Chapter 27
Conclusion

27.1 Overview

The project would harness strong and reliable winds to generate renewable energy through the construction and operation of up to 59 wind turbines. The project represents the potential for a new and significant contribution to the National Electricity Market that will help reach Victoria's renewable energy targets of 40% by 2025 and 50% by 2030, and the Commonwealth Government's target of achieving net-zero emissions by 2050. Wind energy is considerably cheaper than fossil fuel generation and is expected to remain so into the future. When combined with energy storage via large scale batteries the project can provide reliable power and affordable electricity prices for consumers. This can occur while minimising the impacts and maximising the benefits from the project. The following sections detail the draft environmental evaluation objectives for the Willatook Wind Farm EES and how the project has responded to meet these objectives.

27.2 Summary of assessment against evaluation objectives

The key reasons for an EES being required for the project, as contained in the Minister's decision, were due to potentially significant effects to:

- threatened fauna listed under both the FFG Act and EPBC Act, particularly Brolga and Southern Bent-wing Bat
- threatened flora listed under both the FFG Act and EPBC Act
- geoheritage and geoscience values of the area
- visual amenity values of the area.

The Minister also determined the project has the potential for cumulative adverse effects (in particular on biodiversity and amenity values) due to other operating and approved wind farms in the vicinity.

In their determination on the project's referral, the Minister required the EES to specifically address:

- effects on biodiversity and ecological values within and near the site including native vegetation, listed communities and species (flora and fauna) under the FFG Act and EPBC Act
- effects on water environments and related beneficial uses, including as a result of changes to stream flows, discharge of sediment and acid formation from disturbance of wetlands
- effects on the geoheritage values within the proposal area, including for the potential on-site quarry
- effects on the local visual amenity values, including for non-neighbouring landholders
- effects on the socio-economic environment, at local and regional scales, including increased traffic movement and indirect effects of construction on the capacity of local community infrastructure
- effects from a cumulative perspective, including on threatened flora and fauna, social and amenity values, with particular consideration of the currently operating and already approved wind farm.

The EES scoping requirements, developed with input from the public, contained eight draft evaluation objectives for the project. Fifteen specialist studies (listed in Chapter 1 – *Introduction*) addressed these draft evaluation objectives by identifying and assessing a broad range of potential impacts associated with the construction, operation and decommissioning of the project. All studies assessed the potential effects from the project as described in Chapter 5 – *Project description*. A summary of the response to the draft evaluation objectives is provided in the following sections.

27.2.1 Biodiversity and habitat

Draft evaluation objective: To avoid or minimise potential adverse effects on biodiversity values within and near the site including native vegetation, listed threatened species and ecological communities, and habitat for these species. Where relevant, offset requirements are to be addressed consistent with state and Commonwealth policies.

The project site has been used for sheep and cattle farming for more than 100 years and the majority of the site is comprised of introduced and planted vegetation. Fragmented areas of nine native ecological vegetation classes (EVCs) were mapped within or near the project site. The project is estimated to result in the removal of 4.6 hectares of native vegetation and six large trees.

Typical landscape over much of the project site

Two nationally listed ecological communities were identified during field surveys, both listed as 'critically endangered'. These are the Grassy Eucalypt Woodland of the Victorian Volcanic Plain and S Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains. Avoidance has been the primary measure to mitigate potential impacts and as a result no impacts on Grassy Eucalypt Woodland of the Victorian Volcanic Plain were predicted, while clearance of 0.49 hectares Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains was assessed to have a low residual impact.

Two plant species of conservation significance were recorded in during field surveys: Swamp Everlasting and Trailing Hop-bush. The known populations of these species were avoided during the project design, as well as most areas that provide potential habitat for these species. Impacts to other threatened flora that have the potential to occur in the site were minimised by avoiding potential habitat for these species. As such, a very low impact on threatened flora because of the project was predicted.

A range fauna species listed as threatened or migratory under the EPBC Act and/or FFG Act either reside within or have the potential to use the project site. These include several migratory bird species, the Brolga, three bat species (including the Southern Bent-wing Bat), and a number of aquatic and semi-aquatic species including the Growling Grass Frog, Little Galaxias (formally Dwarf Galaxias) and Yarra Pygmy Perch. Given the existing condition of the vegetation and habitat, and the small amount of predicted disturbance in any one location, construction impacts to these species were assessed to be either very low or low (depending on the species).

During the operation of wind farms, some birds and bats are known to collide with turbine blades. Some species are more susceptible based on their flying behaviour, for example, high flying species and those that are less manoeuvrable. The project has developed a range of measures to mitigate potential impacts to fauna populations, including creating habitat buffers to minimise disturbance and committing to having a minimum turbine blade height of 40 metres to minimise potential collision risk with birds and bats.

Brolga

Due to their possible presence at the project site, there is a risk that Southern Bent-wing Bats may collide with operating turbines. Based on the activity of the Southern Bent-wing Bat on the site, the behaviour of the species, and design measures to minimise the risk of collision, the likelihood of collisions with project wind turbines was assessed to be very low. As the species is critically endangered, any mortality is considered significant. As part of a bird and bat and avifauna adaptive management plan, a monitoring program to record bat collisions would be

implemented. If mortality of the species is recorded, defined trigger responses would be executed. With these measures in place, the impact to the Southern Bent-wing Bat was assessed to be low.

The Brolga is an iconic wetland bird that is listed as endangered in Victoria. The southern portion of the population has experienced significant decline since European settlement attributed to habitat loss from agriculture and wetland drainage, predation from foxes, and collisions with fences and powerlines. While Brolga collisions with wind turbines have not been reported, the Victorian Government has issued guidelines with the goal of zero net impact to the species as a precautionary measure due to the potential interaction with wind farms in their range.

Over the last decade significant efforts have been made to assess Brolga activity and suitable habitat at the project site and surrounding area. The assessment included a review of existing Victorian Government database records, consultation with project and surrounding landowners, aerial surveys, roaming observational field surveys to record Brolga activity, as well as a combination of field surveys and hydrological modelling to assess wetland suitability as Brolga breeding habitat.

A total of 28 Brolga breeding sites were identified within approximately 10 kilometres of the project site and of these 23 could be attributed to a functional wetland and defined as a possible Brolga breeding site. Six of these sites are within 3 kilometres of the project. One pair was repeatedly observed nesting within the Cockatoo Swamp wetland complex during roaming field surveys conducted for the project between 2010 and 2021.

To minimise the impact of the project on the Victorian Brolga population, turbine free buffer zones have been developed around breeding wetlands to exclude wind turbines and limit disturbance. This area incorporates functional wetlands assessed as capable of providing habitat that could be used for foraging, breeding and night roosting, non-wetland areas around these wetlands and movement corridors between them. A buffer zone (2,658 hectares in size) was established around the Cockatoo Swamp complex, where five breeding wetlands are located.

A Brolga turbine collision risk model was applied in accordance with the Interim Brolga Guidelines. The model predicts that under the most conservative turbine avoidance scenario where Brolga avoid wind turbines 90% of the time, there would be 0.07 flights at risk of collision per year on average, or 1.7 flights at risk of collision over the 25-year life of the project. A Population Viability Assessment was also completed to assess the impact to the Victorian Brolga population, which predicted the population size would be reduced by between 0.1 and 0.8 birds over the life of the project compared with baseline conditions (or 0.1% of the Victorian Brolga population).

The Interim Brolga Guidelines require that the impacts on the Victorian Brolga population are ‘fully offset’ through the implementation of a Brolga compensation plan. The aim of the plan will be to replace the worst-case estimate of the number of Brolga affected by the project (5 individuals over 25 years) through the restoration of lost breeding habitat so that additional breeding pairs can produce increased numbers of young that survive to become breeding adults. In this way, the impact on the population predicted by the PVA will be offset, meeting the policy objective of zero net impact on the Victorian Brolga population.

27.2.2 Catchment values and hydrology

Draft evaluation objective: To maintain the functions and values of aquatic environments, surface water and groundwater quality and stream flows and avoid adverse effects on protected beneficial uses.

Surface water

The project is situated within the Shaw River and Moyne River catchments. The Shaw River is the main surface water feature within the project site, which is fed by Kangaroo Creek and Carmichael Creek. Back Creek, a tributary of the Moyne River, is another surface water feature that passes through the project site. Previous investigations of the Shaw River and Back Creek has shown these systems to be of poor to moderate condition. Both watercourses are subject to grazing within the project site, with the riparian and in-stream vegetation consisting of both introduced and endemic grasses and rushes.

Due to the relatively flat topography, and influence of lava flows and stony rises, there are areas within the project site that can become inundated during winter and spring, forming ephemeral wetlands during some years. These areas then dry and form modified grasslands, which are commonly grazed by sheep and cattle during drier months. Within the central part of the project site there is a series of low-lying areas that form a series of ephemeral wetlands known as the Cockatoo Swamp.

Back Creek in the east of the project site

The greatest likelihood of impacts to the waterways and wetlands is from construction activities associated with watercourse crossings, and to a lesser extent, from general construction activities. These activities have the potential to result in physical streambed disturbance and water quality impacts from stormwater runoff containing sediments entering waterways. Additionally, the construction of access tracks and hardstand areas has the potential to alter existing drainage patterns if not accounted for during design.

Crossings of Back Creek and the Shaw River and smaller tributaries are required for vehicle and cable connectivity. During construction there is the potential for a temporary increase in sedimentation (and to a lesser extent other contaminants) from these access tracks and cable trenches, as well as runoff from stockpiles or cleared areas including hardstand areas. This has the potential to reduce water quality and cause impacts for other users of a watercourse or for aquatic and semi-aquatic flora and fauna, including nationally and state threatened Growling Grass Frog, Little Galaxias (formally Dwarf Galaxias) and Yarra Pygmy Perch. A range of design measures and management controls are proposed to limit the potential impacts of watercourse crossings including installing fish and frog friendly culverts, micro-siting access tracks and cable crossings to avoid deeper pools of water, using a reduced-width construction right-of-way at watercourse crossings, and rehabilitating disturbed areas. With the implementation of these measures, the impacts from construction runoff to Back Creek and Shaw River were assessed to be low with localised effects.

Hydrological flood modelling was used to inform the placement of turbine locations and other infrastructure outside water flow paths. Similarly, modelling of flood and flow velocity has been considered for the sizing of culverts to ensure flow pathways are not affected by the project. Based on this modelling, no permanent changes to the hydrological regime for the Shaw River or Moyne River catchments within the project site, including ephemeral wetlands, is predicted and impacts were assessed to be very low.

Groundwater

The geology across most of the project site consists of basalt flows and stony rises, and isolated areas of alluvium and colluvium. The main aquifer within the project site occurs in the Newer Volcanic Group basalt. Depth to groundwater is typically between 1 and 12 metres below ground level, depending on the season. The highest groundwater levels occur in late spring after recharge by winter rainfall, and the lowest levels occur in late summer. Possible impact pathways to the Newer Volcanic Group basalt aquifer include localised lowering of the water table from groundwater dewatering during quarry operation and, to a lesser extent, during wind turbine foundation excavation. Other potential impacts may include altered groundwater recharge and flows from infrastructure foundations and hardstands (creating barriers to water movement), and reduced water quality from accidental spills of hazardous chemicals.

The on-site quarry is proposed in an area with few bores or groundwater dependent ecosystems (GDEs), therefore minimising potential impacts to people and the environment. Operation of the quarry would require dewatering, and the inflows were calculated to be around 77 cubic metres per day during operation. This is predicted to result in groundwater drawdown, reducing groundwater levels out to about 500 metres from the proposed quarry. This is not predicted to impact the closest registered groundwater bore about 1,000 metres west, or significantly impact potential terrestrial and aquatic GDEs about 450 metres north-east of the quarry. Further groundwater investigations are proposed prior to construction to improve confidence in groundwater drawdown predictions. Ongoing monitoring during quarry operation is also

proposed. The monitoring plan and groundwater level triggers for further management measures, if needed, would be included in a construction phase Water Management Plan.

Management measures have been proposed for the construction, operational and decommissioning phases of the project to further manage potential groundwater impacts. With these measures in place, the impacts to groundwater users and groundwater quality were assessed to be very low to low.

27.2.3 Landscape and visual

Draft evaluation objective: To minimise and manage potential adverse effects for the community with regard to landscape and visual amenity.

The project site is located in a broad-acre agricultural landscape, part of which is located within the Mount Rouse lava flows. The lava flows have created an undulating landscape that includes scattered native trees, windbreaks, and a mosaic of depressions that fill with water during winder. The broad-acre rural landscape has been altered over time due to a range of activities, including farming and grazing, timber plantations and utilities.

The landscape sensitivity and potential visual impact of the project on key viewpoints was assessed, including from publicly accessible locations (such as local roads and significant landscape sites) and residential dwellings. A 'Seen Area Analysis' (i.e., a theoretical model that maps areas where the project would be visible if vegetation and/or buildings were not in the way of the view) assisted in selecting publicly accessible viewpoints within the investigation area.

Section of a photomontage of project wind turbines from the Hamilton-Port Fairy Road near Orford

Views of the project from the nearby townships of Hawkesdale and Macarthur would be at a distance where topography, vegetation and structures would screen or filter most views to the project. Views from Broadwater would be over farmland allowing clear views towards the project, and views from Orford would be largely screened by timber plantations with views of some turbines still possible.

The greatest potential for visual impacts is for individual dwellings located within 6 kilometres of a project wind turbine. Most selected representative dwellings where visual impacts were ground-truthed would have a negligible – nil to medium level of visual impact, with views partially screened or filtered by existing vegetation or partially screened by topography. Where screening is not present, landscape screening was demonstrated to be effective if required.

Management measures have been proposed for the design, construction and operational phases of the project to minimise potential landscape and visual impacts. These include:

- incorporation of a 1.5 kilometre buffer of neighbouring non-stakeholder dwellings, and a 3 kilometre buffer of surrounding townships
- an on-site landscape plan for the screening of substations, buildings and lower infrastructure
- for dwellings within 6 kilometres of a project turbine, an off-site landscape plan for vegetation screening of eligible dwelling rooms, in consultation with the landowner on a case-by-case basis.

Residual visual impacts from publicly accessible locations after implementation of the proposed mitigations were assessed to be negligible or low. However, there was one dwelling predicted to have a high visual impact following mitigation.

Other operating and approved wind farms are within the project investigation area. Viewers travelling along highways and local roads within the investigation area may experience sequential visual impact from the project – that is, views along the route journey may take in a number of wind farms sequentially, impacting the viewer's perception of the landscape they are travelling through. However, as the landscape contains several operating and approved wind farms, the addition of the project to these views would not alter a viewer's perception of the landscape.

Potential cumulative visual impacts to dwellings involving simultaneous views of Willatook and other wind farm wind turbines would depend on the visibility of turbines and the proximity of the dwelling to turbines (affecting their visual scale). Irrespective of whether there was a cumulative impact, landscape screening would be offered for residential dwellings within 6 kilometres where there are views of one or more Willatook wind turbines.

27.2.4 Geoheritage values

Draft evaluation objective: To minimise and manage potential adverse effects to geoheritage values.

The project site is in an area of south-west Victoria known for its volcanic plains. Lava features of this area form a broader complex and contain areas assessed to be of state geological and geomorphological significance. Volcanic rocks in the investigation area include geologically young basalt (about 300,000 years old), originating from eruptions of Mount Rouse in Penshurst (30 kilometres north of the project site), and older basalt from lava flows during the Pliocene to early Pleistocene age (two to four million years ago) derived from multiple eruption points between Hamilton and Warrnambool.

The older lavas have been eroded over time and the resulting volcanic landscape has been reshaped by deep weathering and erosion and is now recognisable as undulating plains. In contrast, the younger flows from Mount Rouse are more clearly defined in the landscape by a distinctive stony terrain (known as stony rises) quite different from the older flows they cover. This includes elongate mounds and ridges that have not been significantly eroded or weathered and are of high geoheritage significance for the study of long lava flows.

Key impact pathways during project construction include direct physical damage to geoheritage features of significance through excavation and levelling to enable the construction of access tracks, hardstand areas, wind turbine foundations and during construction and operation of the temporary quarry. These impacts by their nature would have a permanent impact on the local geoheritage values, however the project has been designed to maintain the significance of this landscape.

Avoidance by design has been the primary measure to limit impacts to geoheritage values. Through an iterative (step by step) design process informed by the geoheritage specialist, the project avoids significant impacts to geoheritage values and in doing so maintains the high level of geoheritage significance. This process included avoiding the placement of turbine towers and other structures on narrow lava ridges, siting underground cabling and access tracks to avoid crossing narrow lava ridges, and changing the quarry layout to avoid specific elongated lava ridges.

With detailed design and construction activities conducted in accordance with the recommendations developed with the project geoheritage specialist, most impacts to the geoheritage values were assessed as negligible, low or minor. The greatest potential impacts were assessed for geoheritage values east of Shaw River, where local relief on the lava is noticeably greater than most other areas in the investigation area. While physical disturbance would be limited to eight wind turbines and associated infrastructure, this area was assessed to be significant from a geoheritage perspective and therefore potential impacts were assessed as being of moderate to low in the context of the broader area of this type of lava surface.

It is considered that given the avoidance measures carried out, construction of the project is consistent with maintaining the high level of geoheritage significance of the site and the broader aspects of Mount Rouse and associated lava flows. Project design has recognised the specific geoheritage values within the project site and would allow key elements of the landscape to be retained without substantially compromising advanced landscape evolution research and interpretation.

27.2.5 Amenity

Draft evaluation objective: To minimise and manage adverse air quality and noise and vibration effects on residents and local communities as far as practicable during construction, operation and decommissioning having regard to applicable limits, targets or standards.

Air quality

Emissions of particulate matter during construction and operation of the quarry resulting from activities such as material handling and transport, crushing, drilling and blasting, and wind erosion were assessed to be the main potential impact to air quality. There would also be gas emissions at the quarry site, primarily from diesel combustion and blasting of explosives. The construction, operation and decommissioning of other (non-quarry related) project activities would generate dust from civil works, vehicles driving on unsealed roads and wind erosion, the operation of concrete batching plants and gas emissions from combustion engines.

To avoid air quality impacts, the quarry and concrete batch plants have been proposed in areas of the project site away from occupied dwellings. The closest sensitive receptor to the quarry is 1.4 kilometres and to any of the concrete batch plants is approximately 1.2 kilometres, which are greater than the minimum separation distances of 500 metres and 100 metres, respectively, as specified in Environment Protection Authority (EPA) Victoria Publication 1518: *Recommended separation distances for industrial residual air emissions*.

The focus of the air quality impact assessment involved quantitative modelling of quarry emissions and their potential impacts. Emissions modelled were PM_{10}, $PM_{2.5}$, respirable crystalline silica and dust deposition. A qualitative assessment was also undertaken for the potential impacts on air quality from the construction, operation and decommissioning from all other project activities.

Modelling indicates that the predicted ground-level concentrations of PM_{10}, $PM_{2.5}$, respirable crystalline silica and deposited dust do not exceed project standards for all air pollutants emitted from the quarry operations at the nearest sensitive receptor site.

Dust emissions from concrete batching plants would be of relatively short duration and small scale (i.e., with low dust generation intensity). Concrete batching is not expected to contribute significantly to the overall air emissions, and it is expected that these emissions can be effectively managed using targeted dust mitigation measures at each site. Similarly, gas emissions from diesel engines and from blasting for the quarry site, as well as combustion emissions from other project activities, are expected to be insignificant and of short duration.

The project's site-specific dust management plan would contain a monitoring procedure for the generation of dust and contingency measures to be implemented if dust plumes are observed and/or credible dust related complaints are received. The final Quarry Work Plan would contain measures for the control of emissions of dust or other particulates, and the carriage and deposition of dust, silt and clay by vehicles existing the work authority area.

With the implementation of management measures, the potential impact to air quality for nearby sensitive receptors is considered to be low.

Noise and vibration

During project construction, potential noise- and vibration-generating activities would include works associated with access track construction, civil works, excavation, foundation construction, electrical infrastructure works and turbine erection. A detailed assessment of the noise from these construction activities, based on maximum overall sound power levels, was undertaken as part of the project Construction Noise Assessment

Construction activities that may generate noise and vibration impacts at the project's on-site quarry include large mobile plant (crushers, dozers and trucks), as well as blasting. Noise impacts at the on-site quarry were modelled using the CONCAWE noise model and assessed in accordance with EPA Victoria Publication 1826.4: *Noise limit and assessment protocol* (the Noise Protocol). Vibration impacts from blasting were assessed in the blast impact assessment against the Earth Resources Regulation guideline limits and Australian Standard AS 2187.2-2006 criteria for ground vibration.

Noise during operation may result from the wind turbines (from wind turbine generators and the movement of rotor blades), and the on-site substation, battery facility and ancillary activities (which include noise-generating equipment such as transformers, inverters and cooling management systems). Noise from wind turbines was modelled in accordance with the New Zealand Standard 6808:2010 *Acoustics – Wind Farm* Noise, while noise from the battery facility and on-site substation was determined using the CONCAWE model.

Vibration generated from wind turbines during operation was assessed in accordance with the criteria of the International Standard ISO 10137: 2007, which is the relevant standard for human annoyance. An assessment of potential vibration impacts to structures during construction was undertaken in accordance with German Standard DIN 4150.

Noise levels produced from operating the on-site quarry were predicted to be well below the noise criteria without any specific noise treatments. Similarly, predicted noise levels from construction activities are predicted to be considerably less than the relevant criteria.

Modelling predicts that noise generated from wind turbines would meet the New Zealand Standard 6808:2010 *Acoustics – Wind Farm Noise* at all dwellings of landowners not hosting wind farm infrastructure (i.e., non-stakeholders). Similarly, noise predictions from the on-site substation and battery facility show they would achieve the noise limit, with the adoption of a reduced noise level transformer.

Modern operating wind farms produce very low levels of ground vibration. Based on measurements at operating wind turbines, ground vibration from the wind turbines would be undetectable at nearby dwellings.

Based on the separation distances between the construction activities and the nearest dwellings, vibration from construction activities would be undetectable to humans and therefore would achieve criteria associated with residential amenity. The separation distances between the quarry extraction area and wind turbine locations and other structures would limit the potential vibration impact.

Cumulative noise of other wind farms in the vicinity (i.e., Macarthur, Ryan Corner, Hawkesdale and Woolsthorpe wind farms) were considered in the noise assessment for the project. The cumulative noise assessment identified that the New Zealand Standard 6808:2010 *Acoustics – Wind Farm Noise* would be achieved for all wind speeds at all dwellings between the operating and proposed wind farms.

27.2.6 Cultural heritage

Draft evaluation objective: To avoid or minimise adverse effects on Aboriginal and historic cultural heritage and associated values.

Aboriginal cultural heritage

Before European arrival the project region was occupied by the *Dhauwurd wurrung (Gundidjmara)* Aboriginal people. In the western portion of the project site, the Eastern Maar Aboriginal Corporation and the Gunditj Mirring Traditional Owners Aboriginal Corporation maintain joint responsibility as the appointed Registered Aboriginal Parties. The remainder of the project site is within a Registered Aboriginal Party area solely appointed to the Eastern Maar Aboriginal Corporation.

If an EES is required under the *Environment Effects Act 1978*, a CHMP for the area in which the works are to be carried out must also be prepared. A CHMP (no. 11090) has been prepared for the project in accordance with Part 4 of the *Aboriginal Heritage Act 2006* and will be evaluated by the Secretary of Department of Premier and Cabinet (First Peoples – State Relations Group, formerly Aboriginal Victoria) as there was no Registered Aboriginal Party in place for the project site at the time the notice of intent to prepare a CHMP was lodged.

Standard and complex assessments were undertaken between December 2009 and June 2021 and were attended by representatives from the relevant Aboriginal Traditional Owner groups: the Eastern Maar Aboriginal Corporation, Framlingham Aboriginal Trust (who were consulted prior to the appointment of the current Registered Aboriginal Parties for the project site) and/or Gunditj Mirring Traditional Owners Aboriginal Corporation.

Potential impacts to known Aboriginal cultural heritage places and areas likely to contain Aboriginal cultural heritage have been minimised in the development of the project design by avoiding areas of sensitivity.

One previously registered Aboriginal heritage place (a mound) is located within the project site, however, this place could not be found during site assessments and is assumed to have since been unintentionally destroyed. One additional place, comprising of an isolated artefact, was identified during the complex assessments. This site has been avoided during project design and therefore the likelihood of impacts is low.

Protective measures, included as management conditions in the CHMP, would be implemented during project construction, operation and decommissioning. These conditions include the establishment of 'no go' areas around the location of known Aboriginal heritage places, and a cultural heritage induction for key personnel and supervisors prior to and throughout project construction and decommissioning. The induction would include education about the importance of the area to Aboriginal people, planned and delivered with the support of local Traditional Owner people. The CHMP also contains contingency plans for the unexpected discovery of Aboriginal cultural heritage and human remains, and measures for reviewing compliance with the CHMP.

Historic heritage

The historical heritage assessment interrogated relevant heritage registers and databases, previous archaeological publications and unpublished reports, and reviewed the local post-contact history to identify historical heritage artefacts at the project site. The heritage sites identified included both previously recorded in heritage registers and inventories, as well as identifying previously unlisted sites that have been submitted for inclusion in the Victorian Heritage Inventory (VHI).

Avoidance by design has been the primary measure to limit impacts to historical heritage. This has included establishing buffers in the concept design around all VHI and Victorian Heritage Register (VHR) heritage sites. As such, no impacts on listed sites of historical heritage value are anticipated.

The project would impact the Landers Lane dry stone wall which is not included in the VHI or VHR but is protected under Moyne Shire Council's Planning Scheme Clause 52.33, as it holds some local heritage value. These impacts are permissible under the planning scheme and would require a permit from council.

Landers Lane dry stone wall

The project design has avoided many of the potential impacts to the Landers Lane dry stone wall that were identified in the early iterations of the project design. Key design changes have included the relocation of the project substation away from Landers Lane, the removal of an overhead transmission line along Landers Lane and the using existing gaps in the dry stone wall.

As the dry stone wall extends along Landers Lane bisecting the project site, it is difficult to avoid some impacts to the wall to accommodate access tracks and cabling routes. Five crossings of the Landers Lane dry stone wall for access tracks and cables are proposed, two of which would be rehabilitated (i.e., reconstructed) following construction and three would have gates installed.

To mitigate the risk of additional impacts on yet unknown historical heritage values, an unexpected finds protocol would be adhered to throughout construction of the project, with the impacting works to stop until a heritage advisor can assess the site and take necessary actions to maintain the identified heritage values.

27.2.7 Land use and socio-economic

Draft evaluation objective: To avoid and minimise adverse effects on land use (including agricultural and residential), social fabric of the community (with regard to wellbeing, community cohesion), local infrastructure, electromagnetic interference, aviation safety and to neighbouring landowners during construction, operation and decommissioning of the project.

Land use

The project is consistent with the relevant Victorian and local planning policies. At the state level, it would contribute to achieving the greenhouse gas emission reductions set via the *Climate Change Act 2017* and renewable energy generation targets set via the *Renewable Energy (Jobs and Investment) Act 2017*. At a local level, the project has limited potential impacts to people and the environment through careful design and by proposing management measures for residual impacts.

The project is subject to the provisions of the Moyne Planning Scheme. Most of the project is within the Farming Zone, with small areas of Special Use Zone also proposed to host project infrastructure. The main land use in the project site is agricultural, with most of the land is already cleared and used for cattle and sheep grazing. Some properties are used for dairy farming and cropping.

There are dwellings owned by stakeholder landowners on several project lots within the project site and on neighbouring land. All non-stakeholder (neighbour) dwellings are more than 1.5 kilometres from a proposed wind turbine.

The proposed changes to the land use are consistent with the Moyne Planning Scheme. While a small percentage of agricultural land would be occupied by project infrastructure, this is not expected to have a material impact on land productivity. Stakeholders would benefit from improved access to and within their properties via new or upgraded and well-maintained gates and access tracks. They would also benefit via diversified income from project lease revenue.

It is acknowledged that land uses within and close to the project site may experience impacts related to noise, dust and visual amenity.

Socio-economic

The social impact assessment considered a broad range of potential impacts arising from the construction, operation and decommissioning of the project, with these impacts identified principally through the stakeholder consultation process. The assessment of these impacts was based on guidelines published by the International Association for Impact Assessment, *International Principles for Social Impact Assessment* (Vanclay, 2003) and considered the findings of specialist technical reports undertaken for the project.

An economic impact assessment was completed to identify potential local and regional economic benefits and impacts associated with the project. This assessment was based on an analysis of the local and regional population, labour markets, and occupational and business structure, and the capacity of the townships in the study area to participate and service the project. The assessment also included a review of policies that influence investment in the renewable energy sector.

Orford Memorial Hall

During construction, temporary negative impacts to the current way of life, community, culture, health and wellbeing, and environment and amenity are anticipated. These impacts are associated with the generation of dust, noise and vibration, changes to the visual character of the landscape, increased traffic on local roads, and the presence of a construction workforce that affects the community's sense of place. Potential impacts to environment and amenity, culture and way of life are also predicted during the operation of the project, particularly cumulative noise and visual impacts resulting from the nearby existing and approved wind farms (noting that noise levels are predicted to comply with the relevant standard). However, with the project would also support local employment and training opportunities.

The increase and diversification of temporary and ongoing local employment opportunities would provide economic benefits within the region. During construction, it is estimated that $120 million of investment would be retained in the region. Ongoing economic stimulus associated with the operation of the project through the financial returns to host landowners (stakeholders), local wage spending, community fund payments and Moyne Shire Council financial returns is estimated at approximately $158.4 million over 25 years.

Through the design process, the project has sought to avoid and minimise potential impacts to people and the local community by applying buffers between neighbour (non-stakeholder) dwellings and wind turbines, and township zones.

A Neighbour Benefit Sharing Program has been developed that provides 'goodwill' payments to neighbours (amongst other benefits). The program would start upon commissioning of the wind farm and continue annually for as long as the relevant turbines are operational. With the implementation of these and other design and management measures, the social impact significance ratings during both the two-year construction period and operation were assessed to be low to medium, except for impacts associated with 'environment and amenity', which were assessed as high during construction for the community immediately surrounding the site.

Electromagnetic interference

Based on a review of the Australian Communication and Media Authority Register of Radiocommunication Licences database, there are limited radiocommunication services are in the vicinity of the project, with only one point-to-point link (operated by AusNet Services) passing over the project site and three point-to-multipoint stations located within 20 kilometres of the site (operated by Aussie Broadband, Powercor and Wannon Region Water Corporation).

To determine the potential for electromagnetic interference, consultation was conducted with radiocommunications service providers, emergency services, mobile phone providers, NBN, Bureau of Meteorology, operators of fixed point-to-point communications links and radio services. The operators of these services were asked to assess if the proposed project would interfere with their services and to provide possible mitigation measures where they deemed them necessary. Respondents typically advised that no impacts, or acceptable (negligible) levels of impact were expected. Where they advised of potential impacts, respondents provided a range of feedback on conditions they require the project adopt (e.g., Bureau of Meteorology).

The project has sought to eliminate potential electromagnetic interference impacts from the project, including relocating two turbines away from a fixed point-to-point link operated by AusNet Services and the adoption of a buffer to further avoid any potential interference. To ensure mobile phone, NBN, broadcast radio and broadcast television are not negatively impacted, a Signal Strength Survey at neighbouring dwellings would be conducted prior to construction, and then after construction if issues are identified. The proponent would undertake measures necessary to rectify any impacted services.

The assessment of electromagnetic interference concluded that, following the implementation of design and management controls, the project is unlikely or has a low potential to cause interference. Further consultation with the operators of communications and other service providers would occur during detailed design to confirm the avoidance of electromagnetic interference impacts, and to address any impacts identified.

Aviation

The aviation impact assessment identified existing aviation operations and activities within 30 nautical miles (or about 56 kilometres) of the project site to determine the potential impact to aviation safety. To maintain aircraft safety, design and management measures are proposed.

There are three regulated aerodromes within 30 nautical miles of the project site: Portland, Hamilton and Warrnambool. Nine unregulated private airstrips are on properties within or close to the project site, with these airstrips either decommissioned or unused, or used infrequently for activities like aerial agricultural operations (spraying and spreading).

The project has the potential to impact on the operation of aerodromes and local airstrips due to the introduction of new obstacles, including wind turbines and meteorological masts. In particular, there is a potential safety risk relating to Visual Flight Rules for aircraft operating at low levels, including for aerial agricultural operations and aerial firefighting. Wind turbines can also impact communications, navigation, and surveillance (radar systems) used for air traffic control due to electromagnetic interference. The aviation impact assessment concludes the project would not impact on the performance of navigation aids and communication facilities or the performance of any surveillance radars and satellite facilities.

Avoidance by design has been the primary measure to limit aviation impacts. This has included establishing buffers around local airstrips in the concept design, incorporating the recommendations of the Country Fire Authority (2022) *Design Guidelines and Model Requirements Renewable Energy Facilities* in the project design and management measures, and committing to marking the meteorological monitoring masts in accordance with the *National Airports Safeguarding Framework Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation* to improve visibility of these structures for pilots of low-flying aircraft.

The project would not impact the Obstacle Limitation Surface for the Portland, Hamilton or Warrnambool Aerodromes. Similarly, the project would not impact the Procedures for Air Navigation Services – Aircraft Operations surfaces prescribed airspace of the Instrument Approach Procedures for the Portland or Hamilton Aerodromes.

Whilst the proposed turbines are beyond the 10 nautical mile Minimum Safe Altitude of the Warrnambool Aerodrome, there are several turbines within the 5 nautical mile buffer zone used to calculate this Minimum Safe Altitude. To enable the proposed maximum wind turbine tip height to be accommodated, the 10 nautical mile Minimum Safe Altitude would need to be raised by 100 feet (or 30.5 metres) from 2,100 feet to 2,200 feet to satisfy the requirements of ICAO PANS-OPS document 9905 to ensure minimum factors of safety are maintained. The same modification is also required for the Procedures for Air Navigation Services – Aircraft Operations surface for the Warrnambool aerodrome (YWBL RNAV-Z RWY 13) non-precision approach. This change would only affect Instrument Flight Rules aircraft, with the change predicted to have a minimal impact to their pilots.

The project would result in some limitations on aerial agricultural operations immediately surrounding wind turbines and meteorological monitoring masts, however, these limitations would largely be experienced by stakeholder (participating) landowners. Wind turbines are not expected to pose unacceptable risks to aerial firefighting.

Overall, the impact assessment concluded the potential risk to aviation in the project region is low and does not pose a hazard to aircraft safety.

27.2.8 Traffic and transport

Draft evaluation objective: To avoid and minimise adverse effects on roads and road users during construction, operation and decommissioning of the project.

The road network surrounding the project site is consistent with its rural setting, designed to accommodate the transportation needs of the agricultural land uses and the low volume of traffic that typically uses these roads. The road network around the project site includes unsealed local roads and arterial roads that are a mix of single and double lane sealed roads. Several other minor local rural roads extend through the project site, which typically provide access to the land within and surrounding the project site. Public transport routes do not extend through the project site, but services operate on roads that would be used by project traffic. School buses operate on some roads used to access the project site.

Woolsthorpe-Heywood Road, east of Tarrone North Road

Construction of the project would increase traffic on the surrounding road network to access the site, including transport of construction staff, materials, plant and equipment, and wind turbine components. This additional road use would require the implementation of management measures including upgrading some sections of roads to maintain the existing level of service that the road network currently provides the community.

The project would also require the use of over size and over mass vehicles to transport the large components that make up the wind turbines and supporting infrastructure. The project has carefully selected a route for these vehicles that would minimise impacts on other road users. To transport these large project components from the Port of Portland to the project site, several intersections along the route would be modified to accommodate the long vehicles and their wider turning circles.

The project has adopted design measures and road upgrades to mitigate impacts on the road network where possible. These include:

- design of a network of internal access tracks to minimise the use of public roads for internal traffic between different parts of the project site
- use of an on-site quarry as the preferred source of crushed rock to limit heavy vehicle movements
- construction of a watercourse crossing over Shaw River within the project site to avoid internal traffic to using public roads to access the western section of the project site
- road upgrades to enable project access while minimising traffic impacts on existing road users.

A range of other management measures have been committed to mitigate impacts on the road network and its users. This would include the preparation and implementation of a detailed Traffic Management Plan in consultation with Moyne Shire Council and Department of Transport, as well as entering into 'road maintenance and management agreements' with both of these authorities.

Before construction commences, local and regional schools would be consulted for their current bus timetables that intersect construction traffic routes. Suitable windows of inactivity (curfew times) would be arranged in agreement with the relevant schools and Moyne Shire Council. These would apply to both heavy vehicles and over size and over mass vehicle deliveries.

School bus routes would be reviewed at the beginning of each school term in consultation with the local and regional schools and Moyne Shire Council and, if required, updated windows of inactivity (curfew times) would be arranged.

All construction traffic would display a sticker identifying them as being associated with the project and a vehicle ID number, except for 'one off' vehicles that are not inducted into the site.

Based on the existing traffic volumes and usage and proposed public road upgrades, construction traffic generated by the project on public roads can reasonably be accommodated. Similarly, local traffic impacts within the project site during all project phases can be suitability and safely managed. Subject to the resolution of specific traffic management requirements, the preferred over-dimensional vehicle route option from the Port of Portland to the project site for the transport for wind turbine and other imported major components has been assessed and is suitable for over size and over mass transport vehicles.

27.3 Environmental management framework

The scoping requirements state that "the environmental management framework (EMF) in the EES should provide a transparent framework with clear accountabilities for managing and monitoring the environmental effects and hazards associated with the construction and operational phases". This has been extended to include the decommissioning phase within Chapter 26 – *Environmental management framework*.

The EMF contains clear accountabilities for the delivery of the environmental management measures (EMMs) and how the project will comply with all relevant environmental laws, approvals, approval conditions and management plans and procedures to ensure that the environmental effects and any hazards associated with all phases of the project can be effectively managed. The EMF commits the proponent to the auditing of the Construction Environmental Management Plan and sub-plans by an Independent Environmental Auditor.

Implementation of the EMF and EMMs would be effective in avoiding or minimising adverse effects associated with the project. Successful implementation would also support beneficial outcomes for the community and the broader environment. The EMF is a clear, transparent, robust and comprehensive blueprint for managing the project using sound governance and accountability arrangements.

27.4 Next steps

The EES will be on public exhibition for 30 days, during which time the public can view the EES and make written submissions. Following public exhibition of the EES, it is expected that an independent Inquiry and Panel Committee will be appointed by the Minister for Planning to administer panel hearings, and review and report on the environmental effects of the project.

Following receipt of the inquiry report, the Minister for Planning would assess the environmental effects of the project, having regard to all relevant considerations, including the report of the Inquiry, all associated submissions and evidence, the EES chapters and supporting technical reports, public submissions, and the proponent's response to the public submissions.

The assessment will be provided to the Commonwealth Minster for the Environment to decide whether to approve the project under the EPBC Act. The Minister for Planning's assessment of the EES will provide advice on the appropriateness of the Environmental Management Framework and associated mitigation measures.

After the assessment and determination of the EES by relevant State and Commonwealth departments, it is anticipated that the Minister for Planning would exercise their powers under the *Planning and Environment Act 1987* to approve the project and issue a planning permit.