tussock Grassland (0.012 ha).

A BIOR report is contained in Attachment J.

Have potential vegetation offsets been identified as yet?

☐ NYD ☒ Yes *If yes, please briefly describe.*

It is understood that the offset obligations generated (as shown in Table 15) can be satisfied through existing credits registered through the over the counter scheme without difficulty.

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

Not applicable.

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)

A number of investigations have been undertaken for the SHWF WEF and related projects as outlined in the following table.

Table 17 – Flora and Fauna Investigations

Project	Investigations
Wind Energy Facility	• Ecology Heritage and Partners, 'Biodiversity Assessment to Accompany an Application to Amend Planning Permit No. PL-SP/05/0548, Stockyard Hill' (May 2016) • Ecology Heritage and Partners, 'Biodiversity Assessment of Roadside and Intersection Upgrades, Stockyard Hill Wind Farm, Victoria' (May 2016) • Biosis Research, 'Bird & Bat Impact Assessment to Accompany an Application to Amend Planning Permit No. PL-SP/05/0548', (May 2016) • Ecology Heritage and Partners, 'Biodiversity Assessment of Roadside and Intersection Upgrades, Stockyard Hill Wind Farm, Victoria' (May 2016) • Ecology and Heritage Partners, 'Preliminary Ecological Assessments for the Stockyard Hill Wind Farm, Stockyard Hill, Victoria' (2011). • Ecology and Heritage Partners, 'Stockyard Hill Wind Farm, Natural Temperate Grassland of the Victorian Volcanic Plain and Targeted Flora Surveys' (2011). • Ecology and Heritage Partners, 'Stockyard Hill Wind Farm targeted Spiny Rice-flower surveys' (2011). • Ecology and Heritage Partners, 'Targeted Striped Legless Lizard *Delma impar* surveys of the Stockyard Hill Wind Farm, Stockyard Hill, Victoria' (2012). • Ecology and Heritage Partners, 'Targeted Striped Legless Lizard surveys of proposed borrow pits within Stockyard Hill Wind Farm, Stockyard Hill, Victoria' (2013). • Ecology and Heritage Partners, 'Detailed Flora Investigations for the Stockyard Hill Wind Farm, Victoria' (2014). • Ecology and Heritage Partners, 'Targeted Golden Sun Moth *Synemon plana* Surveys for 2011/12 and 2012/13 at Stockyard Hill Wind Farm, Stockyard Hill, Victoria' (2014).
External Overhead Powerlines	• Detailed Flora and Fauna Assessment of the Preferred Overhead Powerline Corridor and Alternative Alignment Options, Stockyard Hill Wind Farm, Victoria, Ecology and Heritage Partners (May 2016) • Brolga Collision Risk Modelling, Biosis Research (May 2016) • Ecology and Heritage Partners, 'Detailed Flora and Fauna Assessment of Several Proposed Overhead Powerline Alignment Options, Stockyard Hill Wind Farm, Victoria' (January, 2013). • Ecology and Heritage Partners, 'Targeted Golden Sun Moth *Synemon plana* Surveys 2012/13, within the Transmission Line alignment options, Stockyard Hill Wind Farm, Stockyard Hill, Victoria', (March 2013). • Ecology and Heritage Partners, 'Preliminary Flora and Fauna Assessment for the Proposed Transmission Line Corridor at the Stockyard Hill Wind Farm' (March 2012). • Ecology and Heritage Partners, 'Flora and Fauna Assessment for the proposed Terminal Station at the Stockyard Hill Wind Farm, Victoria', (June 2012). • Ecology and Heritage Partners. 'Targeted Striped Legless Lizard *Delma impar* surveys of the Stockyard Hill Wind Farm, Stockyard Hill, Victoria', (March 2012). • Ecology and Heritage Partners, 'Targeted Golden Sun Moth *Synemon plana* surveys of the Stockyard Hill Wind Farm, Stockyard Hill, Victoria' (March 2012).
Quarry	• Ecology and Heritage Partners report 'Stockyard Hill Wind Farm: Detailed Flora and Fauna Investigation of the Proposed Quarry Site' (July 2013)

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.*

Wind Energy Facility

Nationally Significant

Table 18 and Table 19 outline the nationally significant species and ecological communities recorded within the local area.

Table 18 – Nationally significant species and ecological communities (WEF Infrastructure)

Species	
Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens*	Although some suitable habitat was identified in the study area for this species, a desktop assessment found that there are no previous records of the species within the study area. Detailed targeted surveys for Spiny Rice-flower conducted in July-August 2011 did not locate any specimens within the permitted and amended WEF footprint study area
Matted Flax-lily *Dianella amoena*	While this species was recorded at two locations within the broader study area (i.e. in Heavier-Soils Plains Grassland along Cheesemans Road reserve and Carngham – Streatham Road reserve), the species is was not recorded within the permitted and amended WEF footprint and is not likely to be impacted.
White Sunray *Leucochrysum albicans* var. *tricolor*	Approximately 30 White Sunray plants were recorded within the broader study area during targeted surveys. Plants were recorded within the road reserve on the east side of the Eurambeen Streatham Road and along sections of Stockyard Hill Road. Under the permitted WEF the White Sunray population was proposed to be bisected by an access track leading to a turbine location. However, as a result of changes to the amended WEF footprint in this area plants will be avoided.
Striped Legless Lizard *Delma impar*	This species has a patchy distribution within the study area, and has been recorded during targeted surveys from areas of suitable grassland habitat primarily along roadside remnants. Under the permitted WEF Striped Legless Lizard habitat was proposed to be impacted in areas supporting native grassland (principally in the southern portion of the study area). Areas of potentially suitable habitat for Striped Legless Lizard are likely to be impacted by the amended WEF.
Golden Sun Moth *Synemon plana*	All suitable areas within the study area have been surveyed for this species. The species was detected in high numbers from a single property within the study area, in both the permitted or amended WEF footprints with a reduction in impact in the amended footprint.
Natural Temperate Grassland of the Victoria Volcanic Plain	This community was recorded during pervious detailed ecological surveys and occurs mostly in road reserves. Areas of NTGVVP are largely restricted to road reserves and intersections within the study area. A reduction of 0.49 hectares of this community is proposed to be disturbed by the amended WEF (now 0.06 ha), compared with the permitted WEF (0.55 hectares).

Despite the presence of suitable habitat and nearby documented records, Ben Major Grevillia, Clover Glycine, Adamson's Blown Grass, Button Wrinklewort, Swamp Everlasting, and Salt-Lake Tussock-Grass, specimens were not recorded during targeted surveys. It is therefore considered unlikely that any of these EPBC Act-listed species will be impacted by either the permitted or amended WEF footprint.

Similarly, with the exception of Growling Grass Frog where this is low quality habitat in the form of artificial waterbodies (e.g. farm dams) and ephemeral drainage lines, and where the species or its habitats are unlikely to be impacted by the amended WEF, no other EPBC Act-listed fauna species are expected to reside within the study area and be impacted by either the permitted or amended WEF footprint.

Table 19 – Nationally significant species and ecological communities (Roadworks)

Species	
Natural Temperate Grassland of the	One ecological community listed under the EPBC Act was recorded within the study area; NTGVVP. The criteria to determine if remnant grassland meets the condition thresholds for NTGVVP. Habitat zones representative of Plains Grassland located along Dunnets Road meet the condition thresholds to constitute NTGVVP. All remaining Plains Grassland

Victoria Volcanic Plain	patches within the study area do not qualify as NTGVVP given the insufficient cover (<50%) of perennial native grasses and a high (>30%) non-grassy weed cover. Three patches of NTGVVP were identified and cover a total of 0.26 ha. No additional ecological communities listed under the EPBC Act are present within the study area. Vegetation identified as Plains Grassy Wetland within the study area did not qualify as EPBC Act-listed Lowland Seasonal Wetlands of South-eastern Australia due to the lack of native grasses and dominance of Common Spike-sedge.
Matted Flax-lily *Dianella amoena*	Matted Flax-lily was recorded at two locations along Cheesemans Road reserve and Carngham – Streatham Road reserve, which is outside of the current study area.
White Sunray *Leucochrysum albicans* var. *tricolor*	Several White Sunray individuals were detected immediately outside of the study area along the western edge of Stockyard Hill Road south of the intersection with Beaufort-Carranballac Road. A population of White Sunray also occurs along Eurambeen-Streatham Road, outside of the road and intersection upgrades footprint.
Striped Legless Lizard *Delma impar*	Striped Legless Lizard was detected along the western side of the Stockyard Hill roadside reserve, and there is suitable grassland habitat for this species within this section of the road (albeit isolated and highly modified with less than 25% cover of native grasses).

Additionally, an additional nationally listed species have either been recorded or are predicted to occur within the local area, however were not identified during surveys.

State Significant

Table 20 and Table 21 outline the nationally significant species and ecological communities recorded within the local area.

Table 20 – State significant species and ecological communities (WEF Infrastructure)

Species	
Plump Swamp Wallaby-grass *Amphibromus pithogastrus*	Plump Swamp Wallaby-grass *Amphibromus pithogastrus* (Endangered in Victoria, listed under the FFG Act) was recorded within the study area along Dunnets Road. Only a few individuals were recorded in moderate quality vegetation. It may possible that this area can be avoided through detailed design and micro-siting
Golden Cowslips *Diuris behrii*	Approximately 13 Golden Cowslips (Vulnerable in Victoria, not listed under the FFG Act) were recorded within the study area during the targeted surveys. Plants were located within the road reserve on the east side of the Eurambeen Streatham Road (occurring alongside the EPBC Act-listed White Sunray and NTGVVP) and along the permitted WEF footprint. The amended WEF footprint also intersects in the property where Golden Cowslips has previously been recorded.
Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra)	A single Arching Flax-lily (Vulnerable in Victoria, not listed under the FFG Act) plant was detected along the Geelong Road reserve within the permitted WEF footprint. No Arching Flax-lily plants are proposed to be impacted by the amended WEF.
Slender Bindweed *Convolvulus angustissimus* subsp. *omnigracilis*	Slender Bindweed (Poorly Known, not listed under the FFG Act) was recorded at one location along the Stockyard Hill Road reserve. No Slender Bindweed plants are proposed to be impacted along the permitted or the amended WEF footprint.
Western (Basalt) Plain Grassland	One threatened community, the Western (Basalt) Plain Grassland floristic community, which is the state equivalent of the NTGVVP community and listed under the FFG Act, occurs within the study area on public land. Areas of the Western (Basalt) Plain Grassland community occur within patches of Heavier-soils Plains Grassland (EVC 132_61). All habitat zones of Heavier-soils Plains Grassland recorded within the study area, on public land, including those constituting NTGVVP, are part of the FFG Act listed community.

Table 21 – State significant species and ecological communities (Roadworks)

Species	
Western (Basalt) Plain Grassland	One threatened community, the Western (Basalt) Plain Grassland floristic community, occurs within the study area on public land. All habitat zones of Heavier-soils Plains Grassland recorded within the study area, on public land (including those constituting NTGVVP) form part of the FFG Act listed community.
Plump Swamp Wallaby-grass ***Amphibromus pithogastrus***	This species was recorded within the study area along Dunnets Road. Only a few individuals were recorded in moderate quality vegetation (habitat zone PGWet2). One individual occurs within the study area boundary along Dunnets Road.

A further state significant flora species have previously been recorded in the local area. There is habitat for three significant flora species within the study area: Hairy Tails, Small Milkwort, and Australian Anchor Plant. However, no individuals were detected during targeted surveys, and therefore given the highly modified nature of the vegetation proposed to be disturbed, there is a low likelihood that any of these flora species will be impacted by the proposed development.

Brolga *Antigone rubicund* has been recorded in the area. Six pairs of Brolgas (12 adults) were documented within 3 km of SHWF WEF during the 2007 and 2008 breeding seasons. Given the very close proximity to each other of many of these locality records, the spread years over which the records have been made and the territorial nature of breeding Brolgas, it is not feasible that Brolgas will breed simultaneously at any more than a small number of these sites. It is considered that an average of no more than six breeding pairs would be likely to use the zone within 3 km of SHWF WEF in any given year. The mean population ratio of juveniles to adults is estimated at 0.05 and therefore there is an expectation that there will be an annual average of 0.6 juveniles accompanying 12 adults per annum. These numbers have been used in brolga collision risk modelling undertaken for the project. This modelling is discussed further in the following sections of this referral.

While other State significant fauna species have previously been recorded within the local area, the proposed development is unlikely to significantly impact these.

Further information can be found in Attachment H, Attachment I and Attachment K .

Related Projects

External Overhead Powerlines

Table 22 and Table 23 outline the nationally significant and state significant species and ecological communities recorded within the local area.

Table 22 – Nationally significant species and ecological communities (Overhead Powerlines)

Species	
Natural Temperate Grassland of the Victoria Volcanic Plain (NTGVVP)	Habitat zones representative of Plains Grassland EVCs (PG 1 and 2) meet the condition thresholds and are considered part of the ecological community NTGVVP (i.e. a total area of 0.128 ha). The remaining habitat zones of Creekline Tussock Grassland and Plains Grassland do not qualify as NTGVVP due to having insufficient cover (<50%) of perennial native grasses and a high (>30%) non-grassy weed cover.
Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP)	Habitat zones representative of Plains Grassy Woodland EVCs (PGW 5) meet the condition thresholds and are considered part of the ecological community GEWVVP (i.e. a total area of 0.002 ha). The remaining habitat zones of Plains Grassy Woodland (EVC 55_61) and *Higher Rainfall* Plains Grassy Woodland (EVC 55_63) do not qualify as GEWVVP due to having insufficient cover (<50%) of perennial native grasses, are heavily invaded by perennial weeds (>70%) and do not have more than 10 native perennial species per 100 m^2 AND a density of at least 3 big trees per hectare.

White Sunray *Leucochrysum albicans var. tricolor*	This species was recorded within roadside reserves along Rokewood-Skipton Road south of Notmans Road and north of Mount Bute Road. The overhead powerlines is proposed to be located within private property to the north of the roadside reserve, thereby avoiding the populations of this species and the EPBC Act-listed NTGVVP ecological community that occur at this location.

Table 23 – State significant species and ecological communities (Overhead Powerlines)

Species	
Western (Basalt) Plain Grassland	One threatened community, the Western (Basalt) Plain Grassland floristic community, listed under the FFG Act also occurs within the study area, which is the state equivalent of the NTGVVP community Areas of the Western (Basalt) Plain Grassland community occur within patches of Heavier Soils Plains Grassland (EVC 132_61) in the study area. All habitat zones of Heavier Soils Plains Grassland recorded within the study area, including those constituting NTGVVP, are part of the state equivalent FFG Act listed community.
Hardhead *Aythya australis*	There is a high likelihood that Hardhead *Aythya australis* regularly occur within the local area, as 1 was observed during the assessment in February 2012 in a dam east of the current of the current overhead powerlines corridor. Hardheads are listed as Vulnerable in the DSE Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2007). Eighty-five records of the species (most recent in 2006) occur within 10 km of the study area. Suitable habitat is present within the study area within larger dams.
Blue-billed Duck *Oxyura australis*	There is a high likelihood that Blue-billed Duck *Oxyura australis* regularly occur within the study area, as one was observed during the assessment in November 2012 approximately 5 km east of the current overhead powerlines corridor. Blue-billed Ducks are listed as Threatened under the FFG Act and Endangered in the DSE Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2007). Forty-three records of the species (most recent in 2006) occur within 10 km of the study area. Suitable habitat is present within the study area within larger dams.
Brolga *Antigone rubicund*	There is a high likelihood that Brolga occur within the study area. Brolgas are listed as Threatened under the FFG Act and Vulnerable in the DSE Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2007). Two-hundred and fifty-six records of the species (most recent in 2006) occur within 10 km of the study area. Suitable habitat is present within the study area within native and exotic grassland and agricultural croplands. In addition, a large wetland west of the study area was known to be supporting the species at the time of the assessment.
Fat-tailed Dunnart *Sminthopsis crassicaudata*	There is a high likelihood that Fat-tailed Dunnart occurs within the study area. Fat-tailed Dunnart is listed as Near Threatened in the DSE Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2007). Fifteen records of the species (most recent in 2008) occur within 10 km of the study area. In addition, the species was recorded during targeted surveys within the WEF and local landowners have indicated presence of the species within their properties and surrounding local area. The abundance of deeply cracking soils throughout much of the study area provides suitable refuge habitat for the species, whilst in the northern section of the study area, granite boulders and intrusions provide additional shelter. The previously recommended targeted surveys for Striped Legless Lizard with tile grids are also likely to detect this species.

There have been 268 fauna species previously documented, the majority of which are birds (207 species), with lower numbers of mammals, reptiles, frogs and fish. This suggests the local area contains a broad range of fauna species, many of which (primarily locally common birds) are expected to use the study area on either a regular or irregular basis. Despite this, given the range of habitats that fall within 10 km of the study area, including large wetlands, many of the species previously recorded within the region have no suitable habitat within the study area and will not be impacted by the proposed development.

No nationally significant fauna species were recorded during the present survey. Eighteen nationally significant fauna species have previously been recorded from the local area or, are predicted to occur. However, based on habitat type and conditions present within the study area, it is unlikely that most of these species would occur within the study area on a regular basis and use

the site as preferred habitat. Due to the linear nature of the powerlines and minimal ground disturbance associated with the development, it is considered unlikely that the proposed action will have a significant impact on these species.

A total of 25 state significant fauna have previously been documented in the area, based on habitat type and conditions present within the study area, it is unlikely that the majority of these species would occur within the study area on a regular basis

Further information can be found in Attachment J, and Attachment L.

Quarry

No threatened or migratory species or listed communities have been recorded within the local area which would be impacted by the quarry (Appendix G of Attachment D).

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.*

Appropriate avoidance or mitigation measures will be included within the respective Environmental Management Plans / Construction Environmental Management Plans to ensure that no threatening processes are made worse by the projects. Further details on what these plans will include are detailed in the 'Is mitigation of potential effects on indigenous flora and fauna proposed?' section (below) of this referral.

Additionally, 'Loss of terrestrial climatic habitat by anthropogenic emissions of greenhouse gases' has been listed as a key threatening process under the *Environmental Protection Biodiversity Conservation Act 1999* and the *Flora and Fauna Guarantee Act1988*. The SHWF represents development of a renewable energy project that provides a low greenhouse gas emission form of electricity generation consistent with the Federal Government RET objectives.

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.*

Wind Energy Facility

Further to the information provided in the above sections, it is not considered that threatened or migratory species, other species of conservation significance or listed communities will be affected by the WEF, as:

- The majority of the remnant native vegetation within the amended WEF footprint that is proposed to be impacted is of very low quality (i.e. approximately 60% of all remnant native vegetation proposed to be removed as a result of the WEF infrastructure has a habitat score of 0.23).
- The project will not lead to the potential long-term loss of a significant proportion (1-5% depending on conservation status of species) of known remaining habitat or population of a threatened species within Victoria.
- The project will not lead to the loss of the following:
  - Matters listed under the FFG Act;
  - Potential loss of a significant area of a listed ecological community;
  - Potential loss of a genetically important population of an endangered or threatened species;
  - Potential loss of critical habitat; or,

- Potential significant effects on habitat values of a wetland supporting migratory birds.

Additionally, a detailed assessment (Attachment K) of the potential change in impact of the amended WEF (from the permitted WEF) on birds and bats has been undertaken to accompany the application to amend Planning Permit No. PL-SP/05/0548). The assessment included two key components:

- Assessment of all listed threatened and migratory bird and bat species for the amended WEF, as a desktop evaluation in which potential impacts of the amended WEF were been considered compared with the permitted WEF.
- Collision risk modelling to assess potential risk of Brolgas colliding with turbines. This modelling was first done for the permitted WEF and for the amended WEF to compare potential impacts of the amended WEF on the Victorian Brolga population. Risk modelling was undertaken using informed scenarios for likely activities of Brolgas in the vicinity of the WEF.

The assessment found that, for all listed threatened and migratory bird and bat species, any potential impacts of the SHWF WEF on relevant species would be low or negligible and that no significant impacts are likely and that this is unchanged from the permitted WEF to the amended WEF.

The collision risk assessment indicates that the amended WEF entails a marginally higher risk to the species than does the permitted WEF. At 95% avoidance rate the modelled estimate for the permitted WEF is for an annual average of 0.086 Brolga collisions, whilst the modelled estimate for the amended WEF is for an annual average of 0.093 Brolga collisions (an increase of 0.007 Brolga collisions). However, the estimated levels of risk under the assumptions used are so low that they require rounding to the same level in order to use population viability analysis. The difference between modelled effects of the permitted WEF and amended WEF on the Victorian Brolga population are negligible and likely to be too small to be measurable.

Additionally, all turbine-free buffers around wetlands, designated during the original planning panel assessment process, remain free of turbine in the amended WEF layout (as shown in Figure 2).

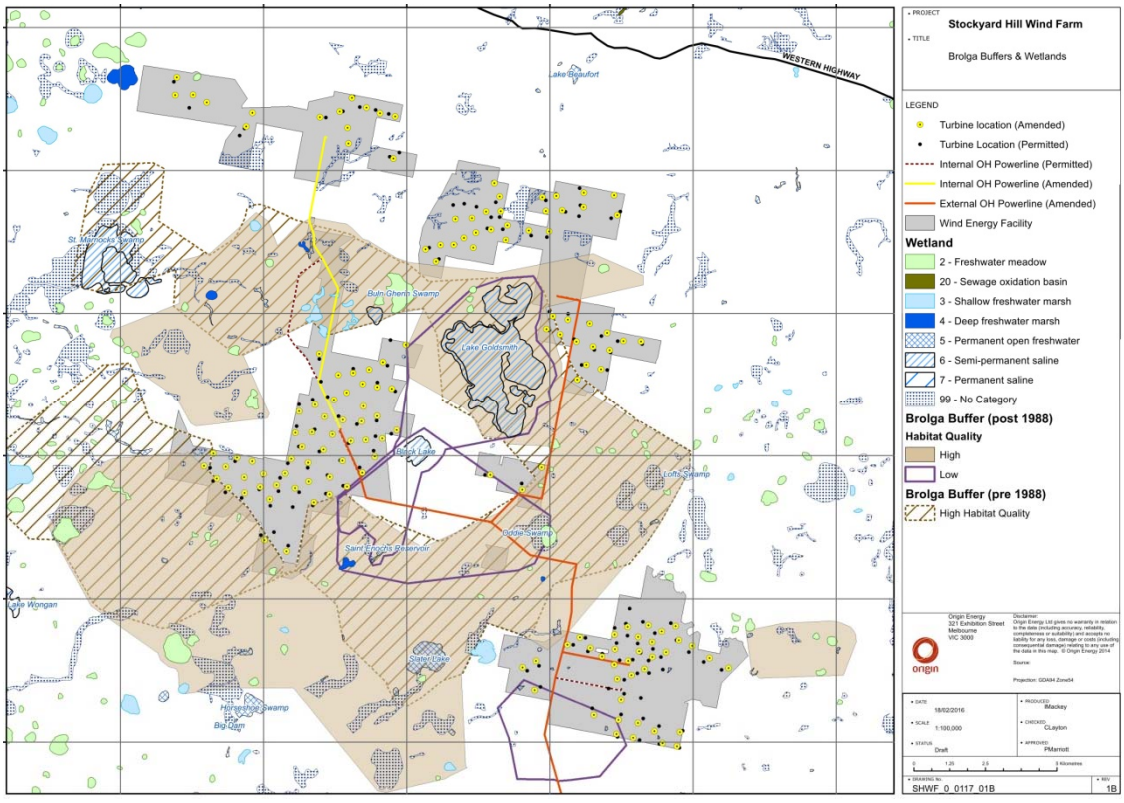

Figure 2 – Location of turbines outside of Brolga 'buffers' (Source: Biosis, 2016)

In accordance with methods stipulated in the *Interim Guidelines for assessment, avoidance mitigation and offsetting of potential wind farm impacts on the Victorian Brolga Population 2011* (Revised 1 February 2012)[14], including population viability analysis, it is considered that mitigation and offset mechanisms could be implemented and can achieve the requirement for no net impact on the Victorian Brolga population. Specifics measures will be determined in consultation with the DELWP, as part of the preparation of a Bat and Avifauna Management Plan in accordance with Condition 15 of Planning Permit No. PL-SP/05/0548.

Related Projects

External Overhead Powerlines

Further to the information provided in the above sections, it is not considered that threatened or migratory species, other species of conservation significance or listed communities will be affected by the external overhead powerlines, as:

- The majority of the remnant native vegetation within the study area is proposed to be impacted is of very low quality.
- The project will not lead to the potential long-term loss of a significant proportion (1-5% depending on conservation status of species) of known remaining habitat or population of a threatened species within Victoria.
- The project will not lead to the loss of the following:
  - Matters listed under the FFG Act;
  - Potential loss of a significant area of a listed ecological community;
  - Potential loss of a genetically important population of an endangered or threatened species;
  - Potential loss of critical habitat; or,
  - Potential significant effects on habitat values of a wetland supporting migratory birds.

Additionally, the brolga collision risk modelling (Attachment L) found there was potential for a very low impact. The modelled estimate is for an annual average of 0.020 Brolga collisions. This estimate means that the level of effect on the Brolga population would be completely within natural variation and would thus not represent a measurable impact on the Victorian Brolga population. It is considered that implementation of mitigation and offset mechanisms to account for potential effects of Brolga collisions with turbines and internal powerlines at the SHWF WEF (in accordance with conditions of Planning Permit No. PL-SP/05/0548) will fully address any effects of the low likely impact of collisions with the external powerline on the Victorian Brolga population.

Quarry

There are no threatened or migratory species, other species of conservation significance or listed communities potentially affected by the quarry (Appendix G of Attachment D).

Is mitigation of potential effects on indigenous flora and fauna proposed?
☒ NYD ☒ No ☒ Yes *If yes, please briefly describe.*

Wind Energy Facility

Condition 14 of Planning Permit No. PL-SP/05/0548 requires that "*before the clearing of any native vegetation starts, a native vegetation offset management plan must be prepared by a suitably*

[14] DELWP developed these guidelines with the purpose to provide a performance based approach for wind farm proponents and decision makers in the siting, design and layout of wind farms to avoid, minimise and mitigate the potential impacts of wind farms on Brolgas.

qualified ecological specialist and submitted to an approved" by the DELWP, and specifies what the plan must include.

Additionally, several measures have been (and will be) undertaken to minimise the impacts of the proposed removal of native vegetation on biodiversity, including (but not limited to) the following:

- The avoidance of areas supporting remnant native vegetation, including EPBC Act-listed listed species and communities, and sensitive sites such as roadsides and waterways;
- Alteration and reductions in the development footprint (e.g. internal access);
- Further, as part of the detailed design process and the preparation of the Environmental Management Plan (in accordance with Condition 6 of Planning Permit No. PL-SP/05/0548) measures will be undertaken to ensure that further impacts to biodiversity are minimised, including (but not limited to):
    - Further micro-siting techniques, including fencing retained areas of native vegetation. If necessary, trees will be lopped or trimmed rather than removed. Similarly, soil disturbance and sedimentation into drainage lines / dams will be avoided or kept to a minimum, to avoid, or minimise impacts to fauna habitats;
    - All contractors will be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention. Habitat zones (areas of sensitivity) will be included as a mapping overlay on construction plans;
    - Tree Retention Zones will be implemented to prevent indirect losses of native vegetation during construction activities; and
    - Construction stockpiles, machinery, roads, and other infrastructure will be placed away from areas supporting native vegetation and/or other ecological sensitive areas.

Additionally, Condition 15 of Planning Permit No. PL-SP/05/0548 requires that a Bat and Avifauna Management Plan is prepared.

Related Projects

External Overhead Powerlines

A Construction Environmental Management Plan will be developed and implemented during construction. The Construction Environmental Management Plan will describe the steps that will be taken to manage and minimise environmental and farm management impacts during construction. Measures may include:

- Further micro-siting techniques, including fencing retained areas of native vegetation. If necessary, trees will be lopped or trimmed rather than removed. Similarly, soil disturbance and sedimentation into drainage lines / dams will be avoided or kept to a minimum, to avoid, or minimise impacts to fauna habitats;
- All contractors will be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention. Habitat zones (areas of sensitivity) will be included as a mapping overlay on construction plans;
- Tree Retention Zones will be implemented to prevent indirect losses of native vegetation during construction activities; and
- Construction stockpiles, machinery, roads, and other infrastructure will be placed away from areas supporting native vegetation and/or other ecological sensitive areas.

Quarry

Design and controls will ensure avoidance. Mitigation measures to avoid any impact to indigenous flora and fauna are detailed within the Environmental Management Plan (which forms part of the Work Plan). Measures specific to conservation and sensitive locations include:

- Site operations, including ground disturbance, stockpiling of soils and storage and operation of plant and machinery, will not occur within an area of 12 metres around the tree and native vegetation,
- The tree and 12 metre 'no-go zone' will be protected by fencing. Signage on the fencing will state that the area is not to be disturbed.
- A Striped Legless Lizard Salvage and Translocation Plan will be developed before construction commences. This has been recommended as a precautionary measure given the low probability of occurrence of the species within the quarry areas.
- The spread of weeds and pathogens will be minimised through the implementation of the Environmental Management Plan.

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

Not applicable.

13. Water environments

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

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

The necessary volumes of water required for the construction and operation of the SHWF WEF and related projects can be obtained through on site storage dam, rain water tanks, on-site bores (locations to be determined in detailed design) and/or potential off-site sourcing. The required water is expected to be less than 1Gl/yr. Waste will be carted to the site if necessary to supplement the onsite water collection capabilities.

Any new water bores proposed to be constructed for use during construction and/or operations of the project will be subject to view with the relevant Catchment Management Authorities to assess any impacts on existing groundwater uses.

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

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

Wind Energy Facility

The amended WEF access track makes allowance for road verges and drainage, whilst all public road upgrades will have stormwater upgrades, with culverts size to convey 5 Year ARI storm events.

Environmentally sensitive construction measures will be employed including sediment and erosion controls to ensure that the project does not discharge waste water and runoff to water environments. These measures will be outlined within the Environmental Management Plan, including a sediment, erosion, and water quality management plan (in accordance with Condition 6b of Planning Permit No. PL-SP/05/0548).

Related Project

External Overhead Powerlines

Environmentally sensitive construction measures will be employed including sediment and erosion controls to ensure that the project does not discharge waste water and runoff to water environments. These measures will be outlined within a Construction Environmental Management Plan.

Quarry

Runoff from the quarry, which may contain quarry sediment, will flow to a settling dam. The settling dam has been designed and positioned to integrate with the natural drainage of the site.

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*.

Wind Energy Facility

The site is in the vicinity of Lake Goldsmith. It is anticipated that this lake will not be impacted due to the nature of development. There will be adequate set-backs between proposed works areas and the lake shore so indirect impacts from runoff and sedimentation during construction will be avoided.

Related Projects

External Overhead Powerlines

The external overhead powerlines alignment runs along some creek lines and water courses including Mount Emu Creek and Mundy Gully, and will traverse the following:

- Mount Emu Creek
- Mundy Gully
- Browns Waterholes
- Haunted Gully
- Oddie Swamp
- 18 unnamed waterways and 3 unnamed waterbodies

The preliminary design of the siting of the pole locations has taken into consideration the location of waterways to minimise potential impact. Detailed design will be refined in consultation with the Glenelg Hopkins and Corangamite Catchment Management Authorities to ensure impact is minimised.

Quarry

The quarry is not likely to affect any waterways, wetlands, estuaries or marine environments.

Are any of these water environments likely to support threatened or migratory species?
☐ NYD ☐ No ☒ Yes *If yes, specify which water environments.*

Whilst these water environments are likely to support threatened or migratory species, they are not likely to be affected by the SHWF and related projects (discussed further in the Flora and Fauna section of this referral, above).

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.*

There is no 'Ramsar Convention' or 'A Directory of Important Wetlands in Australia' wetlands that will be affected by the SHWF or related projects.

The WEF is located approximately 40 km north of Lake Gnarpurt, part of the Western Districts Lakes Ramsar Wetland, which comprises 9 separate lakes (Beeac, Bookar, Colongulac, Corangamite, Cundare, Gnarpurt, Milangil, Murdeduke and Terangpom).

The overhead powerline are located at its closest point 5 km, and at its furthest point approximately 57 km north west of Lake Gnarpurt, whilst the quarry is located approximately 50 km north of Lake Gnarpurt.

Significant impact to the Ramsar site is unlikely due to the localised nature of the proposed works and the distance between the Ramsar site and the project sites. Construction methods will employ appropriate controls to ensure that run-off from the site is contained.

Could the project affect streamflows?

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

Environmentally sensitive construction measures will be employed including sediment and erosion controls to ensure that the project does not affect stream flows. These measures will be described within:

- *Wind Energy Facility* – Environmental Management Plan (to be prepared in accordance with Condition 6 of Planning Permit No. PL-SP/05/0548)
- *External Overhead Powerlines* – Construction Environmental Management Plan
- *Quarry* – Environmental Management Plan, as part of the Work Plan (Attachment D)

Could regional groundwater resources be affected by the project?

☐ NYD ☒ No ☐ Yes *If yes, describe in what way.*

<u>*Wind Energy Facility*</u>

It is anticipated that the foundations of the turbines will have minimal impact on underground water bodies, and/or groundwater. It is anticipated that the development of the proposed wind farm will not impact on the water environment due to the small turbine footprint and the ability to respond to any potential water issues during the micro-siting of the turbines.

The amended WEF is not expected to result in a change of impact on groundwater resources.

Furthermore, as Condition 6b of Planning Permit No. PL-SP/05/0548 requires a sediment, erosion and water quality management plan to be prepared as part of the required Environmental Management Plan.

<u>*Related Projects*</u>

External Overhead Powerlines

Geotechnical investigations have been undertaken for the overhead powerlines alignment. Groundwater was not encountered in most boreholes and all test pits, indicating that groundwater levels were most likely below the termination depth. Groundwater was present in 4 boreholes (a total of 18 boreholes were drilled and 17 test pits were excavated as part of the investigations), between 1.6 m and 6.2 m below ground level. These boreholes were at located in topographic lows, either in alluvium at the base of valleys, immediately adjacent to dry lake or the base of a valley.

Groundwater levels are expected to vary depending on climatic conditions. The investigation was undertaken following a relatively dry period and it is likely that the ground water levels were relatively low. After a period of significant wet weather the groundwater levels are likely to rise, particularly in the low level area of alluvium. However, it is not considered that the construction of pole foundations will affect the groundwater resources of the region.

Quarry

Groundwater is estimated to be between 14 m - 25 m below ground level. The maximum depth of excavation for the quarry is not expected to exceed 8 m and therefore will not affect groundwater.

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)*

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

☐ NYD ☒ No ☐ Yes *If yes, describe in what way*.

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.*

Wind Energy Facility

There are number of conditions in Planning Permit No. PL-SP/05/0548 which will help mitigate potential effects on water environments, including (but not limited to) the preparation of:

- a construction and site works management plan (Condition 6a);
- a sediment, erosion, and water quality management plan (Condition 6b)
- a blasting plan (Condition 6c);
- a hydrocarbon and hazardous substances plan (Condition 6d)

Related Projects

External Overhead Powerlines

A Construction Environmental Management Plan will be prepared to manage potential effects on water environments, associated with the construction of the external overhead powerlines.

Quarry

An Environmental Management Plan has been prepared as part of the Work Plan which will guide the construction and operation of the quarry. With respect to water environments, the Environmental Management Plan includes processes for management of erosions, sediment and water, chemicals and waste. By ensuring compliance with the recommendations identified in the Environmental Management Plan, the potential impacts on the environment will be minimised and mitigate potential effects during the life of the quarry.

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

Not applicable.

14. Landscape and soils

Landscape

Has a preliminary landscape assessment been prepared?

☐ No ☒ Yes *If yes, please attach.*

A number of investigations have been undertaken for the SHWF and related projects as outlined in the following table.

Table 24 – Landscape Assessments

Project	Investigations
Wind Energy Facility	• Environmental Resource Management, 'Stockyard Hill Wind Farm Application for Planning Permit, Landscape and Visual Assessment Report, (October 2009) • Environmental Resource Management, 'Landscape and Visual Impact Assessment to Accompany an Application to Amend Planning Permit No. PL-SP/05/0548', (April 2016)
External Overhead Powerlines	A landscape assessment has not been prepared.
Quarry	• Jacobs, 'Stockyard Hill Wind Farm Quarry – Landscape and Visual Assessment' (June 2014)

Is the project to be located either within or near an area that is:

- **Subject to a Landscape Significance Overlay or Environmental Significance Overlay?**
  ☐ NYD ☐ No ☒ Yes *If yes, provide plan showing footprint relative to overlay.*

Part of the WEF site is located within the Vegetation Protection Overlay (Schedule 1 - 'Roadside Grassland Protection and Conservation) (Pyrenees Planning Scheme), which includes the purpose to "*recognise vegetation protection areas as locations of special significance, natural beauty, interest and importance";* however no vegetation is proposed to be removed, destroyed or loped within this area. Additionally, the WEF site is partially located within the Environmental Significance Overlay (Schedule 1 – 'Designated Water Supply Areas') (Pyrenees Planning Scheme) however the purpose of this overlay does not related to the protection of significant landscape. Additionally, Central Highlands Water have verbally advised that the St Enochs Catchment Supply area (of which the schedule to the overlay protects) is not in use.

The external overhead powerlines alignment will also traverse the Environmental Significance Overlay (Schedule 1 – 'Designated Water Supply Areas') (Pyrenees Planning Scheme), as well as the Vegetation Protection Overlay – Schedule 2 'Roadside vegetation protection area') (Corangamite Planning Scheme). The Vegetation Protection Overlay includes the purpose *"to recognise vegetation protection areas as locations of special significance, natural beauty, interest and importance*", however the vegetation proposed to be removed within this area (0.016 ha of native vegetation (Plains Grassland)) is not anticipated to have a significant impact on the area.

The quarry site is not subject to a Landscape Significance Overlay or Environmental Significance Overlay.

The closest Significant Landscape Overlay to the SHWF WEF and related projects is the Significant Landscape Overlay (Schedule 1 'Volcanic Landscape Area') of the Shire of Corangamite. At closest, the Significant Landscape Overlay is more than 2.5 km west of the external overhead powerlines.

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

DELWP completed an assessment of the character and significance of landscapes throughout the south west of Victoria in 2014. This region has a wide range of landscape types and features from the volcanic plains and cones that dominate much of the area, to the Great Dividing Range in the north, and the Grampians in the west.

The study area comprises all non-coastal, non-urbanised areas in the south west region of Victoria, from Port Phillip Bay in the east to the South Australian border in the west, and extending to the Great Dividing Range in the north.

The study also recognises and values the geological formations that occur within the landscape of the Western Volcanic Plains and therefore increasing the landscape sensitivity of areas that have stony rises as well as the more noticeable features such as remnant volcanic cones. This was recognised in the landscape and visual impact assessment which accompanied the original planning permit application, and therefore the amended WEF does not result in different conclusions with respect to potential landscape and visual impact.

Additionally, the study recognises the change that this landscape has undergone since European settlement and the anticipated increased level of development suggesting lower landscape sensitivity.

Furthermore, the SHWF and related projects are not within areas which have been identified as having a local, regional or state level of significance.

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

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

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

Whilst some vegetation will be cleared as part of the WEF and external overhead powerlines development, it is not considered that it will significantly affect the landscape values of the area.

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

Wind Energy Facility

It is acknowledged that the WEF will have a degree of impact on the landscape, however it is not considered that the WEF will have an impact on landscape values of regional or State importance.

A Landscape and Visual Impact Assessment Report was prepared to accompany the original planning permit application (for 242 wind turbines) in October 2009. The report assessed 14 residential viewpoints and 28 public viewpoints, with photomontages being prepared at 6 residential viewpoints, and 7 public viewpoints. The report concluded that the then proposed project would have a generally low visual impact on its surrounds and that was considered that the site is a suitable landscape for the construction of a wind farm.

Though the original planning permit assessment process the number of turbine locations were reduced, to a project which was deemed to have an acceptable landscape and visual impact. The reduction included the voluntary removal of three turbine locations by SHWFPL in response to aviation/visual impact concerns, and the panel directed removal of an additional 20 turbine locations in response to potential visual impact and 62 turbine locations in response to potential impact to Brolga.

Furthermore, to accompany the application to amend Planning Permit No. PL-SP/05/0548 a subsequent landscape and visual impact assessment has been undertaken to assess the change to the landscape and visual impacts resulting from amended WEF, compared with the permitted WEF (Attachment P).

As part of this assessment, four photomontages have been used to illustrate the level of visual change of the amended WEF. These photomontages allow a benchmarking of the visual impacts of the proposed amendment and help form the basis of the assessment of the degree of change for other viewpoints for which no photomontages were prepared. The viewpoints were selected within 4 km of the nearest wind turbine, as viewpoints that are in the 0-2 km and 2-4 km zones have the greatest potential visual impact. These viewpoints were also indicative of several different landscape unit types located within the viewshed.

The assessment found that:

- The numbers of wind turbines would reduce in some views, and that such a reduction in numbers would have a minor or insignificant reduction to the visual impact of the WEF.
- The reduction in the number of wind turbines from 157 (permitted WEF) to 149 wind turbines (amended WEF) is not visually significant.
- The relocation of some wind turbines makes no perceptible difference to the level of visual impact.
- The change between the visual impact of a permitted wind turbine and the amended wind turbine is not significant.

This conclusion can be demonstrated by comparing Figure 3 and Figure 4. By comparing these examples, from a viewpoint approximately 200 m from the nearest wind turbine, it is apparent that there is a change to the height (and locations). However, these simulations illustrate that the level of visual impact does not change as a result of the proposed amendments.

The assessment found that the level of visual impact assessed for the permitted WEF (as part of the original Landscape and Visual Impact Assessment) do not (in this and the other examples within the landscape and visual impact assessment) change the level of impact as a result of the larger wind turbines.

The assessment found that the permitted wind turbines would be 'highly visible and will usually dominate the landscape' between 1.5-3 km, where the amended wind turbines will be at up to 4 km.

Additionally, the landscape and visual impact assessment found that reductions in electrical infrastructure as part of the amendment may, from some viewpoints, result in a slight diminution in the level of visual impact. However, in the context of the overall WEF, this diminution would not be significant.

Figure 3 – Permitted WEF (Source: ERM, 2016)

Figure 4 – Amended WEF (Source: ERM, 2016)

Related Projects

External Overhead Powerlines

There will be negligible impacts to key landscape resources such as watercourses and volcanic plains. The man made landscape features overhead powerlines and transmission lines are present within the landscape.

Quarry

A visual impact and landscape assessment has been prepared for the quarry. It found that:

- The proposed quarry is located within an area of low visual exposure. The existing roadside vegetation along Stockyard Hill- Wangatta Road would further constrain views of the quarry from areas to the north
- The construction of the quarry will take place within a farming landscape that has generally experienced a long history of alterations associated with farming and other industrial practices. Although the quarry development will be on a larger scale compared with other existing modifications, it will not detract from the general availability of views of this ubiquitous landscape type within the region to any significant degree.
- Locations from Stockyard Hill Road to the south east of the site offer elevated views across the site toward the hills associated with Langhi Ghiran State Park, which is likely to be a visual resource in the local area. However, the cut face of the quarry pit would not be visible from this location, only the overburden areas and other ancillary elements. Additionally, the visual impact to the general population would be low from this location as the surrounding road network experience low traffic volumes.

It is therefore considered that the visual impact of the quarry would be low on the basis of visual exposure and landscape sensitivity. Additionally, the quarry will be established and in operation during the construction of the wind energy facility and is considered minor in the context of these overall construction activities.

Once rehabilitated the site would be consistent in appearance with the natural elements of the landscape (including stony rises). The quarry would not represent a significant permanent visual impact on the landscape.

Is mitigation of potential landscape effects proposed?

☐ NYD ☐ No ☒ Yes *If yes, please briefly describe.*

Wind Energy Facility

Planning Permit No. PL-SP/05/0548 includes two conditions which relate to the mitigation of potential landscape effects of the WEF, including the requirement for:

- an on-site landscaping plan to be prepared for the substation and maintenance facility (Condition 33); and
- an off-site landscaping plan to be prepared, including a program of voluntary landscape mitigation works to owners of dwellings within 3 km of a turbine[15].

Related Projects

External Overhead Powerlines

Through the siting and design of the overhead powerlines, vegetation removal has been avoided or minimised where possible to ensure potential impact on the landscape of the area is minimised.

Quarry

No mitigation measures are proposed during the 3 year operation of the quarry. Once rehabilitated the site would be consistent in appearance with the natural elements of the landscape.

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

Not applicable.

[15] Given that the zone of visual influence has expanded, the application to amend Planning Permit No PL-SP/05/0548 responds by requesting an extension of the requirement (within Condition 34 of the Permit) to offer voluntary landscape mitigation to residents within 4 km of the nearest wind turbine.

Soils

Is there a potential for effects on land stability, acid sulphate soils or highly erodible soils?
☐ NYD ☒ No ☐ Yes *If yes, please briefly describe.*

Wind Energy Facility

It is not anticipated that the WEF will have a significant impact on the soil environment. The amended WEF is not expected to result in a change of impact on the soil environment.

Condition 6b of Planning Permit PL-SP/05/0548 requires a sediment, erosion and water quality management plan to be prepared as part of the required Environmental Management Plan.

Related Projects

External Overhead Powerlines

There were no signs of slope instability along the overhead powerlines alignment observed during the geotechnical assessment of the alignment. It is considered that the likelihood of the proposed infrastructure being affected by natural slop instability to be low, due to the relatively shallow soil profile and the gentle slopes present along the route.

It is acknowledged that slope instability may be triggered by cut and fill activities, such as access road cuts and embankments and cuts into hillsides to form people cap/pad footings. Where permanent cuts and fills are designed on hillsides, a quantitative slop stability analysis will be carried out during the detailed design process for both the cut slop above the excavation and any fill slope below the footing. Adequate slop protection and drainage measure will be designed into permanent cuts and embankments, as water ingress is likely to detrimentally affect exposed soil slopes.

Soil samples were taken as part of the geotechnical assessments, residual basalt soils; residual granite soils as well as alluvium were tested to assess soil agressivity. The assessment found that that the soils tested had a classification of 'Non-aggressive' for both buried concrete and steel, and soil conditions classification of Type A – low permeability soils.

A desktop acid sulfate soils assessment concluded that the proposed alignment is unlikely to intersect or disturb acid sulfate soils. In addition, due to the small volume of disturbance expected as part of the project, the potential consequences would likely be low and readily manageable, if needed. If areas of swamp, stream, river or lake materials are unavoidable then further acid sulfate soils investigations will be undertaken. Additionally, if black organic sludge is encountered during construction, then works will immediately cease at that location. The black organic sludge will be contained to ensure that it cannot disperse into the wider environment and a suitably qualified scientist / engineer will be engaged to assess whether these materials are Monosulfidic Black Ooze (MBO), and if required, implement management measures.

Quarry

The quarry site is located at Stockyard Hill which is a volcanic eruption point, from which lava is estimated to have erupted 100,000 to 500,000 years ago. Lava from Stockyard Hill flowed up to 20 km towards the west and south east creating a stony rise topography comprising an undulating landscape of mounds and ridges with little or no soil covered and minimal surface drainage. The lava has cooled to form a basalt rock which is now exposed on the stony rises.

Land clearance to enable quarrying may result in soil erosion impacts. The Environmental Management Plan (within the Work Plan) describes the mitigation measures that would be implemented to reduce potential erosion impacts at the site. These measures primarily relate to:

- Minimising land disturbance and the removal of vegetation
- Diverting stormwater runoff form the crushing and screening plant area to a dedicated pond which will drain naturally to the surrounding paddock.

- Arranging work schedules so that disturbed land does not remain unstabilised for long periods.
- Temporary erosion controls, such as sand bags and/or silt fencing may be used during periods of excessive wet weather to mitigate erosion impacts.

Are there geotechnical hazards that may either affect the project or be affected by it?
☐ NYD ☒ No ☐ Yes *If yes, please briefly describe.*

Preliminary geotechnical assessments has not indicated that there are to be any geotechnical hazards that may affect, or be affected by, the SHWF WEF or related projects.

Further assessment will be undertaken in conjunction with detailed design and construction works.

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

Not applicable.

15. Social environments

Is the project likely to generate significant volumes of road traffic, during construction or operation?
☐ NYD ☐ No ☒ Yes *If yes, provide estimate of traffic volume(s) if practicable*.

Wind Energy Facility

A traffic impact assessment (Attachment O) has been prepared to assess the overall impact of the amended WEF, whilst also describing the resulting change in potential impact from the permitted WEF. The assessment found that the amended WEF has a neutral to positive traffic impact compared to the permitted WEF.

On an average workday, the assessment found that, the construction phase of the amended WEF is expected to generate no more than 102 one-way vehicle movements in the peak hour periods[16] (80 light vehicles and 22 heavy vehicles). From a network and intersection capacity perspective, the impact of amended WEF construction traffic is not expected to warrant any upgrades to infrastructure, although some measures will be necessary in order to accommodate the swept paths of specific vehicle types.

Over the construction phase of the project, the amended WEF is expected to generate marginally less over dimensional and heavy vehicle traffic when compared to the permitted WEF (7% reduction in over dimensional, 4% reduction in other heavy vehicles).

Planning Permit No. PL-SP/05/0548 requires a Traffic Management Plan to be prepared (in consultation with Pyrenees and Corangamite Shire Councils and VicRoads) to the satisfaction of the Minister for Planning (Condition 35). The traffic impact assessment concluded that the traffic impacts identified by the assessment can be adequately addressed in the required Traffic Management Plan.

Related Projects

External Overhead Powerlines

The overhead powerlines will not lead to a large increase in the amount of traffic in the long term, however the construction process will bring larger volumes of vehicles and vehicles with heavier loads. This amount and type of traffic will vary over the construction period and is typical of large infrastructure projects. A traffic management plan will be been prepared for the project in consultation with the Pyrenees Shire Council, Corangamite Shire Council, VicRoads and VicTrack.

[16] Peak hour periods are nominal only. The exact hours of peak is not known at this stage and will be included in the Traffic Management Plan (TMP) to be prepared pursuant to Condition 35 of the Permit.

Quarry

The presence of the quarry will not lead to a large increase in the amount of traffic in the long term as the quarry has a limited life of approximately 3 years.

A Traffic Assessment and Framework Management Plan was prepared to accompany the planning permit application for the quarry, and provides a traffic assessment and framework management plan for the construction phase only of the proposed on-site quarry associated with the SHWF.

During construction of the quarry, material will be stockpiled on site and there will no movement of material off the site during this time. Vehicles movements associated with the quarry will be limited to the quarry set up and the movement of employees on and off the site. An assessment of these movements is included in the Traffic Assessment and Framework Management Plan, and a traffic management plan will be prepared for this phase.

The traffic impact assessment prepared to accompany an application to amend Planning Permit No. PL-SP/05/0548 includes an assessment of traffic movements generated by the operation of the proposed quarry. The assessment found that the proposed quarry will significantly reduce the overall traffic impact of the project and provide a potential source of local material for road and track construction, maintenance and repair. The traffic impact assessment considered the effect of the provision of an on-site quarry and found that there would be a decrease in the total number of heavy vehicle trips on the surrounding network (for both the permitted WEF and proposed amended WEF) over the course of a workday by approximately 70 vehicles. Parking will be provided for all employees on site.

During operation, the movement of materials off the quarry site will be managed as part of the broader traffic management plan prepared for the WEF as the movement of materials from the quarry are part of the WEF construction. This traffic management plan is required pursuant to Condition 35 of Planning Permit No. PL-SP/05/0548. This plan is required to be prepared in consultation with Pyrenees Shire Council, Corangamite Shire Council and VicRoads, to the satisfaction of the Minister for Planning.

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.

Wind Energy Facility

Emissions (Dust or Odours)

The amended WEF will result in length of access tracks, underground cabling and overhead powerlines. Potential construction impacts are therefore likely to be reduced when considering like for like design assumptions. Any resultant impact will be managed through the existing requirement for an Environmental Management Plan, pursuant to Condition 6 of the Planning Permit No. PL-SP/05/0548.

Visual Conditions

As discussed in the previous section of this referral, a Landscape and Visual Impact Assessment Report was prepared to accompany the original planning permit application (which comprising of 242 wind turbines) in October 2009. Though the planning permit assessment process the number of turbine locations were reduced, to a project which was deemed to have an acceptable landscape and visual impact.

Furthermore, to accompany the application to amend Planning Permit No. PL-SP/05/0548 a subsequent landscape and visual impact assessment has been undertaken to assess the change to the landscape and visual impacts resulting from amended WEF, compared with the permitted

WEF. The assessment found that the amended WEF will not result in a material change in potential landscape and visual impact.

Noise Conditions

An Environmental Noise Assessment (Attachment M) has been undertaken to accompany the application amend Planning Permit No. PL-SP/05/0548. It includes an assessment of the amended WEF by comparing predicted noise levels for 3 examples of turbine models against the noise limits of NZS6808:2010. The assessment indicates that the noise limits will be achieved at all participant and non-participant dwellings for the 3 example turbine models. Figure 5 shows the noise prediction contour for the highest predicted noise level, in relation to participant and non-participant[17] dwellings.

Both the permitted WEF and the amended WEF include indicative layouts and turbine models based on the understanding that the final turbine model and layout will be determined by a competitive tender[18]. Therefore, the predicted noise experienced at dwellings is limited by reference to objective noise limits, rather than by reference to a particular layout or turbine model.

For the purposes of this application, the Environmental Noise Assessment undertook a comparison between the predicted noise for the permitted WEF and amended WEF. The assessment found that depending on the turbine model used, the predicted noise at some non-participant dwellings from the amended WEF is up to 3 dB(A) higher and as much as 5 dB(A) lower than the predicted noise from the permitted WEF. Whilst there is an increase or decrease in noise associated with the amended WEF at some dwellings, the predicted noise at these dwellings complies with NZS6808:2010 for both the amended and permitted WEF.

Figure 5 – Noise Prediction Contour *(Source: Sonus, 2016)*

[17] A participant dwelling means a dwelling on land listed in the Address of the Land in the Permit or where the landowner has a written agreement relating to their land and dealing with noise from the permitted wind turbines. A non-participant dwelling means any dwelling that is not a participant dwelling.

[18] Additionally, the final layout will be subject to satisfaction and endorsement of plans by the Minister for Planning, pursuant to Condition 1 of the Permit.

Traffic Conditions

As discussed in the previous section of this referral, the traffic assessment (Attachment O) found that the amended WEF has a neutral to positive traffic impact compared to the permitted WEF.

On an average workday, the assessment found that, the construction phase of the amended WEF is expected to generate no more than 102 one-way vehicle movements in the peak hour periods[19] (80 light vehicles and 22 heavy vehicles). From a network and intersection capacity perspective, the impact of amended WEF construction traffic is not expected to warrant any upgrades to infrastructure, although some measures will be necessary in order to accommodate the swept paths of specific vehicle types.

Related Projects

External Overhead Powerlines

There will be an increase in traffic volume during the construction phase of the project. A traffic management plan has been prepared for the project in consultation with Corangamite Shire Council, VicRoads and VicTrack.

There will be negligible impacts to key landscape resources such as watercourses and volcanic plains. The man made landscape features overhead powerlines and transmission lines are present within the landscape.

It is not considered that there will be any amenity impacts from emissions, dust and odours during the operation of the overhead powerlines. Environmentally sensitive construction measures will be employed (described within the Construction Environmental Management Plan) to ensure the potential amenity impacts during construction is minimised.

Quarry

The nearest residents to the proposed activity area are in excess of 1.5 km from the site. It is expected, as identified in the Work Plan (which included air quality and noise assessments), that potential impacts relating noise to dust, and odour from the proposed quarry to the nearest residence will be minimal and below the relevant standards.

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.*

Wind Energy Facility

Emissions (to air or water)

The amended WEF will result in length of access tracks, underground cabling and overhead powerlines. Potential construction impacts are therefore likely to be reduced when considering like for like design assumptions. Any resultant impact will be managed through the existing requirement for an Environmental Management Plan, pursuant to Condition 6 of the Planning Permit No. PL-SP/05/0548.

Noise

As discussed in the previous section of this referral, the Environmental Noise Assessment (Attachment M) found that depending on the turbine model used, the predicted noise at some non-participant dwellings from the amended WEF is up to 3 dB(A) higher and as much as 5 dB(A) lower than the predicted noise from the permitted WEF. Whilst there is an increase or decrease in

[19] Peak hour periods are nominal only. The exact hours of peak is not known at this stage and will be included in the Traffic Management Plan (TMP) to be prepared pursuant to Condition 35 of the Permit.

noise associated with the amended WEF at some dwellings, the predicted noise at these dwellings complies with NZS6808:2010 for both the amended and permitted WEF.

Shadow flicker and Blade Glint

The Shadow Flicker and Blade Glint Assessment (Attachment N) found that amended WEF increases the number of dwellings that are predicted to experience theoretical shadow flicker durations above the 30 hours per year limit recommended by the Draft National Guidelines and specified in the Permit. However, there would be no change in the number of dwellings that are expected to experience theoretical shadow flicker durations which would be inconsistent with Planning Permit No. PL-SP/05/0548 conditions (once written agreements with landowners, to accept shadow flicker durations above the specified limit, are considered). Additionally, the amended WEF decreases the number of dwellings that are predicted to experience actual shadow flicker durations[20] above the recommended limit compared to the permitted WEF.

Blade glint is not likely to cause a problem for observers in the vicinity of the WEF as non-reflective coatings are proposed to be used on the blades of the turbines (for the permitted WEF and amended WEF).

Related Projects

External Overhead Powerlines

It is not considered that there will be any 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 relating to the overhead powerlines. Environmentally sensitive construction measures will be employed (described within the Construction Environmental Management Plan) to ensure the potential amenity impacts during construction is minimised.

Quarry

The Air Quality assessment as part of the Work Plan identified that:

> *The predicted ground level concentrations of PM_{10}, PM_{25} and respirable crystalline silica at the closest residence is predicted to be less than half the criteria in the EPA Publication "Protocol for Environment Management Mining and Extractive Industries". Background pollutant concentrations were incorporated in the model and are considered conservative. The major contribution to predicted ground level concentrations at the nearest receptor is background concentration.*

The report has confirmed that there will be minimal exposure for human community to health hazards relating to emissions from the quarry.

There will be an increase in traffic volume during the construction and operation phase (approximately 3 years) of the project. However, it is considered that the impact will be considerably less than if the material extracted from the proposed quarry was sourced offsite.

It is not considered that there will be significant amenity impacts from emissions, dust and odours during the construction and operation of the quarry. Environmentally sensitive construction measures will be employed (described within the Environmental Management Plan) to ensure the potential amenity impacts during construction are minimised and that any risk of chemical contamination is appropriately managed.

Fuels and chemicals will be stored and handled at the site to ensure that stormwater, soils and groundwater do not become contaminated. This will include establishing a dedicated bunded fuel /

[20] There are a number of factors which may reduce the incidence of shadow flicker, such as cloud cover and variation in turbine orientation, that are not taken into account in the calculation of the theoretical shadow flicker duration. The Shadow Flicker and Blade Glint Assessment quantifies the likely reduction in shadow flicker duration due to these effects and therefore produce a prediction of the actual shadow flicker duration likely to be experienced at a dwelling.

chemical store away from stormwater drains and drainage features prior to commencing site operations, and storage and use in accordance with the Material Safety Data Sheet. Other fuel and chemical management measures include:

- Appropriate spill kits will be available at the site, and spills will be cleaned up immediately.
- Onsite refuelling of plant and equipment will be undertaken on impervious areas, away from drainage points, water course and stormwater drains, and will be undertaken in a temporary bunded area (e.g. over a drip tray, or within sediment sock bund).
- Limited volumes of fuels, greases, oils and chemicals will be stored onsite.

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.*

There are four properties which have been purchased by SHWFPL. The dwellings on these properties will not be used as dwellings for the life of the projects.

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.*

Wind Energy Facility

The WEF infrastructure will permanently remove some land from agricultural production. However, the amended WEF will result in a similar footprint that the permitted WEF, due to a reduced number of turbines and the optimisation of access tracks and cabling.

Additionally, the WEF will support and enhance agricultural production, as the development of the WEF allows agricultural use to continue around the WEF infrastructure within the WEF boundaries, whilst providing financial benefits to host landowners. The amended WEF does not change this outcome.

Related Projects

External Overhead Powerlines

Where the external overhead powerlines will be located within private property, it will temporary displace the use of land for agricultural purposes during construction, however once operational grazing activities can continue within the easements. Restrictions will exist within the final easement in regard to structures. Landowners will be compensated for any impacts on existing farming infrastructure, as part of easement negotiation.

Quarry

The quarry will temporarily (3 years) occupy approximately 57 ha of the overall 200 ha site. During the life of the quarry, the remainder of the site will be used for either agricultural purposes or other SHWF related works. Following the use of the quarry, the site will be rehabilitated back to a form suitable for farming purposes.

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.*

Is mitigation of potential social effects proposed?

☐ NYD ☐ No ☐ Yes *If yes, please briefly describe.*

Construction (all related projects)

During construction, activities will include site preparation and civil works, foundation construction, infrastructure construction and equipment installation. These activities might require processes and equipment such as heavy vehicle movements, loaders, excavators, cranes and generators.

Amenity impacts from these activities may be mitigated by limiting construction hours, particularly for activities with high traffic volumes and noise and/or dust emissions

A generator could potentially be required to operate outside these hours for limited periods subject to approval being gained for the activity. Further mitigation measures will be put into place for these periods and community notification will be undertaken for any proposed work outside standard construction hours.

Additionally, there are number of conditions in the WEF Planning Permit No. PL-SP/05/0548 which will help mitigate potential social effects, including (but not limited to) the preparation of:

- a construction and site works management plan (Condition 6a);
- a blasting plan (Condition 6c);
- a hydrocarbon and hazardous substances plan (Condition 6d)
- a complaints management plan (Condition 6k)
- an incident management plan (Condition 6l)
- a traffic management plan (Condition 35)
- a construction workforce accommodation strategy (Condition 47)

Shadow flicker limits are imposed by Conditions 17, Conditions 18-32 relate to noise limits, modelling, monitoring, compliance and complaints, whilst Condition 36-38 relate to undertaking pre-construction and post-construction television and radio reception and interference surveys, and the requirement for measures to mitigate interference if interference is experienced. Additionally, a publicly accessible information shelter displaying information about the wind farm must be constructed in Skipton in accordance with Condition 46.

Quarry Operation

The life of the proposed quarry is expected to be 3 years, with the bulk of the activity occurring within the first 7 months of the operation. An Environmental Management Plan has been prepared as part of the Work Plan which will guide the construction and operation of the quarry. With respect to social effects, the Environmental Management Plan includes processes for management of erosions and sediment, chemicals, air and dust, noise and vibration, waste, resources and emergency response. By ensuring compliance with the recommendations identified in the Environmental Management Plan, the potential impacts on the surrounding community will be minimised and mitigate potential social effects during the life of the quarry.

Additionally, a Stakeholder Engagement Plan has been prepared to assist SHWFPL to consult and communicate with stakeholders about the development and operation of the quarry. In particular the plan has been developed in line with the relevant extractive industry guidelines and considers the scale, nature and potential community related aspects of the quarry.

The plan includes discussion of:

- Consultation undertaken to date
- Identifies affected communities and stakeholders
- The overall quarry engagement strategy
- Consultation planned and achieved for the development and approvals phase
- Proposals for communication and engagement measures to be employed during the operational phase.

The plan also includes a proposal for registering, documenting and responding to complaints and other communications from the community in relation to the quarry.

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

Since 2009, SHWFPL has conducted a community investment program that contributes $10,000 annually to communities surrounding the project area.

SHWFPL supports projects and organisations which contribute to one or more of the following:

- Skills, education and training.
- Community safety, health and wellbeing.
- Sustainable population growth.
- Natural resource stewardship.
- Community events and activities that promote and enhance community connection.

To date, SHWFPL has supported local kindergartens, primary and secondary schools, local Landcare groups, Country Fire Authority and community and sporting groups in general.

This investment program will increase to $120,000 per annum on constructing of primary works commencing and will be used to assist similar groups with major projects that will enhance and build community capacity within the local region.

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.*

Registered Aboriginal Party (RAP) applicants, the Wathaurung Aboriginal Corporation and Office of Aboriginal Affairs Victoria (OAAV), were consulted during the project and participated in the fieldwork for preparation of the CHMPs described in the following table.

Table 25 – Cultural Heritage

Project	Investigations
Wind Energy Facility	• Archaeology At Tardis, 'Stockyard Hill Wind Farm, Stockyard Hill, Cultural Heritage Management Plan, AAV CHMP No. 10530' (21 October 2009). Approved by Aboriginal Affairs Victoria on 22 October 2009. • Archaeology At Tardis, 'Cultural Heritage Management Plan No. 14281, Additional Wind Energy Facility Works' – *In preparation.* • Archaeology At Tardis, 'Cultural Heritage Management Plan No. 14279, Road and Intersection Upgrades' – *In preparation.*
External Overhead Powerlines	• Archaeology At Tardis, 'Cultural Heritage Management Plan No. 12177, Stockyard Hill Wind Farm Transmission Line to Grid Lot 1 TP746129 Skipton Road Stockyard Hill' – *In preparation.*
Quarry	• Archaeology At Tardis Pty Ltd, 'Cultural Heritage Management Plan 12648, Stockyard Hill Wind Farm Quarry Lot 2 PS604561 143 Stockyard Hill - Wangatta Road Stockyard Hill' (9 May 2014). Approved by Wathaurung Aboriginal Corporation on 14 May 2014.

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)

As above.

Is any Aboriginal cultural heritage known from the project area?

☒ NYD ☒ No ☒ Yes *If yes, briefly describe:*

- *Any sites listed on the AAV Site Register*
- *Sites or areas of sensitivity recorded in recent surveys from the project site or nearby*
- *Sites or areas of sensitivity identified by representatives of Indigenous organisations*

Wind Energy Facility

A total of ten places (VAHR 7522-0021, VAHR 7522-0083, VAHR 7522-0082, VAHR 7523-0233, VAHR 7523-0234, VAHR 7522-0084, VAHR 7522-0086, VAHR 7522-0085, VAHR 7523-0235 and VAHR 7523-0236) have been recorded to date during the preparation of complex CHMP 10530 (approved in 2009).

The known cultural heritage in the activity area was assessed, VAHR 7522-0021 has no specific cultural and moderate scientific significance. VAHR 7522-0085, VAHR 7522-0083, VAHR 7522-0082, VAHR 7522-0084, VAHR 7522-0086,VAHR 7523-0235, VAHR 7523-0236, VAHR 7523-0233 and VAHR 7523-0234 have no specific cultural and extremely or very low scientific significance. The known Aboriginal cultural heritage was assessed having no research potential apart from VAHR 7522-0021 (low) and to a lesser extent VAHR 7522- 0086 (very low). On this basis salvage excavations cannot be justified on scientific grounds for the mitigation or management of harm to places VAHR 7522-0085, VAHR 7523-0235 and VAHR 7523-0236.

Six Aboriginal heritage places were assessed as not going to be harmed by the activity (VAHR 7522-0086, VAHR 7522-0082, VAHR 7522-0084, VAHR 7522-0083, VAHR 7523-7523-0233 and VAHR 7523- 0234). Three Aboriginal heritage places were identified to be harmed by the activity (VAHR 7522-0085, VAHR 7523-0235 and VAHR 7523-0236), but have been effectively salvaged during the complex assessment. Part of VAHR 7522-0021 (less than 10%) will be harmed by the activity. A program of salvage excavation has been recommended to manage this harm.

In the statement of significance, in this CHMP, the activity area was considered to have very low scientific or specific cultural values. It is not considered likely that unknown Aboriginal cultural heritage with scientific significance is present in impact zones within the activity area. Any inadvertent harm to unknown Aboriginal cultural heritage will be managed by a Contingency Plan.

A review of CHMP 10530 was undertaken in response to the proposed amended WEF. The review found that that an additional two CHMPs should be prepared. One CHMP to include 2 new areas not currently included within the activity area (1 of which is not within an area of cultural heritage sensitivity) and to ensure that mitigation measures are appropriate for the proposed new layout (amend the management recommendations at two sites to ensure impact is minimised). The other CHMP will include the activities associated with the roadworks for the areas which require a mandatory CHMP to be prepared (Dooleys Road and Mt Emu Settlement Road). CHMP 14281 and CHMP 14279 are currently being prepared, in consultation with the Wathaurung Aboriginal Corporation.

Related Projects

External Overhead Powerlines

A total of eleven places (VAHR 7522-0090, 7522-0091, 7522-0092, 7522-0093, 7522-0094, 7522-0095, 7522-0096, 7522-0097, 7522-0098, 7522-0099 & 7522-0100) have been recorded to date during the preparation of the CHMPs. They are either artefact scatters or low density artefact distributions. All the places are found in the WAC RAP area. Typically they are found within 200m of waterways. Two low density artefact distributions (VAHR 7522-0090 & 7522-0091) were found in the vicinity of Mount Emu Settlement Road on the plain more than 200m from the major waterways. A total of 180 stone artefacts were collected and analysed.

Based on their archaeological attributes places lack the attributes required to have significance research potential (e.g. they have no potential for stratified high integrity occupation deposits, a large diversified sample of artefacts with relatively complete reduction sequences, a wide variety of data classes or raw material or detailed spatial patterning of artefacts and features). Only VAHR 7522-0100 has some limited research potential being restricted to that part with moderate artefact density.

The statement of cultural heritage significance assessed the activity area having low scientific Aboriginal cultural values compared to other known regional cultural heritage values, in particular, to the south of the project area (e.g. Lake Gnarpurt).

CHMP 12117 and CHMP 14449 are still currently under preparation, however the majority of the field survey has been undertaken and it is not anticipated that the final CHMP will result in considerably different conclusions.

Quarry

Voluntary CHMP 12648 demonstrated that in relation to the activity area:

- There are no registered places within the activity area.
- There are no areas of Aboriginal cultural heritage scientific sensitivity.
- It is unlikely that Aboriginal cultural heritage is present.

As such, the proposed activity will not impact any known Aboriginal cultural heritage therefore no consideration of avoiding, minimising or managing harm to known Aboriginal cultural heritage is required. However, a Contingency Plan forms part of the CHMP and must be adopted in case unknown Aboriginal cultural heritage is unexpectedly discovered during the conduction of the activity.

Are there any cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the *Heritage Act 1995* within the project area?

☐ NYD ☒ No ☐ Yes *If yes, please list.*

There are no cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the *Heritage Act 1995* within the SHWF WEF and related projects area.

However, during the original planning permit application assessment process (and in response to the second condition of the decision made on Referral No. 2008R00007) addressed the degree to which turbines, located in the views from the “Mawallok” homestead across the garden and lake to the Pyrenees and Mt Cole, would adversely impact on the cultural heritage significance of the property (Heritage Overlay – Schedule HO32 ‘Mawallok Homestead, 3802 Geelong Road, Stockyard Hill’, VHR No. HO563) was considered. The conclusion of the panel was that a cluster of turbines (near Topper’s Road and beyond) which presented in this view, would adversely impact and accordingly they were not permitted.

Photomontages of the view assessed during the original planning panel have been prepared as part of the landscape and visual impact assessment (Attachment O – Traffic Impact Assessment

Attachment P Attachment P) prepared to accompany the application to amend Planning Permit No PL-SP/05/0548. The assessment found that the amended WEF (including increased turbine dimensions) does not present more prominently than the permitted WEF and the number of turbines in the view shed has reduced.

Is mitigation of potential cultural heritage effects proposed?

☐ NYD ☐ No ☒ Yes *If yes, please briefly describe.*

As discussed above, CHMPs have been, or are currently being, prepared to mitigate potential cultural heritage effects specific to each activity / area, including measures such as the use of fencing and signage to avoid sites, salvage and training for contractors. Additionally, Contingency Plan forms part of each CHMP to manage potential issues including:

- specific measures in the unlikely event that any Aboriginal cultural heritage is unexpectedly discovered during the activity;
- any contingency plans required in relation to disputes, delays and other obstacles that may affect the conduct of the activity;

- reviewing compliance with the cultural heritage management plan and mechanisms for remedying non-compliance;
- the notification of the discovery of Aboriginal cultural heritage during the carrying out of the activity; and
- requirements relating to the custody and management of any Aboriginal cultural heritage found during the course of the activity.

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

Not applicable.

16. Energy, wastes & greenhouse gas emissions

What are the main sources of energy that the project facility would consume/generate?

- ☒ Electricity network. *If possible, estimate power requirement/output* …….
- ☒ Natural gas network. *If possible, estimate gas requirement/output* ……...
- ☒ Generated on-site. *If possible, estimate power capacity/output* …….
- ☒ Other. *Please describe.*

Please add any relevant additional information.

The SHWF WEF will generate approximately 1900 GWh of electricity per year (which will power approximately 326,600 average households). A small supply of electricity to the wind farm is required when the turbines are not operating.

It is anticipated that energy will be generated for use on the quarry site using a diesel generator; however there may be an opportunity to connect to mains power.

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 majority of material excavated from the construction of the SHWF WEF and related projects (including turbine and pole foundations etc.) will be re-used on site (e.g. during the construction of the required access tracks).

Un-used excavated material from the quarry will be re-used on site for rehabilitation. General refuse generated at the site will be managed as identified in the Environmental Management Plan.

There may, however, be small quantities of excavated material to be removed to a licensed landfill facility at the completion of the construction works.

The construction site will have pump out sewage facilities that will involve off-site disposal at an appropriate facility.

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

- ☒ Less than 50,000 tonnes of CO_2 equivalent per annum
- ☒ Between 50,000 and 100,000 tonnes of CO_2 equivalent per annum
- ☒ Between 100,000 and 200,000 tonnes of CO_2 equivalent per annum
- ☒ More than 200,000 tonnes of CO_2 equivalent per annum

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

A small amount of CO_2 may be generated during the construction and operation phase associated with the operation of machinery and vehicles. The exact quantities of greenhouse gas emissions

has not been assessed, however it is not expected that it will be more than 50,000 tonnes per annum.

Furthermore, this generation is significantly offset by the ability to produce clean energy. The SHWF will result in approximately 1.9M tonnes of CO_2 savings per year (0.55 tonnes of CO_2 savings per year more than the permitted WEF).

17. Other environmental issues

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

☒ No ☐ Yes *If yes, briefly describe.*

18. Environmental management

What measures are currently proposed to avoid, minimise or manage the main potential adverse environmental effects?

Table 26 – Environmental Management

Project	Proposed Measures
Wind Energy Facility	☒ Siting: The revised layout of the amended WEF: • In response to the spacing required for larger rotor diameters to reduce predicted turbulence. • To ensure compliance with shadow flicker and noise conditions of Planning Permit No. PL-SP/05/0548. • Optimisation of entire layout to improve project efficiencies and avoid / minimise impact on biodiversity (e.g. significant species or habitat).
	☒ Design: The amended WEF access track makes allowance for road verges and drainage, whilst all public road upgrades will have stormwater upgrades, with culverts size to convey 5 Year ARI storm events. The actual area of disturbance associated with the construction and operation of the WEF will be optimised for minimal impact pending final major procurement decisions, detailed civil and electrical design and timing of project construction.
	☒ Environmental management: *Flora and Fauna* Condition 14 of Planning Permit No. PL-SP/05/0548 requires that "before the clearing of any native vegetation starts, a native vegetation offset management plan must be prepared by a suitably qualified ecological specialist and submitted to an approved" by the DELWP, and specifies what the plan must include. Additionally, several measures have been (and will be) undertaken to minimise the impacts of the proposed removal of native vegetation on biodiversity, including (but not limited to) the following: • The avoidance of areas supporting remnant native vegetation, including EPBC Act-listed listed species and communities, and sensitive sites such as roadsides and waterways; • Alteration and reductions in the development footprint (e.g. internal access); • Further, as part of the detailed design process and the preparation of the Environmental Management Plan (in accordance with Condition 6 of Planning Permit No. PL-SP/05/0548) measures will be undertaken to ensure that further impacts to biodiversity are minimised, including (but not limited to): - Further micro-siting techniques, including fencing retained areas of native vegetation. If necessary, trees will be lopped or trimmed rather than removed. Similarly, soil disturbance and sedimentation into drainage lines / dams will be avoided or kept to a minimum, to avoid, or minimise impacts to fauna habitats;

	- All contractors will be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention. Habitat zones (areas of sensitivity) will be included as a mapping overlay on construction plans; - Tree Retention Zones will be implemented to prevent indirect losses of native vegetation during construction activities; and - Construction stockpiles, machinery, roads, and other infrastructure will be placed away from areas supporting native vegetation and/or other ecological sensitive areas. Additionally, Condition 15 of Planning Permit No. PL-SP/05/0548 requires that a Bat and Avifauna Management Plan is prepared. *Water Environments* There are number of conditions in Planning Permit No. PL-SP/05/0548 which will help mitigate potential effects on water environments, including (but not limited to) the preparation of: • a construction and site works management plan (Condition 6a); • a sediment, erosion, and water quality management plan (Condition 6b) • a blasting plan (Condition 6c); • a hydrocarbon and hazardous substances plan (Condition 6d) Planning Permit No. PL-SP/05/0548 includes two conditions which relate to the mitigation of potential landscape effects of the WEF, including the requirement for: • an on-site landscaping plan to be prepared for the substation and maintenance facility (Condition 33); and • an off-site landscaping plan to be prepared, including a program of voluntary landscape mitigation works to owners of dwellings within 3 km of a turbine. *Social Environments* There are number of conditions in the WEF Planning Permit No. PL-SP/05/0548 which will help mitigate potential social effects, including (but not limited to) the preparation of: • a construction and site works management plan (Condition 6a); • a blasting plan (Condition 6c); • a hydrocarbon and hazardous substances plan (Condition 6d) • a complaints management plan (Condition 6k) • an incident management plan (Condition 6l) • a traffic management plan (Condition 35) • a construction workforce accommodation strategy (Condition 47) Shadow flicker limits are imposed by Conditions 17, Conditions 18-32 relate to noise limits, modelling, monitoring, compliance and complaints, whilst Condition 36-38 relate to undertaking pre-construction and post-construction television and radio reception and interference surveys, and the requirement for measures to mitigate interference if interference is experienced. Additionally, a publicly accessible information shelter displaying information about the wind farm must be constructed in Skipton in accordance with Condition 46.
External Overhead Powerlines	✗ Siting: The external overhead powerlines alignment and siting of pole locations has been designed to avoid or minimise impact on native vegetation, flora and fauna, water bodies and aboriginal cultural heritage. The alignment sections and pole siting process also included a Multi-Criteria Analysis to select route options, as well as extensive consultation with government agencies and private landowners.
	✗ Design: Low-disturbance construction methodology of applying geofabric on top of the existing ground surface and gravel will be used to construct access tracks in areas of cultural heritage sensitivity along the overhead powerlines alignment.
	✗ Environmental management: Only the clearance of vegetation required to for construction and operation of the proposed works will be undertaken. Where possible remnant and regrowth vegetation will be retained.

	The external overhead powerlines will fly over watercourses and where possible only trimming of riparian vegetation that falls within the safety zones of the line will occur. Where trimming is not possible clearing for the proposed external overhead powerlines will only be for trees that fall entirely within the safety zone of the line. Grasses and shrubs where practical will remain. The line will require access for maintenance purposes. After construction grasses and shrubs will be encouraged to regrow within the easement with only a narrow grassed access track required for maintenance and emergency situations. A Construction Environmental Management Plan will be developed and implemented during construction and will describe the steps that will be taken to manage and minimise environmental and farm management impacts during construction. Measures may include: • Further micro-siting techniques, including fencing retained areas of native vegetation. If necessary, trees will be lopped or trimmed rather than removed. Similarly, soil disturbance and sedimentation into drainage lines / dams will be avoided or kept to a minimum, to avoid, or minimise impacts to fauna habitats; • All contractors will be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention. Habitat zones (areas of sensitivity) will be included as a mapping overlay on construction plans; • Tree Retention Zones (TRZs) will be implemented to prevent indirect losses of native vegetation during construction activities; and • Construction stockpiles, machinery, roads, and other infrastructure will be placed away from areas supporting native vegetation and/or other ecological sensitive areas.
Quarry	☒ Siting: The siting of the quarry will ensure that visibility from outside the subject site will be minimised. Furthermore, the subject site is within a Farming Zone, which is considered to be an appropriate zone to develop a quarry as the potential to impact on amenity is limited (e.g. the nearest dwelling to the proposed quarry is over 1.5 km away). Additionally, the quarry has been sited to ensure that the minimal impact will be imposed on the sensitive environmental issues such as native flora, fauna and avoid waterways and lakes.
	☒ Design: A preliminary environmental assessment was undertaken for the site, the results of the environmental assessment were considered in developing design options resulting in no significant environmental impacts.
	☒ Environmental management: An Environmental Management Plan has been prepared to address the environmental impact of the quarry through construction and operation. The Environmental Management Plan forms part of the Work Plan, which addresses: • Air Quality – Particles • Noise • Blasting • Groundwater • Stormwater • Flora and Fauna • Noxious Weeds • Cultural Heritage • Visual Impact • Erosion Control • Fire Management • Waste Management • Fuels and Chemicals

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.*

There are a number of other wind farms in the vicinity of the SHWF WEF, include Chepstowe Wind Farm approximately 4 km to the west, Challicum Hills Wind Farm approximately 7 km to the north-west, Mount Mercer Wind Farm approximately 40 km to the south-east and Waubra Wind Farm approximately 32 km to the north-east. Additionally, the Ararat Wind Farm is currently under construction approximately 21 km to the north-west. However, it is not considered that revised proposal will not increase the cumulative impact of the permitted proposal.

The permitted terminal station, related to the SHWF (discussed in Section 3 of this referral), does not have the potential for to create cumulative effects. A self-assessment in accordance with the *Ministerial Guidelines for assessment of environmental effects under the Environment Effects Act 1978* was undertaken in 2012 and the DELWP were advised of the outcomes via letter dated 21 September 2012. The self-assessment found that terminal station will not have significant effect on the environment.

The region has recently seen a number of major projects developed with several more proposed in addition to the above listed wind farms this has included the duplications of the Princes Highway and the Western Highway. In at least one project, the cartage of crushed rock from off-site quarries resulted in community concern relating to the perceived impacts on road safety and damage to roads caused by heavy vehicles.

Cumulatively these projects will continue to place significant demand on crushed rock in the region. If this cumulative demand continues to grow, the price will increase potentially impacting the ability of local landholders to secure crushed rock for their properties, affecting their future plans. An insufficient supply of crushed rock could also affect the feasibility of major projects, including the SHWF, endangering the employment opportunities that these projects may generate. The use of on-site quarry, for the SHWF, provides the opportunity to reduce the cumulative impact in the region.

By sourcing material onsite and carting crushed rock within the general footprint of the SHWF will avoid:

- additional truck movements through Skipton and Beaufort and the associated amenity impacts on community facilities and dwellings in these towns;
- an increased heavy vehicle movements in Skipton or Beaufort, reducing the associated health and safety impacts associated with heavy vehicle movements through these urban centres (i.e. potential pedestrian/bicycle and motor vehicle accidents); and,
- impacts on valued places, community facilities and population centres.

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.*

In addition to the studies referred to in the above sections, an assessment of aircraft safety (including an Aviation Impact Statement, Aeronautical Impact Assessment, Qualitative Risk Assessment and an Obstacle Lighting Review) has been undertaken to accompany the application to amend Planning Permit No PL-SP/05/0548.

The assessment (undertaken in accordance with *National Airports Safeguarding Framework (NASF) Guideline D – Managing Risk to Aviation Safety of Wind Turbine Installations (Wind Farms) and Wind Monitoring Towers* (NASF Guideline D)) found that:

- The Aviation Impact Statement shows that the WEF will not impact upon the following:

- The Obstacle Limitation Surface published for any registered or certified aerodrome;
- The Instrument Departure and Approach Procedures and the associated PANS-OPS surfaces published for any aerodrome;
- The published Lowest Safe Altitude of Air Routes in the vicinity;
- The operation of any Navigation Aids and Communication facilities; and
- The operation of any airspace surveillance facility.

- The Qualitative Risk Assessment shows that the SHWF WEF will not be of operational significance nor be a hazard to aviation safety.

The WEF is located within approximately 26 km from the Ararat aerodrome (and 33 km from the Ballarat aerodrome), and proposed wind turbines of up to 180 m above natural ground level. The WEF will not infringe the obstacle limitation surface around a declared aerodrome.

SHWFPL has contacted the Civil Aviation Safety Authority in the attempt to undertake consultation on the proposal prior to lodgement of the application to amend Planning Permit No PL-SP/05/0548 however the Civil Aviation Safety Authority declined, advising that they would review the proposal when the application is formally referred to the Civil Aviation Safety Authority by the Minister for Planning.

The Department of Defence and Airservices Australia were also consulted as part of the preparation of the assessment. The Department of Defence advised that they had no objection to the proposed development, whilst Airservices Australia confirmed that the proposed development will not interfere with any instrument approach or departure procedures (at Ballarat and Yarrowee) and will not impact on the performance of any Airservices Communications, Navigation or Surveillance facilities.

Additionally, as part of the preparation of the assessment on aircraft safety, key aviation stakeholders (including local operators, recreational aviation groups, State Government Policy Air Wing, Air Ambulance and Fire Services) were identified, contacted and surveyed to ascertain the extent of local aviation activity in the vicinity of the SHWF WEF.

Planning Permit No PL-SP/05/0548 specifically prohibits aviation safety lighting from being installed. In addition, the Obstacle Lighting Review concluded that, in line with the NASF Guideline D and the findings of the Qualitative Risk Assessment, aviation safety lighting is not considered necessary as the assessed risk is 'low' and no additional mitigation is required. No aviation lighting is proposed for the SHWF WEF.

Has a program for future environmental studies been developed?

☒ No ☐ Yes *If yes, briefly describe.*

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.*

Since the commencement of the project, SHWFPL has been communicating, informing and listening to the local community (including the host landowners, neighbours (within 2 km of a permitted turbine), objectors of original planning permit application, the wider community, and the Pyrenees Shire Councillors). Engagement has been undertaken through a number of forums, including:

- Operating a project specific website providing information and updates.
- Operating a project specific 1800 phone number for community members to call for further information.
- Distributing project newsletters on a quarterly (or otherwise as appropriate given the level of development progress) basis distributed through the local postal service.

- Briefings of the councillors and officers of the local councils (Pyrenees and Corangamite) on a quarterly (or otherwise as appropriate given the level of development progress) basis.
- A dedicated full-time SHWFPL project representative is regularly on-site to meet face-to-face with landowners and the general community regarding the project, including meeting with all landowners (host landowners and neighbours with 2 km of a permitted turbine) several times though all stages of the planning process.

SHWFPL also regularly advertises and provides information via the local media through advertisements and media articles; it has also sponsored the local community calendar which features in the local paper.

Attachment R outlines the timeline of specific stakeholder engagement activities undertaken since the WEF Planning Permit PL-SP/05/0548 was issued in 2010. These are in are in addition to the 'business as usual' engagement activities undertaken as part of the normal development activities regarding the SHWF.

Has a program for future consultation been developed?
☒ NYD ☒ No ☒ Yes *If yes, briefly describe.*

The above listed consultation activities will continue to be undertaken through the development of the SHWF WEF and related projects.

Authorised person for proponent:

I, *Peter Marriott, Generation Project Development Manager (Origin Energy Ltd)*, confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature _____

Date 25/07/2016.

Person who prepared this referral:

I, *Cara Layton, Land Use and Approvals Planner (Jacobs Group (Australia) Pty Ltd)*, confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature _____

Date 25/07/2016

List of Attachments

Attachment A – Related Projects Figure
Attachment B – Existing WEF Planning Permit
Attachment C – Amended Wind Energy Facility Indicative Layout Plans
Attachment D – Endorsed Work Plan (including Flora and Fauna Assessment)
Attachment E – Permitted Wind Energy Facility Indicative Layout Plans
Attachment F – Site Context Plans (for all Related Projects)
Attachment G – Land Tenure Spreadsheet
Attachment H – Biodiversity Assessment (WEF Infrastructure)
Attachment I – Biodiversity Assessment (WEF Roadworks)
Attachment J – Biodiversity Assessment (External Overhead Powerlines)
Attachment K – Bird and Bat Assessment (WEF)
Attachment L – Brolga Collision Risk Modelling (External Overhead Powerlines)
Attachment M – Environmental Noise Assessment
Attachment N – Shadow Flicker and Blade Glint Assessment
Attachment O – Traffic Impact Assessment
Attachment P – Landscape and Visual Impact Assessment
Attachment Q – Electromagnetic Interference Assessment
Attachment R – Stakeholder Engagement Timeline