Executive summary

KENTBRUCK GREEN POWER HUB

Executive summary

This section summarises the key findings of the Environment Effects Statement (EES) for the Kentbruck Green Power Hub. It provides an overview of the Project description, the need for the Project, and the development of the Project including options and alternatives, as well as the approach taken in the EES. It concludes by summarising the key findings of the assessments and associated management and mitigation responses to address residual issues, and details the next steps in the EES process.

Overview

The Kentbruck Green Power Hub (the Project) is a proposed wind farm in Victoria's south west being developed by Neoen Australia Pty Ltd (the Proponent). The Proponent is one of Australia's leading renewable energy producers with over 4 gigawatts (GW) of wind, solar and battery storage projects in operation or under construction.

This 600 megawatt (MW) wind farm could contribute approximately 5% of Victoria's electricity generation, a substantial step towards the achievement of the state's renewable energy targets. The Project is estimated to involve a $1.2 billion infrastructure investment, creating up to 350 jobs during construction and 14 jobs when operational. It has also been selected for Commonwealth Government's competitive Capacity Investment Scheme's Tender 1 – NEM generation. It is the only Victorian wind farm to qualify for this round. The CIS aims to create jobs, reduce pressure on energy bills, and lower emissions. It supports Australia's clean energy transition and complements other programs under the Powering Australia Plan.

As a long-term owner and operator of large renewable energy assets, the Proponent recognises the importance of engaging with the community of Portland to maximise local outcomes at every stage of a project. Portland is among Victoria's most experienced regions when it comes to the types of businesses and skills that support wind farm construction, as it has been hosting wind farms since the 2000s.

The Project is located on Gunditjmara Country and in a culturally significant area for the Gunditjmara. The Proponent is sponsoring the Gunditj Mirring Traditional Owners Aboriginal Corporation (GMTOAC) to undertake an extensive cultural values assessment (CVA) to articulate intangible cultural values within and around the Project Area. The intent of the CVA is to direct the Indigenous Land Use Agreement (ILUA) and to provide the Gunditjmara and their community with information to enable them to move forward with discussions. Cultural heritage surveys have been undertaken to ensure the wind farm's design protects local cultural artefacts and values and a Cultural Heritage Management Plan (CHMP) will be finalised with the GMTOAC prior to construction of the Project.

The wind farm is proposed in an area with consistent high wind speeds, a strong grid connection, and has received positive feedback from surrounding communities during consultation undertaken as part of the EES process. It is predominantly located in an actively harvested pine plantation, which minimises impacts on native vegetation and biodiversity.

The coastline near Portland experiences some of the strongest winds in Victoria. Strong wind speeds mean competitively priced electricity for Victorian consumers, as well as reliable electricity generation, which supports energy security in our changing grid. Building a wind farm in the windiest possible location also means less turbines are required to generate the electricity that Victorians need today and into the future.

The wind farm connects into the grid at the Heywood interconnector, a very strong position in the electricity network that will mean relatively little curtailment or wasted electricity. The Project's grid connection location is close to the Portland aluminium smelter. Siting generation near Victoria's largest single electricity load (8% to 10% of Victoria's electricity demand) can reduce the amount of electricity that is transported from over 500 kilometres (km) away in the Latrobe Valley, and thereby would have an impact on reducing electricity produced using fossil fuels. The Project could also help lower the energy costs for the smelter, and in doing so help support its financial viability.

Locating the Project within a pine plantation is a decision the Proponent made to minimise impacts on native vegetation. It also creates synergies with existing plantation infrastructure and operations; existing roads can be improved during wind farm construction, improving access including for fire response. Several jurisdictions are recognizing the benefits of co-locating renewable energy infrastructure within operational plantations including the NSW Forestry Corporation, which ran a process in 2023 to actively partner with wind farm developments within its operations. Further afield, wind farms are common in northern European forests across Germany and the Nordic states, and the Proponent is operating the Mutkalampi wind farm in a plantation in Finland.

Several areas recognised for their conservation significance are within the vicinity of the wind farm, including Lower Glenelg National Park to the north, Cobboboonee National Park to the east, and Discovery Bay Coastal Park to the south. Several of these conservation areas form part of the Glenelg Estuary and Discovery Bay Ramsar site (the Ramsar site), comprising highly significant wetland values.

The Proponent has undertaken extensive research to understand and respond to the biodiversity and habitat values that are present within and around the wind farm. Investigation into the biodiversity values of the site and surrounds have been ongoing for more than five years and has involved some of the most significant monitoring campaigns undertaken for a wind farm in Victoria. This includes a total of 9,432 detector nights of bat call data, including from detectors mounted at several heights on four monitoring masts for over a year. Ecologists have also recorded data about birds that are flying, foraging, roosting, and nesting in and around the Project site, as well as other threatened fauna such as small mammals. Botanists have also surveyed and mapped native vegetation and threatened flora. This ecological data has been used to develop the project's layout design, construction methodologies, and management and mitigation measures to minimise potential impacts.

The Proponent adopted several design changes in response to the outcomes of studies including removal of turbines from within 500 metres (m) of wetlands within the Ramsar site, within 300 m of parks and conservation reserves, and from farmland in the east of the wind farm site. These changes reduce collision risk for bird and bat species that use nearby habitats. The Proponent also removed turbines from areas within Brolga (*Antigone rubicunda*) breeding buffers and movement corridors, including a 900 m buffer on Long Swamp which is also known habitat for Australasian Bittern (*Botaurus poiciloptilus*). Turbine free buffers were also applied to areas of the wind farm site within 5 km of Southern Bent-wing Bat (*Miniopterus orianae bassanii)* (SBWB) roost sites. The Proponent also increased the minimum blade tip height of turbines from 45 m above ground level to 60 m to avoid or minimise potential impacts on avifauna and bat species, particularly SBWB, which most frequently flies at heights less than 60 m. Of the 1,292 confirmed, probable or complex SBWB calls recorded at the site, four calls were recorded at 56 m and only one was recorded at a height above 60 m.

Bat activity is highest at low wind speeds, so bat collision risk can be reduced further by turning wind turbines off during low wind speeds. This is called curtailment. The Project has adopted a low windspeed curtailment strategy to further reduce risk of bat collisions. To support and protect local species, the Proponent has committed a significant fund for the sponsorship of ecological studies, protection activities and species recovery projects worth $1 million per year from the commencement of operations for the 30-year expected life of the Project. The fund would be administered by the Proponent and would initially have a focus on SBWB. Projects to assist the species could include habitat conservation and regeneration, and the Proponent will work with local experts on the most effective projects.

The Proponent has held community information days, met project neighbours and local community groups, met with the Glenelg Shire Council on numerous occasions, and opened a shopfront in the centre of Portland for locals to drop by and ask questions, with our Community Liaison Officer employed in the town for the last four years. Listening to the community has resulted in design changes to the wind farm. One of the issues that the community expressed very clear opinions on was the route for the transmission line linking the wind farm to the electrical grid. In response to the community's strong preference that the transmission does not go overhead via privately held agricultural land, the Proponent has developed a technically feasible option to go underground through the Cobboboonee National Park and Cobboboonee Forest Park (the Parks).

The area surrounding the Project has a very low population density. The township of Nelson is around 5 km west of the wind farm, and the regional centre of Portland is around 30 km to the southeast. There are 19 non-associated dwellings and 10 associated dwellings within five kilometres of the proposed wind turbines.

The Project was referred to the Victorian Minister for Planning on 24 July 2019 in accordance with Section 8(3) of the *Environment Effects Act 1978* (EE Act). On 25 August 2019, the Minister determined that an EES is required for the project due to the potential for significant environmental effects.

The Proponent has commissioned numerous technical studies since then to better understand the physical, ecological, cultural, and social environment within which the project is proposed and the surrounding region. Developing this understanding has played a key role in the wind farm design, and the development of management and mitigation measures to ensure the project is able to operate in an acceptable manner.

This document summarises many of those studies, but more detail can be found in the full EES documents which are publicly available online and in the Proponent's Portland office.

The need for the Project

This 600 MW project can make an important contribution to replacing retiring generation capacity in Victoria. The closure of coal fired plants and potential coal, gas and diesel fuel shortfalls has been identified as a material risk to the reliability of the National Electricity Market (NEM) (AEMO, 2023). Reliability gaps in Victoria are forecast to exceed the reliability standard from 2026–27. AEMO's 2023 Electricity Statement of Opportunities states that

> *All jurisdictions have a range of policies that support the development of new capacity to replace retiring generators. Each policy must now prioritise delivering the transmission, and renewable energy and firming generation they target, ahead of announced closures. Just-in-time investment may not maintain suitable reliability, and delivering on the current development opportunities is now essential.*

The Victorian Government's own modelling finds that from 2025 to 2030 an additional 4,000 MW of large-scale renewable energy generation and storage capacity is required in Victoria (DELWP, 2022). Furthermore, a target for 65% of Victoria's energy production to be from renewable sources by 2030 and for 95% of Victoria's energy production to be from renewable sources by 2035 was recently legislated as an update to the *Renewable Energy (Jobs and Investment) Act 2017*. The Commonwealth is undertaking similar actions to reduce emissions nationwide and encourage the development of clean energy.

The Project can also contribute to reducing emissions in the state. Victoria's main source of emissions comes from burning fossil fuels such as coal and gas, which are also the primary sources for electricity production and transport (DEECA, 2023). The Victorian government has released Victoria's 'Climate Change Strategy', a roadmap to net-zero emissions and a climate resilient Victoria by 2050. The Victorian government has set ambitious, but achievable, emission reduction targets which aim to reduce the state's greenhouse gas emissions by 28–33% by 2025, 45–50% by 2030, 75– 80% by 2035 and to achieve net-zero emissions in Victoria by 2045.

Reducing emissions is also important for the protection of the natural environment. The most recent Victorian Climate Change Adaptation Plan (2017–2020) states that *"The effects of climate change on the natural environment will vary across regions and ecosystems, and may be severe. It is likely that climate change will cause irreversible changes to ecosystems and species".*

The Project may also make an important contribution to Australia's federal renewable energy targets. The Project was successful in being selected in Tender 1 – NEM Generation of the Capacity Investment Scheme (CIS), which is an Australian Government scheme seeking competitive tender bids for underwriting contracts to support renewable generation and dispatchable projects. The scheme aims to:

- help deliver the Australian Government's 82% renewable electricity by 2030 target
- deliver an additional 32 GW of capacity by 2030
- support electricity generation growth and reliability as demand grows and ageing coal power stations retire
- place downward pressure on electricity prices.

The CIS aims to create jobs, reduce pressure on energy bills, and lower emissions. It supports Australia's clean energy transition and complements other programs under the Powering Australia Plan.

The Project

Location

The Project is located in south west Victoria and within the Glenelg Shire Council local government area (Glenelg LGA).

The township of Nelson is located five km west of the wind farm site. The city of Portland is around 30 km to the southeast. The Project is situated inland of Discovery Bay. Because the wind farm is sited within an operating pine plantation, there is an existing network of public roads both surrounding and internal to the Project Area, as well as several private access roads.

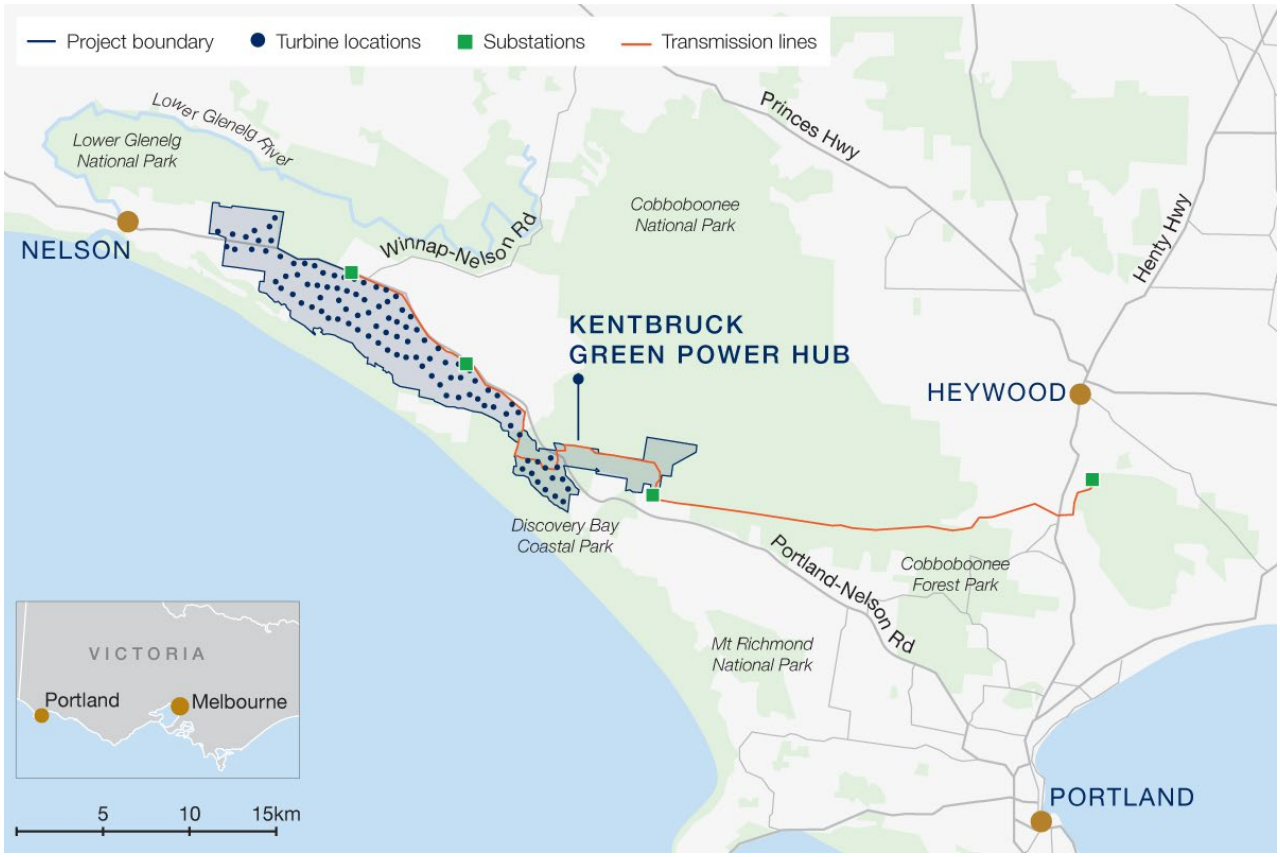


Figure 1 Project Location

Within the Project Area, land has been heavily modified and is predominantly used for commercial radiata pine forestry operations, which adjoins Portland-Nelson Road to the north and Discovery Bay Coastal Park to the south (see **Figure** 1). A small section of the wind farm site is also on agricultural land that abuts the Lower Glenelg National Park to the north and Cobboboonee Forest Park to the east.

The transmission line travels underground beneath an existing road through the Parks, and then underground through agricultural land to the existing Heywood Terminal Station, south of Heywood. Approximately 14.3% of land in the Project Area is freehold land that is primarily used for grazing, and around 85.4% of the land is commercial pine plantation. Around 0.3% of the Project Area is public land.

Figure 2 Aerial photo of the pine plantation in the Kentbruck area, which represents common landscape features surrounding the Project Area. Portland-Nelson Road is also shown in this photo

Project infrastructure

The Project will involve the construction of around 105 wind turbines to produce electricity. This electricity will be transported from the wind farm into the existing electricity network at Heywood Terminal station through a new transmission line.

The Project involves the following key infrastructure:

- A wind farm of up to 600 MW, comprising approximately 105 wind turbines with a maximum tip height of 270 m above ground level.
- Each wind turbine will be fixed to a large underground foundation with a diameter of approximately 25 m and depth of approximately 4 m. Subject to detailed geotechnical assessments, the turbine foundations would consist of concrete slab (gravity) or rock anchor foundations.
- A new 275 kilovolt (kV) transmission line connecting the wind farm to the existing electricity transmission network. The transmission line would be approximately 26.6 km in length, running underground under an existing public road through the Parks, and then through agricultural land to the existing Heywood Terminal Station, south of Heywood
- On site electrical infrastructure including a main substation and smaller collector substations, as well as underground and overhead electrical cables that link each turbine into these substations.
- Meteorological monitoring masts that measure wind speed and direction.
- Permanent hardstand areas at each turbine, which are flat graded areas to enable turbine construction and maintenance.
- Graded access roads to each turbine, many of which are already existing but some of which will be newly constructed.
- Temporary infrastructure including construction compounds, concrete batching plants and laydown areas, which will be removed when construction is complete.
- A limestone quarry to provide material for hardstands and for upgrades to existing access roads or construction of new access roads.

An overview of the wind farm layout is shown in **Figure 3**. Further details on the Project can be found in **Chapter 3 *Project description*** of the EES.

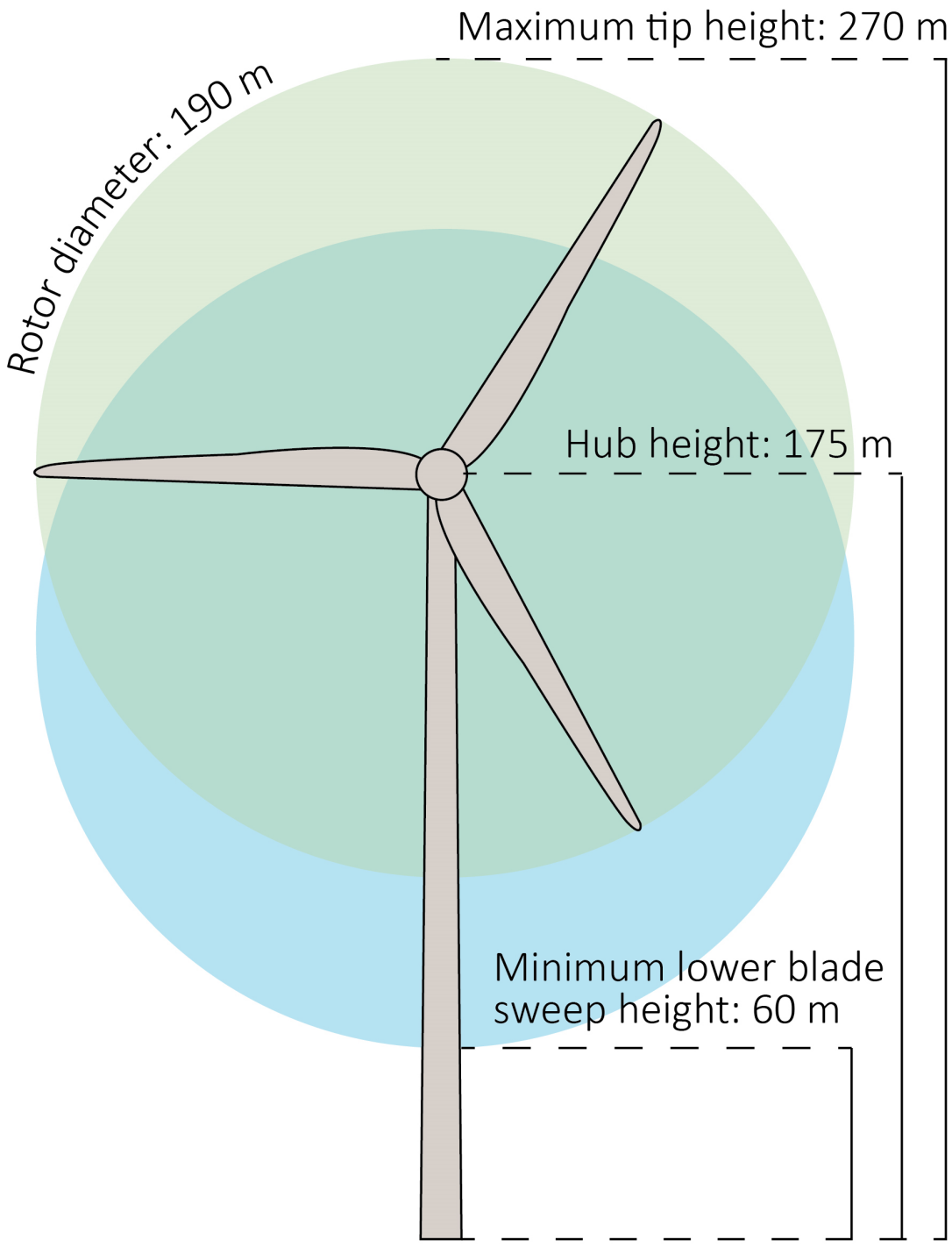
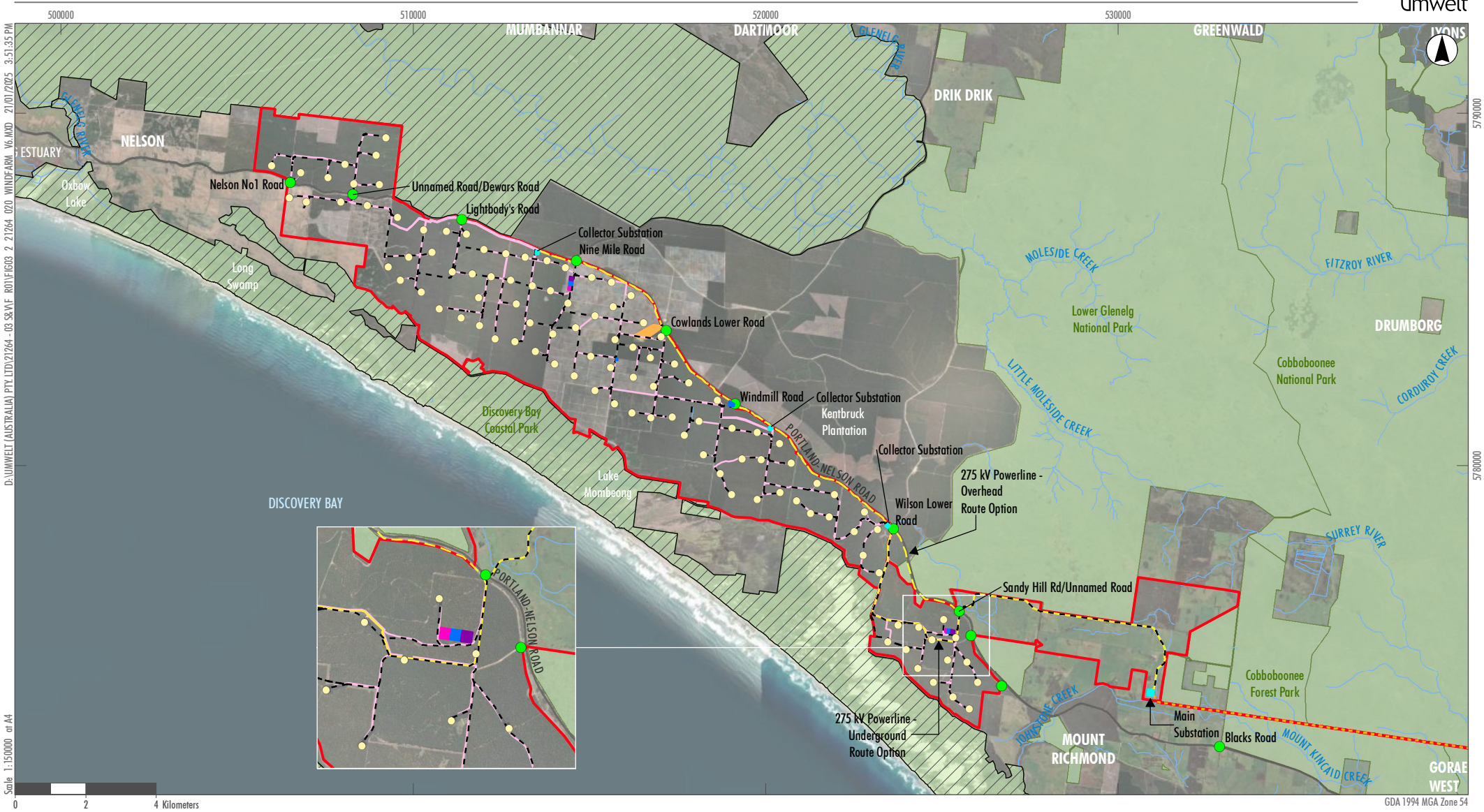


Figure 3 Indicative wind turbine dimensions



Legend

- Project Area
- Glenelg Estuary and Discovery Bay Ramsar Wetland
- Roads
- Watercourses
- Site Access Points

Permanent Wind Farm Infrastructure

- Onsite Quarry
- Collector Substation
- Crane Hardstand

- Proposed Turbine Location
- Underground Transmission Line
- 275 kV Powerline - Overhead
- 275 kV Powerline - Underground
- Internal Access Roads
- Underground Powerlines

Temporary Wind Farm Infrastructure

- Concrete Batch Plant
- Laydown Areas
- Site Compounds

FIGURE 4

Wind Farm Details

Image Source: ESRI Basemap (2021) Data source: DELWP (2021); Geoscience Australia (2021); Aurecon (2021)

Construction

The Project would be constructed in either a single stage or over two stages. Construction of the Project would involve two main components: the wind farm and the transmission line.

Wind Farm

Construction of the wind farm is expected to take between two and 2.5 years (depending on whether a single or two staged approach is adopted), followed by electrical testing prior to wind farm energisation and operation.

Pre-construction works would be the first step in the construction phase, and includes site investigations and testing, clearing of pine trees within the plantation and removal of vegetation within agricultural properties to allow for project infrastructure, establishment of construction compound areas, upgrades and/or construction of public and internal access roads. Subsequent construction works for the wind farm would be associated with the establishment of hardstand areas, construction of foundations, wind turbine erection, electrical reticulation, and substation installation and commissioning.

The wind turbine foundations would have a nominal diameter of 25 m and depth of approximately 4 m. Subject to detailed geotechnical assessments, the turbine foundations would consist of concrete slab (gravity) or rock anchor foundations. Gravity foundations would involve the excavation of approximately 1,600 cubic metres (m^3) of ground material and installation of shuttering and steel reinforcement, followed by the pouring of concrete. Much of the excavated material would, if suitable, be used as backfill around the turbine base.

Underground powerline construction in the wind farm site would involve the excavation of trenches to a depth of 0.8 m to 1.2 m unless other construction methods such as horizontal directional drilling (HDD) are required. HDD is typically used for crossing rivers or culverts and is useful for burying cables beneath surface waterbodies which would otherwise require dewatering if trenching was to be used. It can also be used for avoiding existing underground services that cannot be removed or re-instated, as well as avoiding other sensitive landscape features such as native vegetation or threatened species.

Approximately 210,000 m^3 of concrete and 300,000 m^3 of crushed rock would be required for the Project. Crushed rock would be sourced from the onsite quarry and used for upgrading and constructing internal access tracks and establishing hardstand areas. Concrete would be batched onsite and be used primarily for the construction of turbine foundations and ancillary infrastructure.

Transmission Line

The transmission line beneath Boiler Swamp Road would primarily be constructed using trenching. Within the Parks, the cabling would be buried at a depth of approximately 1.25 m beneath an existing road (Boiler Swamp Road) and disturbance within the Parks would be limited to the existing road corridor. The proposed construction methodology uses a specialised machine that integrates excavation, cable laying and backfilling equipment. This method excavates, lays the cable and backfills the trench in a single pass, minimising the associated construction footprint through small trench widths and minimal spoil generation. HDD would be used at several crossings of the Surrey River to avoid interaction with the waterway and riparian zone, thereby reducing the risk of transporting sediment into nearby waterways. HDD would also be used to avoid potential impacts on the tree protection zones of Apple Jack trees (*Eucalyptus splendens*), by minimising incursion into the tree protection zone.

To the east of Cobboboonee Forest Park, the transmission line traverses freehold land that is primarily used for grazing. Construction of this section of the transmission line would be via traditional open-cut trenching methods involving an excavator bucket.

Final construction methodology will be selected during detailed design but will meet or exceed the commitments made as part of this EES.

Operation and Monitoring

The operational life of the wind farm is expected to be 30 years. During this period, operation, maintenance, and monitoring of the wind farm would include the following activities:

- Servicing of the wind turbines and associated infrastructure
- Maintenance of internal access tracks and electrical infrastructure
- Use and maintenance of buildings and plant, including the operations and maintenance building
- Ongoing environmental monitoring in accordance with operational requirements and relevant approvals.

Decommissioning

At the end of the operational life of the Project, the wind farm would either be decommissioned or upgraded with new turbines and ancillary infrastructure. Upgrading (repowering) the Project would extend the operational period of the Project and be subject to varied or additional approvals and permits.

Key decommissioning activities would include:

- Removal of all above-ground non-operational equipment
- Removal and clean-up of any residual contamination
- Rehabilitation of all storage areas, construction areas, access tracks and other areas affected by the Project, if those areas are not otherwise useful to the ongoing use or decommissioning of the wind farm and pine plantation. The site would be rehabilitated in consultation with the relevant landowners.

Project benefits

Environmental

The Project would provide at least 30 years of clean energy to Victoria, producing approximately 2,000 gigawatt-hours (GWh) of electricity per year, which would power 411,000 homes. This contribution to emissions reduction is the equivalent of removing 616,000 cars from the road or planting 15.9 million trees. This would not only contribute to energy security in the state, it would also assist the Victorian Government in achieving its Climate Change Strategy, emission reduction targets and renewable energy targets.

Additional to this, given both the size of the Project and its proximity to sensitive ecosystems, the Proponent has committed a fund for the sponsorship of ecological studies, protection activities and species recovery projects worth $1 million per year from the commencement of operations for the 30-year expected life of the Project. The fund would be administered by the Proponent and would initially have a focus on SBWB species recovery.

Economic and community

The Project has the potential to bring significant economic and social benefits to Victoria, including to Portland and the local area. It is estimated to involve a $1.2 billion infrastructure investment, creating up to 350 jobs during construction and 14 jobs when operational.

Construction of the Project would help support businesses in the Glenelg LGA and across the State and is estimated to generate between $153 million and $163 million for the Glenelg LGA and between $611 million and $659 million for the state of Victoria more broadly. Operation of the Project has potential to generate up to $49.9 million for the Glenelg LGA and up to $62.3 million for the State of Victoria.

The Project also has the potential to increase tourism in the area by becoming a new attraction for visitors. Members of the broader community have suggested that the Proponent could support eco-tourism ventures and promote the area as a green energy tourism location and develop a strong legacy in the area through support of local tourism ventures.

The Proponent will use local service providers and businesses to service or supply the Project where possible and will develop a Local Participation Plan prior to construction commencing, which will contain targets for local and regional employment during construction and operation. The Proponent's first focus is to hire local people to deliver its projects, recognising that locals are familiar with the land involved and often have the skills required for construction.

The Proponent has committed to providing $150,000 per year for local projects and initiatives throughout the Project's lifetime as part of its Community Benefits Fund. The Proponent implements these programs for all of its assets in Australia and believes it to be industry best practice. The Fund will be administered by the Community Enterprise Foundation, the philanthropic arm of the Bendigo and Adelaide Bank. An advisory committee will also be established to ensure community involvement and oversight are incorporated into design and allocation of the fund.

The Proponent has also publicly announced a Neighbour Benefits Program. The Proponent is committed to an equitable, transparent and easy-to-understand Neighbour Benefits Program, which offers direct payments to landowners with residential dwellings within 3.5 km of the Project. The payments will be annual and will commence at the beginning of Project operation and continue for the life of the Project.

Grid security

The Project involves a dedicated transmission line to connect into the NEM, which means it is a connectable project that is not reliant on new network infrastructure being built. This means the Project will be able to provide renewable energy into the NEM sooner than other proposed developments that are reliant on new infrastructure. The Project's proposed connection point is at the existing 275/500 kV Heywood Terminal Substation. The AusNet 500 kV network is extremely secure with the capacity to transport large amounts of electricity to major load centres in Victoria including the Portland Aluminium Smelter and Melbourne. The Portland Aluminium Smelter, which employs a significant portion of the local population, is Victoria's largest single electricity load (around eight to 10% of Victoria's electricity demand). Siting and connecting generation nearby can reduce the amount of electricity that is transported from over 500 km away in the Latrobe Valley, and thereby would have an impact on reducing fossil fuel generation.

AEMO's Integrated System Plan (ISP) provides a blueprint for Australia's complex and rapid energy transformation towards net zero emissions, enabling low-cost renewable energy and essential transmission to provide consumers with reliable, safe, secure, and affordable power. The 2024 ISP confirmed the importance of the area the Project is located in, by declaring the Western Victoria Grid Reinforcement as a future ISP project, triggering preparatory design to harness more renewable generation along the 500 kV backbone of the state's transmission system.

Project objectives

The primary objective of the Project is to provide a source of clean, renewable energy to help power homes and businesses in Victoria and throughout eastern Australia.

The Project is anticipated to deliver approximately 2,000 GWh of renewable electricity per year. The Project would reduce Australia's carbon emissions by approximately 2.0 million tonnes annually, thereby contributing to State and Commonwealth Government targets for greenhouse gas emission reductions. The Project would also directly contribute to achieving Victoria's legislated renewable energy targets of 65% by 2030 and 95% by 2035 (DEECA, 2024).

The Proponent's environmental and social objectives for the Project are to:

- Maximise project benefits such as affordable electricity production, local jobs and investment and direct financial benefits to neighbours, the community and biodiversity funding, while minimising adverse impacts on the local community and biodiversity.
- Develop the Project in accordance with the principles of ecologically sustainable development, in particular, recognising the importance of natural resources and ecosystems for meeting environmental, social and economic needs now and into the future
- Consider the rights and values of the community and stakeholders, human health, environment, and cultural heritage in the decision-making process
- Provide regular, consistent and considered consultation with stakeholders and the community to ensure their expectations and preferences are reflected in the Project's design and approach to operations from an early stage
- Where possible, identify opportunities to partner with community stakeholders in the co-design and delivery of equitable, lasting community benefits including procurement, employment, training and support for key social groups.

Project development and alternatives

Site selection for the Project was largely determined by analysing potential sites against the following criteria: proximity to electricity transmission infrastructure, available capacity of the transmission network, proximity to areas with high electricity demand, a smooth landscape (which minimises turbulence and mechanical stress on turbines and improves the constructability of the project), and environmental and social constraints. Publicly available data and mapping (e.g. (BoM, 2011)) indicate that the Portland area has an excellent wind resource, which is reinforced by the presence of existing wind farms in the area. Additional advantages of the site include minimal removal of native vegetation due to past land use practices across much of the Project Area, low population density in surrounding areas, and extensive existing road networks.

The Project has undergone significant design changes since 2019 when the Project comprised 157 wind turbines, a battery storage facility and two potential transmission line corridors. Following the consideration of various alternative design choices, consultation with a raft of project stakeholders, and detailed environmental and social analysis as part of the EES process, the Project now comprises 105 turbines, no battery storage facility and one transmission line route. See **Figure 5** showing the original and final turbine layouts.

Biodiversity constraints accounted for a significant proportion of these design changes, with 91 turbines relocated or removed to minimise potential biodiversity impacts. Turbines were removed/relocated for several reasons including but not limited to locating turbines at least 500 m from wetlands within the Ramsar site and 300 m from parks and conservation reserves, as well as excluding turbines from Brolga breeding buffers and movement corridors.

Planning considerations associated with zones and overlays resulted in the relocation or removal of several turbines:

- Four turbines were removed from a small area of the wind farm site near Hedditch Hill Scenic Reserve zoned Public Park and Recreation Zone (PPRZ).
- Two turbines in the west of the wind farm site were moved because of the 200 m setback from Portland-Nelson Road (zoned Transport Zone 2 (TZ)). A setback which was implemented by the Project.
- Most of the turbines within the Significant Landscape Overlay (SLO1) had already been removed or relocated due to biodiversity constraints, but an additional four turbines were moved due to the SLO1. Twelve turbines remain in the SLO1.

Turbines were also excluded from within two km of the Lake Mombeong campsite to minimise potential visual and noise impacts.

The battery storage facility was removed from the Project to focus on progressing the wind farm component, given Victoria's imminent need for renewable energy generation.

Numerous transmission routes were assessed as part of the EES. The Heywood transmission line route was identified as the preferred transmission line option for the Project for a range of reasons. Particularly, due to the potential to minimise impacts associated with social considerations and the opportunity to connect the Project to existing infrastructure at the Heywood Terminal Station. The Heywood transmission line route has the additional benefits of the potential to minimise impacts associated with cultural considerations, visual amenity, existing land uses, the Portland Aerodrome, and the environment more broadly. This route also aligned strongly with the community and local council's preference of an underground transmission line option.

The Heywood transmission line route was subject to in-depth design investigations which identified a construction methodology that would allow the underground line to have minimal impacts on native vegetation and threatened flora and fauna within the Parks. The small construction footprint of the machinery would also minimise disruption along Boiler Swamp Road and allow for vehicles, including emergency vehicles, to pass the construction site.

Legend

- Original Wind Farm Site
- Original turbine layout
- Campsite
- Roads
- Watercourses

FIGURE 5

Original turbine layout (July 2019)

Image Source: ESRI Basemap (2022) Data source: DELWP (2021)

Environment effects statement

Requirements for an EES

On 25 August 2019 the Minister issued a decision determining that an EES would be required for the Project due to the potential for a range of significant environmental effects, including on threatened fauna and ecological communities, Aboriginal cultural heritage values, landscape values, and effects on surface water and groundwater.

The Project was determined to be a controlled action on 7 November 2019 due to the potential for significant impacts on three MNES: listed threatened species and communities, listed migratory species and Ramsar wetlands. The Victorian EES will serve as the accredited environmental assessment process for the purpose of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC) Act under a Bilateral Assessment Agreement between the Commonwealth and Victorian governments. The Commonwealth and Victorian statutory authorities will make separate approval decisions based on the same environmental assessment documentation.

EES purpose

The EE Act establishes a process for the assessment of environment effects of a project. It enables statutory decision makers (ministers, local government, and statutory authorities) to consider whether a project should or should not proceed, based on potentially significant environmental effects (DELWP, 2021). Preparation of an EES is the responsibility of the proponent and requires various technical investigations to be undertaken.

The role of the EES is to describe the Project and its potential environmental effects to enable the Minister to make an assessment on whether the Project would have acceptable environmental outcomes. The EES:

- Describes the Project including its objectives, rationale and key components
- Describes the existing environment and identifies receptors that may be impacted
- Identifies the potential effects of the Project on the existing environment
- Recommends mitigation measures to avoid, minimise or manage potential adverse effects
- Assesses the residual impacts of the Project with recommended mitigation measures in place
- Provides an environmental management framework (EMF) to manage potential environmental effects during construction and operation of the Project.

EES process

The EES process is not an approvals process but rather a mechanism that enables ministers, local government and statutory authorities to make informed decisions about whether the Project should be approved.

The EES process is designed to be rigorous and transparent, with opportunities provided for input from stakeholders and the wider community. The specific environmental matters to be investigated and documented in the Project's EES are set out in the *Scoping Requirements for Kentbruck Green Power Hub Environment Effects Statement* (the Scoping Requirements), which were issued in February 2020 following public consultation. The Scoping Requirements provide evaluation objectives (see **Table 1**) that describe the desired outcomes to be achieved for each of the matters being addressed in the EES.

This EES was prepared in accordance with the Victorian Minister for Planning's decision, the Scoping Requirements, and the *Ministerial Guidelines for Assessment of Environmental Effects* under the *Environment Effects Act 1978* (Ministerial Guidelines). An overview of the EES process and key approvals required for the Project is shown in **Figure** 6.

Table 1 EES evaluation objectives

EES draft evaluation objective
Biodiversity and habitat To avoid or minimise potential adverse effects on biodiversity values within the project site and its environs, including native vegetation, listed species and ecological communities other protected species and habitat for these species
Cultural heritage To avoid or minimise adverse effects on Aboriginal and historic cultural heritage and associated values
Catchment values and hydrology To maintain the functions and values of aquatic environments, surface water and groundwater quality and stream flows and prevent adverse effects on protected beneficial uses
Landscape and visual To minimise and manage potential adverse effects on landscape and visual amenity
Land use and socioeconomic To avoid and minimise adverse effects on land use, social fabric of the community, local infrastructure, aviation safety and to neighbouring landowners during construction, operation and decommissioning of the project
Community amenity, safety, roads and transport To avoid and minimise adverse effects for community amenity and safety, with regard to construction noise, vibration, dust, traffic and transport, operational turbine noise and fire risk management

A total of 20 technical studies have been undertaken to assess the potential impacts of the Project and inform the EES. The Department of Transport and Planning (DTP) convened a Technical Reference Group (TRG) to provide guidance to the Proponent throughout the EES preparation process. DTP has been responsible for managing the EES process and will review the EES to ensure it is adequate for public exhibition.

The EES will be publicly exhibited for a minimum of 30 business days, during which the public can read the EES and make written submissions about matters presented within it. Submissions can also be made on the draft planning scheme amendment (PSA) documentation being exhibited at the same time.

Following the EES public exhibition period, a joint inquiry and advisory committee in a form agreed to by the Minister will be convened to consider the effects of the Project having regard to the EES, the exhibited draft PSA application, and public submissions. At the conclusion of the inquiry, the panel will prepare a report including recommendations for the Minister to consider in making an assessment. The Minister will consider this report prior to issuing a written assessment of the Project. The assessment, called the 'Minister's Assessment', then informs statutory decision-makers responsible for issuing environmental approvals for the Project.

Project approvals

The Project requires approval under the following legislation which have been underway in parallel with the preparation of the EES:

- Approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
- Planning approval for the use and development of the Project via a Planning Scheme Amendment to the Glenelg Planning Scheme in accordance with the Victorian *Planning and Environment Act 1987*
- An approved Cultural Heritage Management Plan under the Victorian *Aboriginal Heritage Act 2006*
- An approved Work Authority for the onsite quarry under the Victorian *Mineral Resources (Sustainable Development) Act 1990*

Several other relevant approvals, permits, and/or licenses would be required for the Project (See **Section 5.2.5** of **Chapter 5 *Assessment and approvals framework*** and **Legislation and Policy Report (Appendix B).**

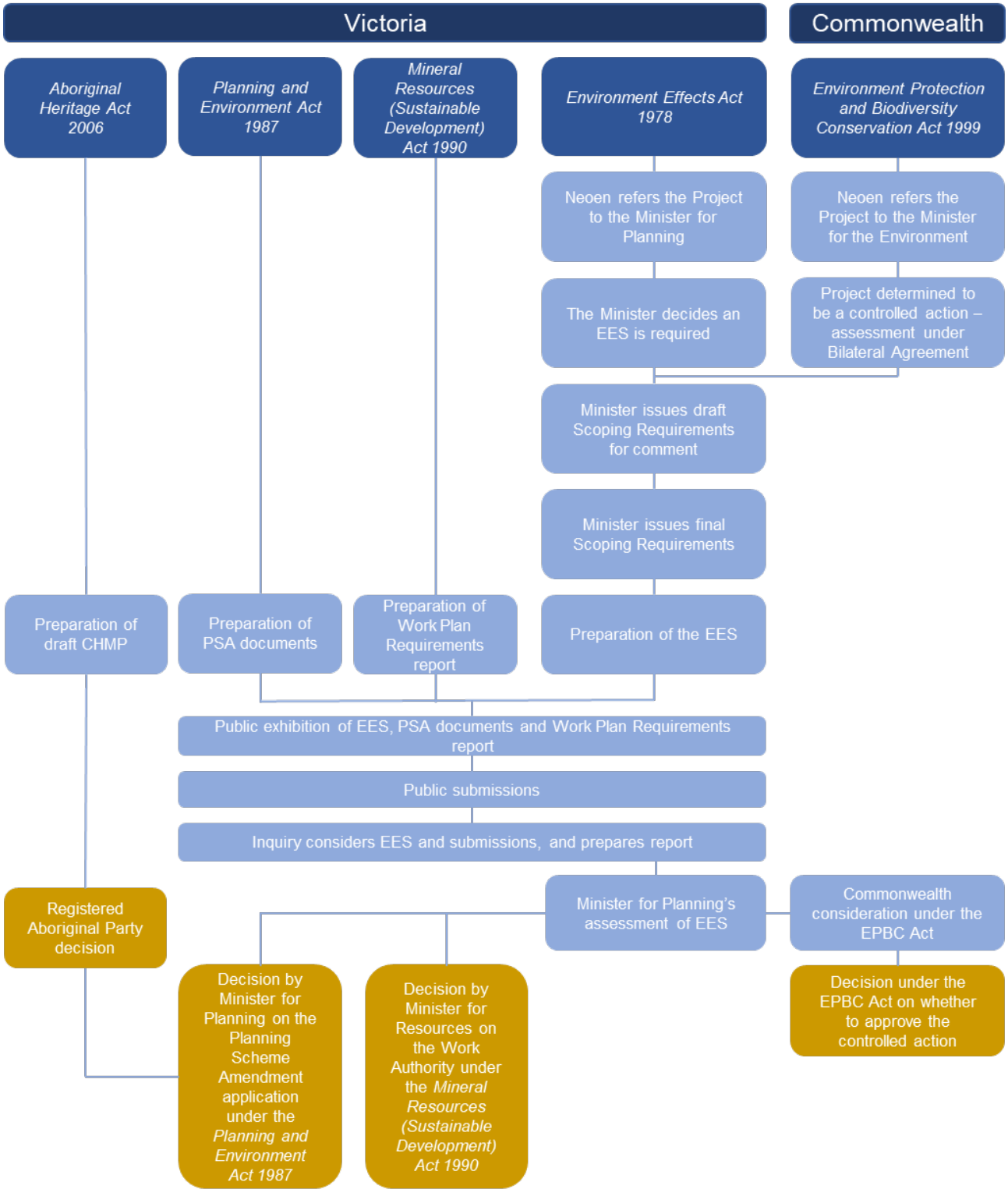


Figure 6 EES process and key approvals required

Community involvement

The Proponent is one of Australia's leading renewable energy producers with over 4 GW of wind, solar and battery storage projects in operation or under construction and understand that the success of the Project is dependent to a large extent on the development of genuine, open and ongoing relationships with key stakeholders and the local community.

The Ministerial Guidelines state that a specific objective of the EES assessment process is "to provide public access to information about potential environmental effects as well as fair opportunities for participation in assessment processes by stakeholders and the public". In accordance with this objective, the EES Scoping Requirements identify the consultation requirements to be undertaken as part of the EES process.

Through implementation of an EES consultation plan, the Proponent has been informing and will continue to inform the public and stakeholders about the EES process and associated investigations and will provide opportunities for input and engagement during the EES investigations.

The Project's proposed engagement approaches are diverse and have been tailored to the expectations of stakeholders, to ensure stakeholder feedback, interests and concerns are adequately reflected in the final design and operational approach of the Project. Engagement approaches used to date to keep stakeholders informed include one-on-one meetings, Project briefings and updates (in-person, virtual, written or electronic), community events and information sessions, and other forms of engagement specific to the stakeholder group. Engagement has been and will be conducted in 7 key phases:

- Phase 1: Site Selection (June 2018 – September 2019)
- Phase 2: Feasibility (scoping requirements period) (October 2019 – January 2020)
- Phase 3: Planning and approvals (early 2020 to present)
- Phase 4: Post EES lodgement (public exhibition and panel hearings) (Q1 2025 onwards)
- Phase 5 to 7: Pre-construction, construction and operations (future).

All feedback provided by members of the community throughout the Project's engagement and consultation process, has been recorded, responded to, and used to inform the design of the Project where possible. Feedback has also informed the development of benefit sharing initiatives valued at approximately $350,000 per annum and an ecology fund of $1,000,000 per annum. There are ongoing discussions with GMTOAC about potential Indigenous benefits and participation initiatives.

Evaluation and monitoring measures will be detailed in the Community Engagement Plan used to guide the ongoing delivery of community engagement and the overall development of the Project.

Figure 7 Neoen office opening in Portland, August 2022

Summary of potential impacts

Approach to assessing potential impacts

The assessment framework used in this EES is a systematic risk-based approach to understand the existing environment within the Project Area and surrounds, identifying potential impacts of the Project on the environment, and evaluating the effectiveness of mitigation measures to avoid, minimise and manage potential impacts.

The 20 technical studies that formed part of this EES undertook an existing conditions assessment, involving the identification and characterisation of the significance of existing assets, values and uses within the environment that could be affected by the Project. These collectively define the environmental context for the Project. After determining the existing conditions and defining a study area, each technical study undertook an impact assessment. Potential impacts were identified, either beneficial or adverse, and assessed against the existing conditions.

In the first instance and where possible, the Project design was amended to avoid impacts. If impacts were unavoidable, mitigation measures were identified to reduce the potential impacts. This process was repeated until the impacts were reduced to as low as practically possible. Following this, the significance of residual impacts from the Project were assessed and evaluated against the relevant draft evaluation objectives.

Potential cumulative impacts (a combination of impacts from this Project and other projects which have the potential to impact on the same sensitive receptors) have also been assessed where relevant. The scope of projects considered as part of the cumulative impact assessment was tailored to each discipline. The Project would not result in any significant cumulative impacts.

Biodiversity

Native vegetation and threatened terrestrial species

Most of the wind farm site is within a radiata pine commercial timber plantation. Native vegetation is limited to road reserves, small remnant patches excluded from plantation development, and regeneration of native understory species in plantation areas. The wind farm site also includes several areas of farmland, which have been cleared of native vegetation and are used primarily for dryland grazing by sheep and cattle.

A large portion of the underground transmission line is located beneath Boiler Swamp Road, which passes through the Parks. This area supports high quality native vegetation. To the east of the Parks, native vegetation in this area is limited to scattered trees, some wetlands, and remnant vegetation patches along road reserves and some degraded patches of trees within farmland.

Having designed to avoid as many impacts as possible, construction of the Project would require removal or assumed losses of 8.696 ha of native vegetation, including impacts on 228 large trees. 3.755 ha of this removal is for construction of the underground transmission line, however, the majority of this is due to major encroachment on tree protection zones [1](TPZ) and does not involve direct removal.

The Proponent has selected a reduced impact construction methodology for the transmission line to avoid and minimise potential effects. The section of the transmission line that traverses the Parks, beneath Boiler Swamp Road, is proposed to be built using integrated trenching machinery that excavates, lays the cable, and backfills the trench in a single pass, within a 6.5 m construction corridor in the existing road formation (Boiler Swamp Road). Underboring (horizontal directional drilling (HDD)) will also be used to minimise impacts on the root systems of the *Flora and Fauna Guarantee Act 1988* (Vic) (FFG Act) critically endangered Apple Jack (Eucalyptus splendens) along Boiler Swamp Road.

424 trees would be affected by incursions of more than 10% of the tree protection zones. These effects have been included in the calculation of native vegetation losses and associated offsets in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017). 699 trees would also be affected by minor encroachment (less than 10 per cent of the TPZ). Minor encroachment is not considered as native vegetation loss because the long-term health and stability of these trees are not likely to be affected.

[1] The TPZ is the area above and below ground at a given distance from the tree trunk to provide for the protection of the tree's roots and canopy during construction works.

Table 2 Summary of proposed native vegetation removal for the Project

Project component	Patch area (ha)	Large trees#
Wind farm	4.920	1
Transmission line (Cobboboonee National Park)	1.921	145*
Transmission line (other areas)	1.834	82*
Transport route	0.021	0
Total	**8.696**	**228**

Table note:
* Greater than 10% incursion into tree protection zones
# Large trees as defined in the Guidelines for the removal, destruction or lopping of native vegetation (DELWP, 2017)

Four threatened flora species were recorded within the wind farm site: Dune Fan-flower (*Scaevola calendulacea*), Western Peppermint (*Eucalyptus falciformis*), Western Golden-tip (*Goodia medicaginea*), and Tiny Violet (*Viola sieberiana*). However, they are not within the wind farm footprint and are unlikely to be impacted. Several threatened flora species were identified in and near the transmission corridor along Boiler Swamp Road, however the majority of these threatened flora species are in remnant vegetation beyond the regularly maintained road formation. Numerous Apple Jack and Western Peppermint trees are present within bushland adjacent to Boiler Swamp Road. The Proponent has committed to avoiding impacts on Apple Jack trees, using a range of construction techniques including directional drilling.

The Project is considered to have limited potential to impact on six threatened mammal species, including White footed Dunnart (*Sminthopsis leucopus*), Heath Mouse (*Pseudomys shortridgei*), Southern Brown Bandicoot (*isoodon obesulus obesulus*), Long-nosed Potoroo (*Potorous tridactylus trisulcatus*), Swamp Antechinus (*Antechinus minimus maritimus*), and Yellow-bellied Glider (*Petaurus australis*).The wind farm site is unlikely to support significant habitat for these threatened mammals due to its highly modified nature and is therefore not likely to impact on these species. The broader area of the Parks provides habitat suitable for these threatened mammal species. While they may be present within the edges of the road alignment, direct impacts on habitat have been avoided through the development of a construction methodology that is constrained to the existing road formation. There is some potential for disturbance during construction, however extensive habitat exists beyond the road formation which could be used during the construction period, with negligible change to the current use of Boiler Swamp Road once construction is complete. Potential impacts on tree protection zones of trees adjacent to Boiler Swamp Road are unlikely to impact on the broader population of Yellow-bellied Glider within primary habitats throughout the Parks.

Threatened bats and avifauna collision risk

Mortality of threatened avifauna species due to collision with turbines has been identified as the most significant potential impact from operation of the Project.

Australasian Bittern were recorded on three occasions in the north-east of the wind farm site and along the southern boundary of the wind farm site adjacent to the Ramsar site near Lake Bongbong. A portion of Australasian Bitterns using the local wetlands are expected to fly across the wind farm site. They have been recorded to fly at heights of three to 200 m and may be at risk of collision of turbines at these heights. No mortalities of Australian Bittern have been detected at Victorian wind farms (Moloney et al. 2019, Symbolix 2020). The assessments found that the Project has potential to impact upon Australasian Bittern by collision with turbines or power lines and this impact is most likely to be from individuals moving seasonally between coastal and inland wetlands (autumn and spring).

Buffers from wind farm infrastructure established as part the Brolga assessments would avoid and minimise potential impacts on Australasian Bitterns, as most of the known and suitable habitat for Australasian Bitterns are in these buffers. Specific measures to further monitor and avoid potential impacts on Australasian Bittern have also been developed, including the use of bird diverters on transmission lines and adaptive management strategies to be incorporated into the Bird and Bat Adaptive Management Plan (BBAMP).

White-throated Needletail (*Hirundapus caudacutus*) was recorded on 21 occasions mostly during bird utilisation surveys (BUS), some of which were within the wind farm site. Because of their annual migrations, White-throated Needletails are not at risk of any effects from the Project in the annual period from mid-April until mid-October when they are absent from Australia. A collision risk model was undertaken for White-throated Needletail, which determined it is likely that some collisions by White-throated Needletails with turbines may occur. However, the population is not considered likely to be significantly impacted by the Project.

The wind farm site is not suitable habitat for the South-eastern Red-tailed Black Cockatoo (*Calyptorhynchus banksii graptogyne*). There are several past records of South-eastern Red-tailed Black Cockatoos in appropriate habitat close to

the Project Area, primarily in Lower Glenelg National Park to the north of the wind farm site. It is likely that most flights by the species would be below rotor swept height of the Project's turbines (below 60 metres above ground level). Overall, due to the lack of suitable habitat in the Project Area, the limited potential for the species to traverse areas of the Project where wind turbines are proposed, and the likelihood that they will fly below the rotor swept height, it is considered that turbine collisions would rarely occur, if ever. The Project is unlikely to have a direct significant impact on the South-eastern Red-tailed Black Cockatoo population.

The Project Area is not suitable habitat for Orange-bellied Parrots (*Neophema chrysogaster*). A single Orange-bellied Parrot was recorded in the interdunal heathland vegetation adjacent to the beach south of Swan Lake as part of Project investigations, which was the first record of the species in that area since 1993. The species may occasionally fly over or through the wind farm site, however movements away from the species' preferred coastal environment into the Project Area are likely to be infrequent. Despite this, the potential impact of at-risk flight movements into the Project Area is high given the very small population and the conservation status of the species. Available evidence is not conclusive but suggests that most flights by Orange-bellied Parrots would be below rotor-swept height which, at its lowest, will be 60 metres above the ground. The overall lack of suitable habitat for the species combined with the high proposed height of turbine rotors means that collisions with turbines are extremely unlikely to occur and that the wind farm is not likely to have direct significant impacts on the Orange-bellied Parrot population.

The SBWB call recordings indicate the critically endangered species is present within the Project Area. Activity peaks within late summer and early autumn (February and March) and again in spring (September to December). Bat detectors determined reduced levels of Southern Bent-wing Bat call activity detected at the higher height-level detectors, with 1,254 (97% of total confirmed, probable and complex calls) calls recorded at 1.5 m above ground. Only one call was detected at the upper detector at 84 m above ground, within the rotor swept area for the Project turbines. Evidence from extensive call data indicates that majority of flight activity at the wind farm site occurs close to the ground and substantially below rotor swept-height of the proposed turbines, and that an extremely small proportion of SBWB flights occurred within rotor-swept height – with only one record within the rotor-swept area. The risk of collisions with turbines appears likely to be low.

SBWB call activity peaked at lower wind speeds between 5 and 7 metres/second (m/s). This means that turbine collision is not likely to pose any risk to the species during periods of wind speed above those levels. Based on the information obtained during SBWB investigations for the Project, it is considered that turbine collisions at the proposed wind farm are unlikely to result in a long-term decrease in the size of the population.

Other threatened avifauna species (other than those discussed above) also have potential to collide with wind turbines during Project operation The assessments found that the likelihood of these species colliding with wind turbines is low.

Several mitigation measures have been developed in response to the assessments into potential impacts on birds and bats. The Project has committed to implementing seasonal nocturnal low wind speed curtailment. Curtailment specifications, including cut-in wind speed, will be developed during finalisation of the BBAMP and will include consideration of seasonality, time of day, temperature and rainfall. Any additional curtailment will be conducted as part of scientific trials, including intensive monitoring and reporting, to evaluate effectiveness of the curtailment in eliminating or reducing mortalities.

All new overhead powerlines, including the transmission line, will also be marked with standard commercially available bird diverters to increase visibility to birds and minimise the risk of collision.

A BBAMP will be developed in consultation with the Victorian Department of Energy, Environment and Climate Action (DEECA). The BBAMP will be developed prior to construction commencing and will detail the objectives, strategies and activities for minimising bird and bat strike arising from operation of the wind farm.

The primary objective of the BBAMP will be to ensure operation of the Project does not result in net significant or lasting impacts on the viability or conservation status of birds and bats. The BBAMP will minimise, manage and mitigate bird and bat mortality arising from the operation of the wind farm. The BBAMP will also aim to determine whether the presence, abundance and flight behaviours of species of concern are altered, relative to pre-construction levels, in response to the presence and operation of the wind farm.

The Project will also investigate employing smart turbine curtailment as part of the BBAMP to minimise bird and bat collisions through technologies that detect when a bird/bat is approaching a turbine rotor, and shuts down the turbine. These may include radar; optical and/or infra-red camera systems; animal call-recognition or a combination of such technologies.

Glenelg Estuary and Discovery Bay Ramsar site

Overall, effects or mechanisms associated with development or operation of the Project have very little capacity to directly or indirectly result in changes to the Ramsar site provided that appropriate management measures are implemented. The Project is considered unlikely to have a significant impact on the Ramsar site as per the EPBC Act significant impact criteria. The Project is considered to have no potential for impacts that will exceed definitions for the majority of Resource Condition Targets for the Ramsar site.

Brolga

Brolga is listed as endangered under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act). A detailed survey and assessment program was undertaken to assess potential impacts of the Project on the Victorian brolga population, and to inform the identification of appropriate avoidance, mitigation, and management measures.

Four new breeding pairs of brolgas in farmland were recorded in the eastern section of the wind farm site, east of Portland-Nelson Road. Other breeding pairs were recorded or assumed to occur in areas adjacent to the Project Area, including in the Ramsar site and farmland near the wind farm site and near the eastern end of the transmission line corridor. Brolgas were also observed flying in these areas.

Site-specific buffers were applied to brolga breeding habitat and movement corridors which resulted in the removal or relocation of 60 turbines from the original Project layout. The overhead powerline that was originally positioned down the centre of the farmland to the east of Portland-Nelson Road was also changed to underground and moved to the northern boundary of the property, to minimise potential impacts on brolga.

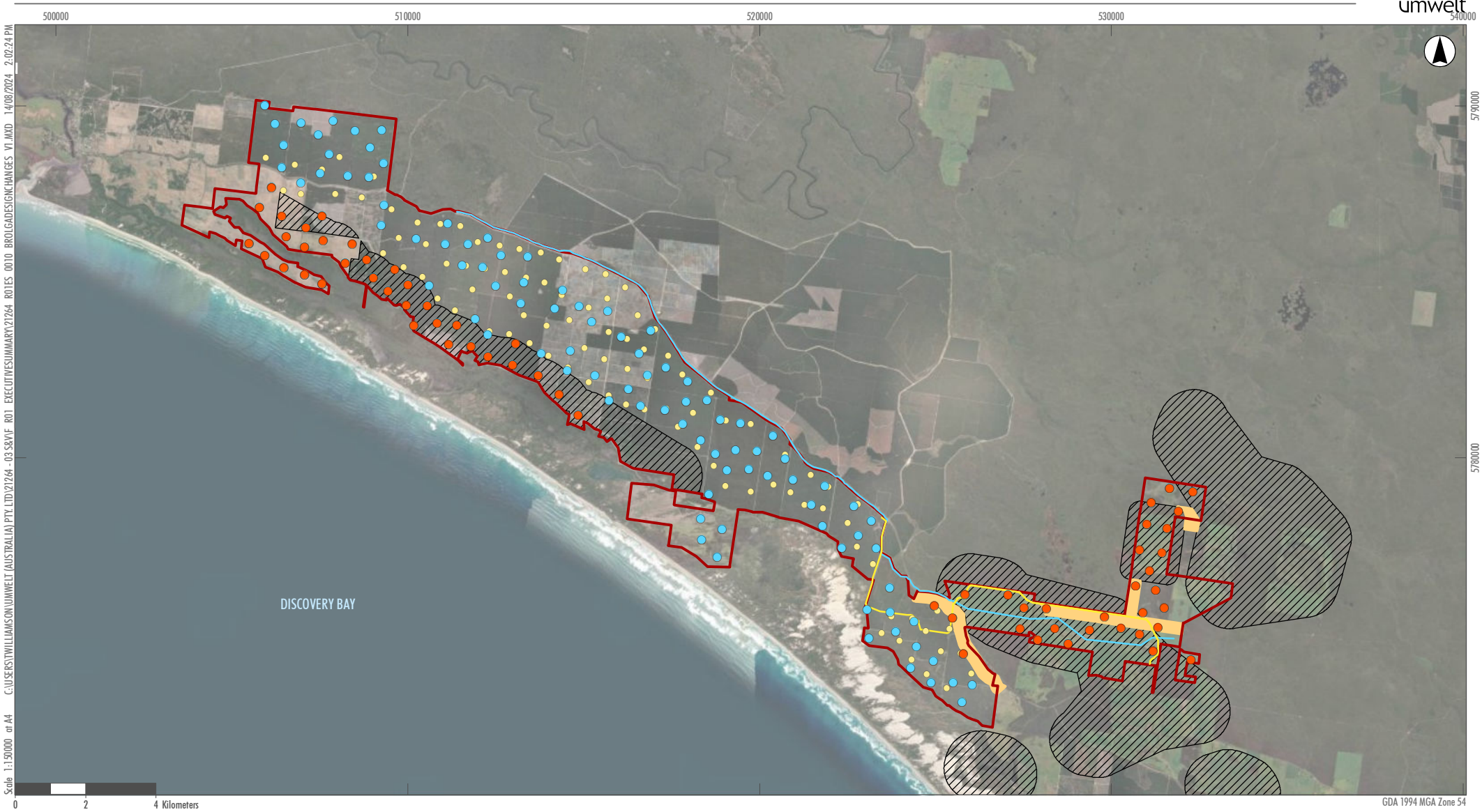
With the implementation of these avoidance measures, collisions risk modelling (CRM) for the Project predicted that there would be a low risk of turbine collisions (less than 0.21 collisions per year or up to one collision every five years on average). It is likely that the turbine avoidance capacity of Brolgas is very high and close to 100%. Investigations of turbine collision avoidance rates for a wide variety of birds indicate that virtually all are above 95%, with most being above 98% and many as high as 99.9%. It is therefore considered that the modelled result for an avoidance rate of 0.99 is likely to be closer to reality than those for lower avoidance rates (0.05 collisions per year or one collision every 20 years on average).

Results from the population viability analysis (PVA), based on the conservative CRM outputs, indicate that the southwest Victorian brolga population would decline by around 11% within 25 years without the effects of the Project to 555.5 individuals, and to 554.8 individuals with the development of the Project (assuming a 99% avoidance rate by Brolgas).

A Compensation Plan will be prepared prior to Project construction involving the identification of appropriate compensation strategies to be implemented to ensure net zero impact, in accordance with *Interim Guidelines for the Assessment, Avoidance, Mitigation and Offsetting of Potential Wind Farm Impacts on the Victorian Brolga Population 2011* (2011 Brolga Guidelines). The Compensation Plan will include quantifiable measures of compensation, with a key focus on the restoration and management of wetlands to improve Brolga breeding success.

Potential residual impacts on Brolgas will be mitigated by ceasing construction works withing breeding buffers when breeding activity is detected within the identified breeding habitat, the marking of overhead powerlines to improve visibility, and implementation of a BBAMP. Potential indirect impacts associated with construction disturbance (traffic, noise and artificial light); the spread of weeds, pathogens and pest animals; and inappropriate management of dewatered groundwater / surface water and run-off, will be managed in accordance with the Construction Environmental Management Plan (CEMP) and relevant sub-plans.

Figure 8 Brolga pair on a nest in farmland within the eastern section of the wind farm site, 9 July 2021 (Biosis)



Legend

- Original turbine layout
- Turbines removed or relocated
- Proposed Turbine Location
- 275 kV powerline - original location
- 275 kV powerline - current location
- Previous Project Area
- Brolga 300m Movement Corridors
- Brolga Breeding Habitat Buffers

FIGURE 9

Project design changes to minimise impacts on Brolga

Image Source: ESRI Basemap (2022) Data source: DELWP (2021)

Surface water

The Project is in the Glenelg Hopkins catchment. The largest watercourse within the Glenelg Hopkins Catchment is the Glenelg River which is located more than 1.6 km north of the wind farm site and is also the primary river which feeds into the Ramsar site.

The Ramsar site borders the southern and north-western boundaries of the wind farm site and comprises three broad systems that support different wetland types: the beach and dune systems of Discovery Bay, freshwater wetlands, and the Glenelg Estuary. These systems support a diversity of waterbird, fish and plant assemblages including a significant number of threatened species and ecological communities. The hydrological system includes a complex interaction of surface and groundwater flows and local rainfall run-off which is crucial to the function of the estuary and freshwater wetlands.

Surface water run-off from the western and central areas of the proposed wind farm site generally flow towards the Ramsar site, however, the vegetated plantation and sandy soils ensure much of the rainfall occurring across these areas infiltrates into the ground. The wind farm site intersects with two minor, ephemeral waterways. These waterways would be temporarily disturbed during construction of access and tracks and underground cabling. Trenching is proposed as they are narrow ephemeral waterways that can be reinstated quickly. Trenched waterway crossings will be scheduled during dry or low flow conditions.

The underground section of the transmission line corridor intersects waterways ten times (with some waterways intersected multiple times). Three of these crossings are of the Surrey River, which is proposed to be crossed with HDD due to its large upstream catchment and wide crossing over the Surrey River floodplain. Wild Dog Creek will also be crossed with HDD but all other waterways are proposed to be trenched during dry weather as they are narrow, ephemeral waterways that can be reinstated quickly.

The greatest potential for impacts on surface water is through Project construction activities, which have potential to impact local and downstream sensitive receiving waterbodies and watercourses through mobilisation of sediment, changes in water quality and changes in stream hydrology/stability. Rain events occurring during the construction phase have the potential to inundate the turbine foundations and open trenches with surface water, which may contain sediments and other pollutants, as well as result in increased surface water run-off over disturbed areas. Collected trench water and surface water run-off has potential to increase sediment loads and turbidity in nearby receiving waterways, including the Ramsar site. Implementation of industry standard mitigation measures such as treating collected trench water prior to discharging and installing sediment control devices would ensure potential residual impacts on surface water are managed during construction of the Project. It is unlikely operation of the Project would have surface water impacts on nearby sensitive receptors.

Groundwater

The key aquifers relevant to the Project are the Quaternary Aquifer (QA) and Upper-Mid Tertiary Aquifer (UMTA). Underlying the QA is the UMTA, which is thought to be near the surface at the southern boundary of the plantation, beneath a relatively thin section of QA. There is no significant aquitard between the QA and UMTA, so the QA and UMTA are considered to be in direct hydraulic connection and to act as one hydrogeological unit.

Site-specific data obtained during field investigations are consistent with the water table being a subdued expression of topography. The steeply increasing ground surface elevation away from the southern boundary of the wind farm site, compared to the relatively flat water table, leads to significant increases in depth to water immediately north of the southern site boundary. Turbines have been located away from the southern boundary of the plantation for several reasons, including to avoid turbine foundations intersecting shallow groundwater during construction. The Project has committed to not siting wind turbine foundations in areas where inferred depth to groundwater is less than 6 m below ground level to avoid direct impacts on the shallow groundwater table in these locations.

Groundwater was also observed to be shallow (near to surface in some areas, during certain times of the year) in the north-eastern section of the wind farm area. As part of project development and in response to several constraints observed during the studies, turbines have been removed from this area (east of Portland-Nelson Road), removing the risk of encountering groundwater during construction at this location also.

Overall, the site-specific groundwater data show limited potential for the proposed 4 m deep turbine foundations to intersect groundwater. If groundwater is encountered during construction, it would be managed in accordance with a Dewatering Plan that will be prepared as part of the CEMP.

Groundwater levels or flow are not expected to be impacted by the presence of turbine foundations or underground electrical lines during operation of the Project, with groundwater expected to readily flow around or beneath this infrastructure. Potential impacts on groundwater bores being lost, damaged or becoming inaccessible during construction are considered negligible with the recommended mitigation measure of ‘ground truthing’ bore locations and liaison with the landholder/bore owner.

Groundwater contamination is not expected to be present within majority of the study area. Concentrations of metals are low and are considered likely to represent naturally occurring background levels. In the western end of the wind farm site, there is potential for treatment chemicals associated with the former sheep dip operation to be present in groundwater. Groundwater in the pine plantation may be contaminated by organochlorine pesticides associated with historical land use, although it is noted that concentrations of pesticides were only observed above laboratory detection limits in groundwater from one of the four wells installed. If groundwater is abstracted from these areas during construction, it would be tested prior to discharge to determine whether it must be remediated, sent offsite for disposal, or can be discharged to land. All groundwater abstracted from properties associated with pine plantations will not be discharged to a surface water body.

Groundwater dependent ecosystems

Construction activities have potential to impact on groundwater dependent ecosystems (GDEs) by temporarily altering baseline hydrological settings, particularly from pumping activities associated with groundwater extraction to supply water for construction purposes. The GDE impact assessment considered impacts on groundwater and surface water in the context of the ecological condition and function of GDEs. The potential for impact of groundwater extraction for use during construction on terrestrial GDEs is low, as depth to water table mapping indicates that vegetation reliance on groundwater is unlikely. The potential for impact on high value aquatic GDEs from groundwater extraction is also low, as aquatic GDEs associated with the Glenelg Estuary Ramsar site are outside the predicted drawdown extent.

The shallow depth of trenching along the underground transmission line would limit the potential to penetrate a significant depth below the water table, and dewatering (if required) would be carried out for a short duration only (hours rather than days) immediately prior to installation of the cable and backfill. Drawdown away from the trench section being dewatered would be negligible at distances beyond around 5 m and occur for less than a week. Potential impacts on aquatic GDEs from groundwater/surface water contamination and surface water run-off are anticipated to be minor with the implementation of standard sediment control and contamination management measures.

To ensure that the conclusions reached in relation to potential effects on GDEs are verified and any unforeseen impacts suitably managed, a GDE Monitoring and Management Plan will be developed prior to construction commencing and will include commitment to measure groundwater levels in target and background bores to measure changes to hydraulic gradient. Monitoring will begin at least 12 months before pumping starts so that baseline conditions (and natural variations in hydraulic gradient) can be determined. Target trigger levels will be developed (based on the seasonal baseline condition monitoring) so that changes to the hydraulic gradient outside of natural variations triggers contingency measures, such as temporary cessation of pumping, reduction in pumping volumes or introduction of an intermittent pumping schedule, to be determined prior to pumping commencing. These measures to ensure the hydraulic gradient to the Ramsar wetland is maintained throughout the life of the groundwater extraction will remain in place during construction and for two years after construction is complete.

Contamination and acid sulfate soils

Detailed field investigations did not find any soil contaminant concentrations above laboratory limits of reporting or relevant guidelines. Typically, wind farm developments would not introduce contamination but would result in ground disturbances during construction, which has potential to unearth existing contamination already present on a site. In this case of this Project, there is low potential for soil contamination associated with existing and historical land uses within the Project Area such as forestry. It is considered unlikely that unknown contamination would be encountered during Project construction that could result in a long-term and irreversible impacts to human health and the environment. The CEMP will include an unexpected finds protocol that details the procedures to be implemented if any unexpected contamination is found during construction.

Similarly, construction activities have potential to disturb acid sulfate soils (ASS) (naturally occurring sediments that can produce acid when disturbed) which could result in the mobilisation of acid leachate. Potential impacts due to the disturbance of ASS would be dependent on the nature, extent and magnitude of construction activities and their interaction with the natural environment. Construction works may result in the excavation of significant volumes (greater than 1,000 m3) of ASS, the exposure of ASS through drilling, and the release of metals and acidity into the surrounding environment. The exposure of potential acid sulfate soil (PASS) during excavation could also allow oxidation to occur and create ASS. A detailed Acid sulfate soil management plan (ASSMP) will be developed and implemented to manage ASS and any associated waters.

Peat is known to occur in low-lying areas of the wind farm site, east of Portland-Nelson Road. No turbines are located in this section of the site. When dry, peat areas are highly vulnerable to ignition and the resulting fires are extremely difficult to extinguish without re-establishing natural groundwater levels. A peat assessment will be undertaken in low-lying high risk areas of the Project Area to determine whether peat would be impacted by excavation activities. A Peat Management Plan will be developed prior to the start of construction works that details the safe work practices to be implemented when working in areas with peat and the remediation works required if these areas are disturbed.

Construction of the underground section of the transmission line through the Parks will aim to minimise the amount of spoil created and removed, and reuse spoil where possible to minimise waste. The proposed method of trenching and cable laying for the transmission line, involves an integrated trenching wheel excavator which excavates the trench, lays the cable and backfills the trench in a single pass which minimises spoil generation. Spoil management and control measures will be implemented and included in the CEMP to manage duties and obligations associated with waste/spoils under the Environment Protection Act 2017 (EP Act) to minimise risk of harm.

Aboriginal cultural heritage

There are 18 known Aboriginal places identified within the Project Area. Turbine and associated construction works are not anticipated to impact on these registered Aboriginal places as the Project design has been revised to avoid direct impacts. There is potential for the required road and access networks to impact registered Aboriginal Places, however where these impacts are identified, the Project will aim to avoid or mitigate impacts through altered construction design that will protect and preserve the Aboriginal places.

A Cultural Heritage Management Plan (17822) (CHMP) is being prepared to assess and manage the impacts to the registered Aboriginal place and previously unregistered Aboriginal cultural heritage in accordance with mitigation measures. The CHMP has identified generally more and denser Aboriginal cultural heritage presence towards the coastline as well as a shift in the type of Aboriginal cultural heritage expected moving away from the coastline.

Predictive modelling has been developed using inputs from the Gunditj Mirring Traditional Owners Aboriginal Corporation (GMTOAC). The predictive modelling focuses on using interpretations of predicted culturally sensitive Chromosol sediments and geomorphological interpretations of the landform (karst identification and elevation associations with cultural heritage). The model has been developed in consultation with GMTOAC and the Proponent to facilitate greater understanding of the potential Project impacts for cultural elements in the landscape.

The CHMP will allow for an appropriate level of assessment of registered and previously unregistered Aboriginal heritage places identified during the preparation of the CHMP and will provide appropriate management conditions to avoid, minimise or mitigate the impact on these places.

While in some cases harm to Aboriginal cultural heritage would not be able to be avoided, the CHMP will allow the collection of scientific and cultural data that may otherwise be unrealised and provide alternatives for potential impact areas. The preparation of the CHMP will similarly allow for the implementation of management strategies to protect those places which will not be impacted directly by the proposed works from inadvertent harm. The management conditions will be guided in consultation with GMTOAC. The approved CHMP will also provide contingency measures, with clear instructions if previously unregistered items of Aboriginal cultural heritage are identified during construction works.

A Cultural Values Assessment (CVA) has also been undertaken by the GMTOAC as part of the Indigenous Land Use Agreement process, with sponsorship by the Proponent, to identify intangible Aboriginal cultural values present in the Project Area. The CVA and CHMP complex assessment will provide a more complete view of Aboriginal heritage values in the Project Area and allow for the identification of further opportunities to avoid, mitigate and manage any impacts and for the Project to enhance those values, e.g. through partnerships with Traditional Owners and Aboriginal communities.

GMTOAC, will continue to be consulted, and involved where practicable, before, during, and after the construction phase. GMTOAC Research Principles and Guidelines must be employed to ensure that Gunditjmara Country and cultural values are respected and protected during the operational phase of works.

Historical heritage

Two historical heritage sites are located within the Project Area. The Former Kentbruck School site is located within the wind farm site. Direct impacts on the site would be avoided through strategic placement of Project infrastructure, and indirect impacts will be avoided by implementing a range of mitigation measures including employee/contractor inductions, identifying the site on design and construction plans, onsite demarcation of the site, and avoidance of the site during any micro siting. Consent from Heritage Victoria (HV) under the Heritage Act would be required if any Project works are to be undertaken within the extent of the site.

Boiler Swamp Sawmill (D7121-0045) is a delisted Victorian Heritage Inventory (VHI) site that is located immediately adjacent to the underground transmission line. While the delisted Boiler Swamp Sawmill site is not protected under the Heritage Act, the site will be afforded the same level of protection by the Project as other historical sites including the Former Kentbruck School. An exclusion zone will be placed around the site to help prevent impacts from occurring. If impacts are unavoidable, the Proponent will consult with HV to determine whether the boiler should be moved back to its original location, to a local museum, or to a safe location nearby.

Construction works are considered unlikely to have a significant adverse impact on the historical, architectural, or archaeological values of known historical heritage places within the Project Area. Micro siting of Project infrastructure will be undertaken to avoid known heritage sites and ensure impacts are avoided. Heritage sites within 10 m of Project works would be marked with suitable exclusion fences, bunting or similar. Signage will be used to clearly indicate that marked sites are to be avoided the Project will not have a permanent impact on the built historical fabric or archaeological potential of the identified heritage items with the identified avoidance and management measures being applied.

Figure 10 Photo of the steam boiler on Boiler Swamp Road, which is part of the Boiler Swamp Sawmill delisted heritage site (Biosis, 2020)

Landscape character and visual amenity

The landscape characteristics within and immediately surrounding the Project Area, as well as within the broader landscape, are generally robust and defined by strong visual forms and broadscale, consistent landscape patterns and texture. While recognising landscape sensitivities and values applied to the landscape surrounding the Project, the overall landscape exhibits characteristics which tend to result in a moderate to high sensitivity to accommodate change. The general tree cover, topography and landforms across the landscape often restrict views of the Project and contribute to easing the visual effects of Project components.

Key viewpoints (including public and private) were identified within viewshed, including non-involved dwellings, public lookouts, tourist attractions, roads and key vantage points where the Project may result in visual effects on these viewpoints. Potential visual effects on these viewpoints from the Project were then determined based on a combination of receptor sensitivity and the magnitude of visual effects. Most of the land within the Project Area is privately owned. There are opportunities for the public to access and explore the landscape and to obtain more distant and panoramic views from existing rights of way such as road corridors or a small number of official lookouts.

There are 50 non-involved residential dwellings within 10 km of the wind turbines, five of which are considered to have a high visual effect from the Project. Soft landscape works (tree and shrub planting) will be installed at non-involved dwellings within 10 km of wind turbines where the Project would result in Moderate–High to High visual effects. Landscape works would aim to filter or screen views toward wind turbines.

Turbines would be visible from Lake Mombeong campsite, day use area and pathways towards and around the lake, as well as some sections of the Lake Mombeong inland track. At a distance of 2 km, the wind turbines would form dominant elements within the available view. Views from these locations are likely to experience a moderate to high visual impact. Some potential visual effects may be mitigated through strategies to identify and screen sensitive view locations within the Mombeong campsite and surrounding area. Mitigation works to be undertaken in consultation and conjunction with Parks Victoria and the GSWW committee might consider additional planting strategies to increase levels of screening at specific sensitive viewpoint and/or to install/upgrade existing infrastructure to benefit people at Lake Mombeong or those travelling between the lake and ocean beach.

There are three wind energy developments that are currently operational within the same regional context as the Project. Overall, the Project is not predicted to significantly increase the magnitude of visual effect for the majority of dwelling locations surrounding the Project. The potential for cumulative visual effects is mitigated by the screening or partial filtering of views toward approved and existing wind farms. Sequential views from local roads would be mitigated to some extent by undulating landform and tree cover alongside road corridors, as well as the fact that these wind farm projects are not located on a single highway or thoroughfare.

Overall, the Project is located within a landscape context where a wind farm would not be wholly unexpected. Wind turbines and ancillary infrastructure would be subject to various degrees of screening through localised permanent or temporary forests and plantations as well as natural undulating landforms within the coastal zone. Overall receptor numbers are low. Some landscape areas surrounding the Project site are subject to levels of high scenic amenity and held in high regard at a local and state level. Views from landscapes with high landscape values will occur from the coastal edge including in the vicinity of beach, sand dunes, lakes and camping sites within these areas, as well as more distant views from Bridgewater Lakes and sections of the Great South West Walk (GSWW) around Cape Bridgewater.

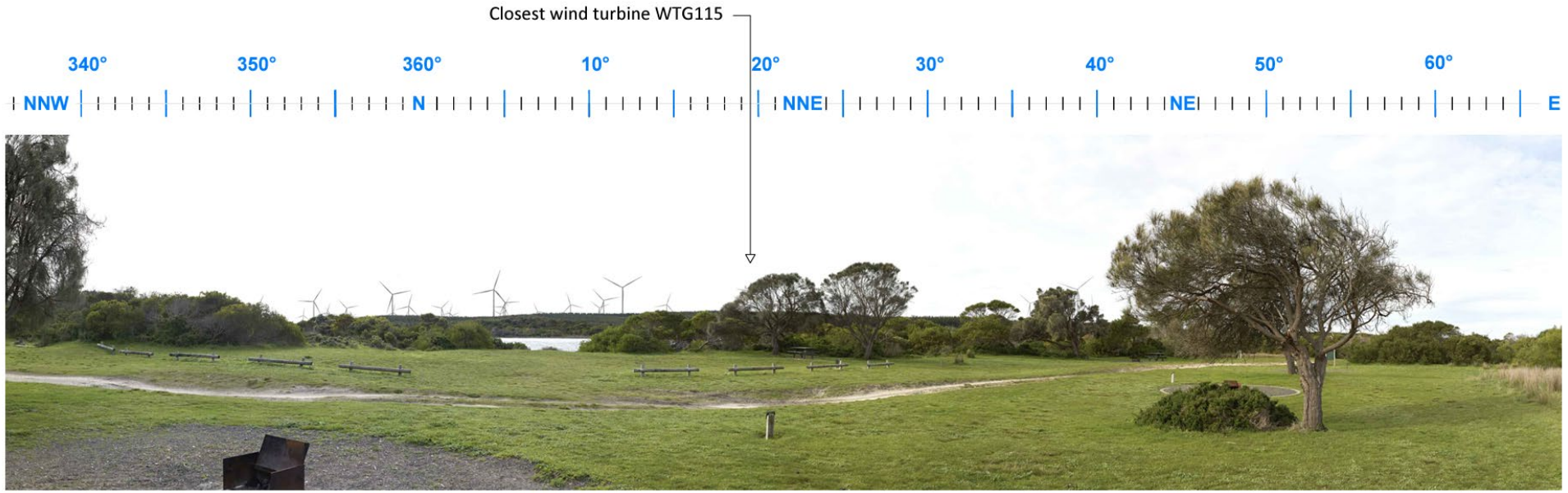


Figure 11 Approximate 90° field of view north-north west to east-north east from Lake Mombeong campsite

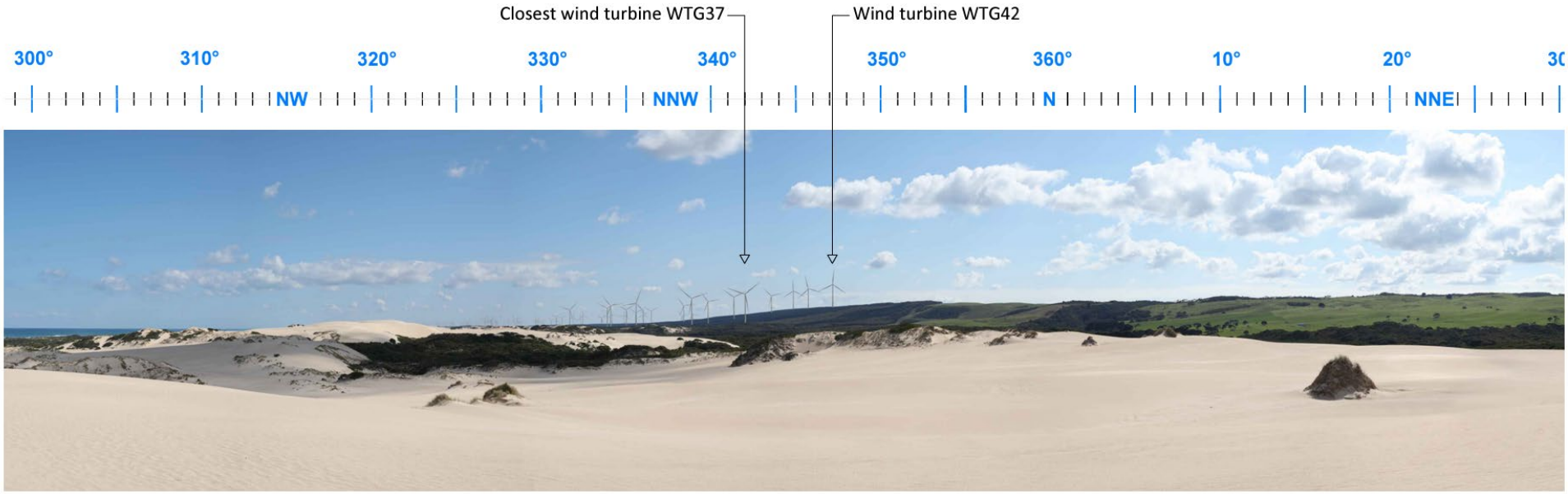


Figure 12 Approximate 90° field of view north to east from sand dunes at Swan Lake

Shadow flicker and blade glint

Shadow flicker and blade glint can cause visual impacts on receptors in the surrounding landscape. Shadow flicker is the fluctuation of light levels that can appear to flicker to an observer at a fixed ground location during the operation of wind turbines. The effect will occur under circumstances where the wind turbine location and orientation are such that at certain times of the day, the sun's rays pass behind the swept area of the rotating blades and affect the viewpoint. The extent of the flicker will depend on wind turbine geometry, cloud cover, the time of day, time of year, and geographical position of the site, and is more likely to be an issue for turbines located to the east or west of a receptor.

Worst case modelling undertaken for the Project determined that shadow flicker is likely to exceed 30 hours per year at two involved landowner dwellings (receptors 21 and 675). The Proponent has agreements in place both of these landowners who acknowledge and accept this exceedance. Once the Project's turbine locations have been finalised prior to construction, an updated shadow flicker assessment would be undertaken to minimise shadow flicker impacts on nearby receptors where possible, and to ensure there is no increase in exceedances.

Blade glint is caused by the reflection of sunlight from a wind turbine blade which can be experienced by an observer as a repeating flash of light from a wind turbine. The amount of blade glint experienced depends on several factors including, the rotor plane of the turbine, relative position of the sun, the wind turbine's locations, and the viewpoint location.

To reduce the possibility of blade glint occurring, the Project's wind turbine blades will be painted in a low reflectivity coating. This mitigation is consistent with Section 5.1.2 (b) of the Policy and Planning Guidelines which states "blades should be finished with a surface treatment of low reflectivity to ensure that glint is minimised".

Air quality

Potential air quality impacts from the Project are expected to be limited to construction and decommissioning activities when there is potential for dust to be generated, such as from vehicular movements, earthworks, and activities associated with the quarry and construction of turbine foundations, access tracks and underground powerlines. This has the potential to result in short-term amenity, human health, and ecological impacts on nearby sensitive receptors. A total of 13 sensitive human receptors were identified within 350 m of the Project Area, comprising 12 residential dwellings and one campsite. Sensitive ecological receptors, including the Ramsar site, were identified within 50 m of the Project Area boundary.

Unmitigated dust impacts on sensitive human and ecological receptors from construction activities are considered to be medium to low. These impacts would be managed through the implementation of industry best practice mitigation measures, including dust suppression, restricting vehicle movements, and scheduling works to avoid adverse weather conditions, resulting in negligible residual impacts. In addition, the progressive manner in which the construction works would be carried out and the distances between construction activities and sensitive receptors, would further minimise potential dust impacts. Residual dust impacts on sensitive receptors would be negligible.

Air quality impacts during operation of the Project are expected to be negligible and primarily associated with the use of light vehicles on existing access roads for operation and maintenance activities.

Noise and vibration

The Project is anticipated to generate noise during both construction and operation. A total of 40 receivers were identified within 5 km of the proposed turbines, comprising 33 non-involved receivers on properties that are not associated with the Project (14 dwellings and 19 campsites), and nine residential dwellings on properties associated with the wind farm (involved receivers).

Predicted noise levels for operation of the wind farm have been determined using the sound power levels for four candidate turbine models. The results demonstrate that wind turbine noise levels associated with the Project are predicted to comply with the noise limits for all receivers and candidate wind turbines. Specifically:

- The predicted wind turbine noise levels at the non-involved receivers are below the applicable base noise limit of 40 dB L_{A90} by at least 3.3 dB for all candidate wind turbine models
- The predicted wind turbine noise levels at the involved receivers outside of the Project Area are below the applicable base noise limit of 45 dB L_{A90} by at least 2.0 dB for all candidate wind turbine models.
- The predicted wind turbine noise levels at the involved receivers within the Project Area are below the reference base noise level of 45 dB L_{A90} by at least 4.4 dB for all candidate wind turbine models.

A pre-development noise assessment will be prepared and submitted to the responsible authority demonstrating that the wind farm is expected to achieve compliance with the operational noise requirements established in accordance with NZS 6808. The pre-development noise assessment will be based on the final wind turbine layout, representative noise emission data for the final selected turbine model and the location of all receivers around the wind farm. A Noise Management Plan (NMP) will be prepared and implemented during operation to ensure compliance with operational noise requirements as per the pre-development noise assessment.

Noise levels associated with each of the main construction activities have been predicted at the nearest receivers and are considered typical for the construction of a wind farm. The highest noise levels are predicted to occur during cable trench digging near a non-involved receiver, followed by the construction of powerlines (overhead and underground) and access roads. However, the works associated with these construction activities would progress relatively quickly and these levels would therefore only be expected to be reached for a short period of time, typically less than three to four weeks and less than one week for the highest noise level associated with cable trench digging. The predicted noise levels for use of the quarry during construction are lower than the most stringent Publication 1826.4 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* (Noise Protocol) limit of 36 dB applicable to the night period, by at least 5 dB, at all 3 receivers located within 5 km of the quarry.

One non-involved receiver (576) is located within the range of distances where vibration could be perceptible and potentially disruptive for the brief period while cable trench digging activities are occurring at the nearest point to the dwelling. Perceptible vibration at this receiver due to cable trench digging activities is expected to be manageable via resident consultations, appropriate scheduling, and prioritising efficient work times to minimum the duration of trench digging nearest to the dwelling.

A CEMP will be implemented during construction works to manage potential noise and vibration impacts. In addition, the Project's Quarry Work Plan will outline noise related measures to manage potential impacts. The plans would include details of all reasonably practicable mitigation measures to be implemented to reduce the risk of harm from construction activity noise and vibration and to fulfil the general environmental duty under the EP Act and achieve the noise limits determined in accordance with the Noise Protocol.

Legend

- Campground
- Involved Noise Sensitive Locations
- Non-involved Noise Sensitive Locations
- Underground Transmission Line
- Wind Farm Site
- Parks and Reserves
- Roads
- Watercourses

Noise Levels dB(A)

- 30
- 35
- 40
- 45

FIGURE 13

Highest Predicted Noise Levels

Image Source: ESRI Basemap (2021) Data source: Geoscience Australia; DELWP (2021)

Transport

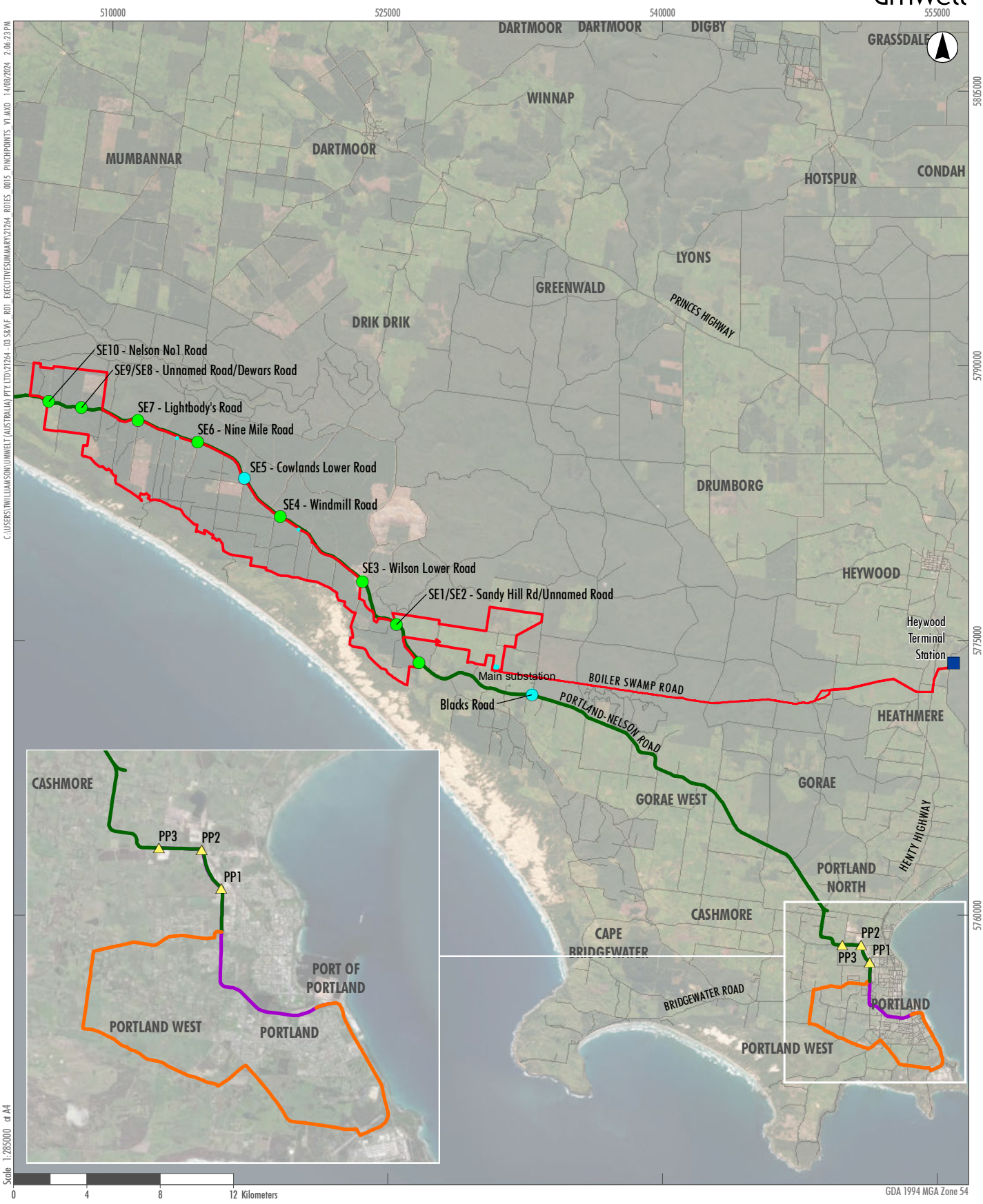
Potential impacts on traffic and transport from the Project would predominantly be associated with the construction and decommissioning phases of the Project. Construction of the Project would increase traffic of the surrounding road network to access the site, including construction staff, materials, plant and equipment, and wind turbine components.

Delivery of Project components from overseas is expected to be via the Port of Portland, given its proximity to the Project Area and capacity to receive wind turbine components. Additionally, containers will be delivered via the Port of Geelong. Several intersections and wind farm site access points along the over dimensional/over mass (OD/OSOM) transport route will require upgrade works to allow for the delivery of oversized project components (i.e. turbine hubs and blades). Temporary pavement widening is proposed to be provided at almost all intersections to safely accommodate the movement of OD/OSOM vehicles. Some obstructions would also need to be removed at some intersections (temporarily or permanently), such as vegetation and fences.

During construction there is potential for OD/OSOM vehicle movements to impact on the wider road network and its users. There will be occasions where intersections would need to be shut down to allow for safe passage and manoeuvrability of OD/OSOM vehicles. During these times, appropriate warning signage, along with temporary reductions in speed limits, would be in place for all affected intersection approaches. The temporary reductions in speed limits would only be implemented while the OD/OSOM movements are taking place and would not be visible to traffic at any other time. A Traffic Management Plan (TMP) will be prepared for construction of the Project to minimise disruption to the road network from the movement of OD/OSOM vehicles. The TMP will be developed in consultation with the relevant road management authorities and be informed and supported by an appropriate level of transport analysis.

The requirement for road upgrades to accommodate construction vehicles will be determined during development of the TMP. Prior to construction, road condition (dilapidation) surveys will be undertaken to ensure public and private roads are in a suitable condition to accommodate construction vehicles, particularly OD/OSOM vehicles transporting wind turbine components. These surveys will also provide a baseline of pavement conditions to determine any future impacts that may require upgrades or remediation of road assets.

A site access strategy will also be prepared prior to construction to identify the site entrances to be used during construction by OD/OSOM vehicles, heavy vehicles and light vehicles. Management measures such as speed limits at the site entrances and obstruction removal can then be identified, to ensure safe access of Project vehicles to/from site and the safety of local road users. This strategy will be coupled with a formal OD/OSOM transport route assessment which will identify the transport routes along which Project materials would be transported to site, and the impacts (e.g. vegetation clearance) that need to be managed.



Legend

- Project Area
- Vehicles with Loaded Height < 4.4m
- Vehicles with Loaded Height > 4.4m
- All Vehicles
- Upgrades Required
- Upgrades Not Required
- Pinch Points
- Heywood Terminal Station
- Main Wind Farm Substation

FIGURE 14

Pinch Points and Intersection Upgrade Requirements

Image Source: ESRI Basemap (2021) Data source: DELWP (2021); Geoscience Australia (2021); Aecom (2020)

Land use and planning

The use and development of the Project is permissible under the Glenelg Planning Scheme (the Planning Scheme), subject to approval by the Victorian Minister for Planning (the Minister). The Project has been developed with consideration of the objectives of the Planning Scheme and is consistent with all applicable State and regional policies relating to the provision of renewable energy.

Land use impacts during construction of the Project would be temporary and primarily associated with the use of public roads and land, notably during construction of the underground transmission line through the Parks. Two-way vehicle access would be maintained at all times for emergency vehicles, however public access along Boiler Swamp Road would not be permitted where the construction works are taking place. Road detours would be used to divert public vehicles onto adjacent roads through the Parks, ensuring that public access is maintained through the parks. Temporary access arrangements would also be implemented for people using the GSWW and other recreational uses such as horse trails. All traffic management measures will be documented in a TMP and developed through consultation with relevant landowners such as the Victorian Department of Energy, Environment and Climate Action (DEECA) and Parks Victoria. Following construction works, Boiler Swamp Road would be restored to the current road grading.

Once operational, the Project would have minimal impact on public land uses, agricultural activities, and existing infrastructure. Land within the wind farm site that is not required for wind farm infrastructure would continue to be used for forestry and grazing during operation. It is estimated that approximately 5% of the Project Area would be used for the wind turbines, access tracks and other operational Project infrastructure.

Operational and maintenance requirements of the transmission line within the Parks would be minimal. Underground assets are expected to be largely maintenance free, with monitoring to be undertaken remotely. Any onsite maintenance work would involve small crews with a vehicle and minor excavation equipment, and would remain within the road formation. Emergency vehicle access along Boiler Swamp Road would be maintained at all times. Public access would be maintained where possible, however some works could require partial road closures and diversions to be put in place.

Potential land use impacts associated with decommissioning of the Project would be similar to those for the construction phase. Areas of agricultural land uses affected by the Project (forestry and farming) would be rehabilitated to pre-development condition or as otherwise agreed with the relevant landowners, and there is not expected to be any long-term adverse effect on the current uses. A Decommissioning Environmental Management Plan (DEMP) will be prepared in consultation with all relevant stakeholders. The plan would detail the activities involved in decommissioning of the Project, particularly for the transmission line for which decommissioning is still to be ascertained, and the measures for mitigating impacts.

Socio economic

Through research and consultation with stakeholders and input-output economic modelling, potential socio-economic impacts of the Project have been identified.

Construction and decommissioning of the Project would result in a temporary population increase which has potential to impact on access to short term accommodation, recreational areas, and local infrastructure and services. Construction and decommissioning works may also disrupt existing land uses, including agricultural operations on host properties, and generate amenity, recreation, and visual impacts on the local area, affecting how people experience their surrounds and sense of place. Residual impacts associated with construction and decommissioning of the Project would be low with the implementation of mitigation.

The perceived reduction in rural property values associated with land, houses, or property adjacent to, or within eyesight of the Project's infrastructure, was considered by some stakeholders as detrimental to people's livelihood and their futures. However, research indicates that there are no statistically relevant correlations between wind farms and property values, especially in rural areas. Furthermore, only marginal economic impacts would result from permanent land acquisition for the transmission line over the medium-to-long term once compensation arrangements have been accounted for. Operation of the Project would also result in visual changes to the landscape, which may affect the local tourism industry and people's sense of place and attachment to the area. Residual impacts associated with operation of the Project would be low with the implementation of mitigation.

The Project is expected to have significant economic and social benefits at a local, regional, and state level from both construction and operation of the Project. The most significant social benefits associated with the Project include provision of training and upskilling for local people, and local employment and procurement opportunities. Depending on how the Project is constructed, in either a single stage or over two stages, up to a peak of 350 workers would be required to construct the Project. If a single stage construction program is assumed, an estimated 350 employees would be required, with close to 253 full-time workers required across the State during the two-year construction period, 52 of which are expected to be apprentices and trainees. It should be noted no other known projects are anticipated to be construction during the same timeframe as the Project. There is strong and consistent evidence that the provision of apprenticeship and trainee opportunities during construction of a project would benefit the individuals involved by increasing their probability of employment and expected hourly weekly wage rate in subsequent years.

The Proponent will also implement a Shared Benefits Strategy to ensure the benefits of the Project are proactively and purposefully shared with local communities.

Construction of the Project would help support businesses in the Glenelg LGA and across the State more broadly, with the potential to generate up to $167.2 million for the Glenelg LGA and up to $668.7 million for the State of Victoria (assuming 25% employment from the study area). Operation of the Project has potential to generate up to $49.9 million for the Glenelg LGA, and up to $62.3 million for the State of Victoria.

Safety, hazard and risk

Wind farms have the potential to impact on radio and television signals, however understanding where these signals are allows for risk mitigation through design. In the case of the Project, potential impacts on point-to-point radio systems have been avoided by removing a wind turbine from the layout that was located within the exclusion area defined by the second Fresnel zone. The wind farm has potential to impact on television broadcasting systems for two dwellings located south of the wind farm site, and to result in signal degradation of FM broadcast services for receivers in the immediate vicinity of the wind farm.

To ensure no degradation of communication signals for Project neighbours, an independent specialist will be engaged to undertake a pre- and post-construction assessment of the television and FM broadcast reception strength at the location of any existing or approved dwellings within 5 km of any turbine (as at the time of Project approval) to determine if the wind farm is causing interference with reception.

The wind farm site is expected to have an impact on the Mount Gambier weather watch radar; however, the Proponent will continue to consult with the Bureau of Meteorology (BoM) on the exact terms of the operational limits and/or other technical solutions for the Project to ensure that the radar can maintain operational efficiency.

Potential aeronautical impacts resulting from operation of the wind farm have been identified to address aircraft safety hazards associated with nearby aerodromes and air routes. The Lowest Safe Altitude (LSALT) for two air routes is required to be raised from 2,200 ft to 2,400 ft to meet the LSALT determined for the wind farm. The height of the wind turbines would also impact on the non-precision instrument approach procedures at Portland Aerodrome. These procedures will require amendment to the 25 nm and 10 nm minimum safe altitude (MSA) as well as requiring the instrument approach paths to be redesigned. The qualitative risk assessment determined that the overall risk of the Project to aviation is low, and that the wind farm is ‘not a hazard to aircraft safety’. Obstacle lighting is therefore not required for the Project.

The Project has been reported to Civil Aviation Safety Authority (CASA), and Airservices Australia has been notified in accordance with AC 139-08(1) *Reporting of Tall Structures* to ensure the position of wind turbine and met masts are included within the vertical obstacle database and marked on aeronautical charts. Consultation with Portland Aerodrome operator (Glenelg Shire Council) has been undertaken throughout the Project.

The risk of a fire igniting during construction of a wind farm is always present, due to the presence of ignition sources including hot works, increased vehicle traffic and vehicles travelling across vegetated areas. The existing risk of bushfire ignition in the Project Area and surrounds is very high. This risk is managed by local Forest Industry Brigades (FIB). With the implementation of the Project’s proposed mitigation measures, the residual risk rating of a bushfire being ignited during wind farm construction decreases to medium.

Turbines have potential to ignite a fire through the use of combustible and flammable materials and liquids, a lack of maintenance causing failures within the turbines, or a lack of fire detection systems. A range of design and maintenance mitigation measures will be implemented including the installation of fire detection and suppression systems within the nacelle of the turbines and providing a fuel managed area around the base of the wind turbine to prevent ignition from falling burning materials. Additionally, remote shut down procedures (which can be triggered at any time) will be implemented for turbine operations during bushfires and/or bushfire reports. The residual risk rating of a bushfire igniting during operation of the wind turbines with the implementation of mitigation measures is medium.

Managing environmental effects

Environmental management framework (EMF)

The assessment of potential environmental effects outlined in this EES has informed development of the Project’s EMF. The EMF set out in this EES provides a transparent framework with clear accountabilities for managing and monitoring the environmental effects associated with the construction and operational phases of the Project.

Each technical assessment completed for this EES provides recommendations for appropriate environmental mitigation measures (MMs) to be adopted by the Project. The measures adopted by the Project are detailed in **Chapters 7–18** of this EES and have been incorporated into the EMF. The EMF outlines how the MMs will be incorporated into the relevant statutory approval conditions or within environmental management plans to be pursuant to these statutory approvals, to ensure that the potential environmental impacts of the Project are effectively managed through all stages. These relevant statutory approvals and management plans include the PSA under the *Planning and Environment Act 1987*, the quarry Work Plan under the *Minerals Resources (Sustainable Development) Act 1990* and the CHMP under the *Aboriginal Heritage Act 2006*.

The Project would be delivered in accordance with the environmental commitments outlined in the EMF and statutory approval documents. The Proponent would ensure that construction and operational contractors used for the Project prepare management plans which incorporate all required conditions of approval and mitigation measures. Contractors would also be required to comply with legislation and other relevant guidelines and policies and obtain other approvals, licences, permits or consents that may be required.

The EMF also outlines the procedures to be followed for the preparation, review, approval and implementation of environmental management plans and procedures. It provides for the regular review and updating of plans and procedures, as well as independent monitoring, auditing and reporting of compliance. The roles and responsibilities of key stakeholders are defined to ensure that there are clear accountabilities for the implementation of the environmental management requirements.

Next steps in the EES process

Exhibition

The EES and draft PSA will be placed on public exhibition for 30 business days from late January 2025. During this time the public are invited to review the EES documents and PSA and make written submissions.

The EES, draft PSA and supporting documents will be available to read and download from the Project website: kentbruckgreenpowerhub.com.au

Hard copies can be viewed at the following locations:

Neoen Portland Office
111 Bentnick Street, Portland
Monday 4.00 to 7.00pm and Saturday 11.00am to 2.00pm

Glenelg Shire Council
71 Cliff Street, Portland
Monday to Friday 9.00am to 5.00pm

Nelson Visitor Information Centre
Leake Street, Nelson
Monday to Sunday 10.00am to 12.30pm and 1.30pm to 5.00pm

Department of Energy, Environment, and Climate Action
8 Nicholson Street, Melbourne
Monday to Friday 9.00am to 5.00pm

State Library of Victoria
328 Swanston Street, Melbourne
Monday to Sunday 10.00am to 6.00pm

A USB flash drive will be sent to any stakeholder at any time during the public exhibition period upon request.

Hard copies of the EES and planning permit application can be obtained from the Proponent at cost by contacting:
1800 966 206
contact@kentbruckgreenpowerhub.com.au

How to make a submission

Submissions on the EES and draft PSA must be made in writing and be received by the exhibition closing date. The submission process for the EES is independently managed by Planning Panels Victoria (PPV) and any enquiries regarding the management of submissions for the EES and the Inquiry and Hearing process should be directed to PPV.

Online submissions on the EES are preferred and can be lodged via an online form on the Victorian Government's engagement website: **www.engage.vic.gov.au.** Only one submission is needed to address all of your views about the Project, its effects and the relevant documents.

Where a submitter on the EES is unable to lodge a submission online, they must contact PPV through the DELWP Customer Call Centre on 136 186 (select option 6) and request a hardcopy submission coversheet. Each hardcopy submission must be accompanied by a completed coversheet issued by PPV for privacy reasons.

All submissions must state the name and address of the person making the submission. Petitions will be treated as a single submission and only the first names from a petition or pro-forma submission will be registered and contacted.

Submissions will be treated as public documents and will be published on the Engage Victoria website. Do not include personal information in the body of your submission (such as your email address or phone number or photos of people, particularly children). Your submission and your name will be made public.

Inquiry and advisory committee process

The Minister for Planning will appoint a joint Inquiry and Advisory Committee (IAC) under the *Environment Effects Act 1978* and the *Planning and Environment Act 1987* to hold an inquiry into the Project and its environmental effects. The IAC will review the public submissions, the EES, and the draft PSA. It will consider the environmental effects of the Project in accordance with the Terms of Reference issued by the Minister for Planning.

After the exhibition period, the IAC will hold a Directions Hearing, where the necessary arrangements and timetable for the public hearing will be established. Further information about the Directions Hearing arrangements will be published on **www.engage.vic.gov.au** when determined.

Members of the public and any other parties seeking to be heard at the public hearing are required to submit a written submission and indicate on the online submission form or hard copy submission coversheet that they would like to be heard at the hearing. Information on the hearing process and timetable will be published as it becomes available at **www.engage.vic.gov.au.**

The IAC will provide a report to the Minister for Planning, who will consider this report to inform the Minister's assessment of the Project's environmental effects. The Minister's assessment of the Project will make recommendations about whether the environmental effects of the project are acceptable and will inform statutory decision-makers responsible for issuing environmental approvals for the Project.

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