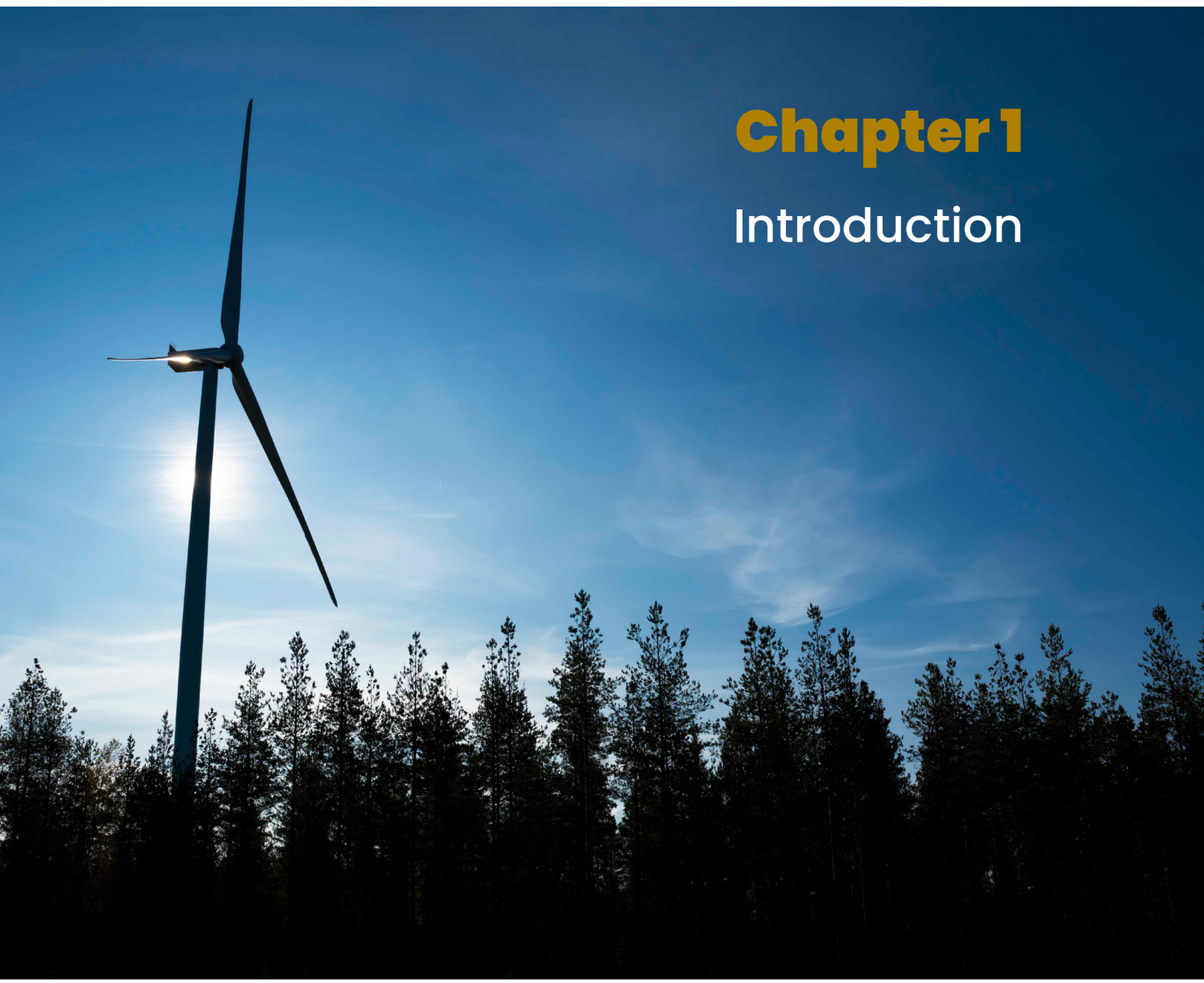


Chapter 1

Introduction

Acknowledgement of Country

Neoen Australia acknowledges the traditional custodians of the land in which we live, and pays its respects to their elders, past and present. The Gunditjmara are the original custodians of the Country on which the Project is located and we acknowledge them as the original custodians. We are committed to Aboriginal engagement and reconciliation and aim to bring Aboriginal and Torres Strait Islander people, local communities and the councils along for the journey to strengthen relationships and enhance local community outcomes.

Disclaimer

1 Introduction

1.1 Purpose of this document

This Environment Effects Statement (EES) presents the findings of the environmental, heritage and socioeconomic impact assessments undertaken for the Kentbruck Green Power Hub (the Project). The Project is a proposed renewable energy development comprising a wind energy facility (wind farm) and associated infrastructure, including collector substations and power lines for the wind farm, and a new transmission line connecting the wind farm to the existing electricity network.

The Project is in south-west Victoria approximately 300 kilometres (km) west of Melbourne. It would be operational for a period of between 25 and 30 years following a construction period of at least two years and is anticipated to deliver approximately 2,000 gigawatt-hours (GWh) of renewable electricity, powering around 411,000 homes over its lifetime. At the end of its operational life, the wind farm would either be decommissioned or upgraded with new turbines and ancillary infrastructure.

This EES provides a detailed description of the Project including the Project components, proposed activities, alternatives and potential environmental, heritage and socioeconomic issues that may occur. It presents an assessment of potential impacts associated with these issues and identifies measures to avoid, mitigate, manage and/or offset potential significant impacts. This EES also sets out an Environmental Management Framework (EMF) which describes how the Project will be managed throughout its construction, operation and decommissioning phases to achieve the identified environmental outcomes.

The EES process provides a range of opportunities for input, including from Traditional Owners, stakeholders and the wider community. Feedback on this EES can be provided through written submissions during the public exhibition period.

The Victorian Minister for Planning (the Minister) will consider this EES, public submissions, the inquiry report and other information provided by Neoen Australia Pty Ltd (the Proponent) or submitters in preparing an assessment of the environmental effects of the Project. The Minister's determination as to whether the Project has acceptable environmental impacts will be detailed in the Minister's Assessment. The Minister's Assessment will inform statutory decision-makers responsible for issuing the approvals required for the Project.

1.2 Background to the Project

Renewable energy projects such as the Kentbruck Green Power Hub will play an important role in providing energy security and mitigating the projected impacts of climate change.

The Project would directly contribute to achieving Victoria's legislated renewable energy and greenhouse gas (GhG) emission reduction targets. The Victorian Government's Climate Change and Energy Legislation Amendment (Renewable Energy and Storage targets) Bill 2023 legislated the State's renewable energy target of 95% renewable energy generation by 2035 under the *Renewable Energy (Jobs and Investment) Act 2017* (Vic). This Bill also legislates Victoria's emissions reductions targets, to cut emissions by 45% to 50% below 2005 levels by 2023, and 75% to 80% by 2035. The Bill also establishes a commitment to achieve net-zero emissions in Victoria by 2045.

The Project could contribute approximately 5% of Victoria's electricity generation, a substantial step towards the achievement of these targets.

Wind energy is the single-largest contributor to Australia's clean energy transformation, accounting to 35.6% of renewable power generation in 2022 (Clean Energy Council, 2023). There are many benefits to wind energy, including cleaner air with no emissions and providing a low-cost source of energy. Australia has some of the best wind resources in the world, most of which are in the southern parts of the continent, including in western Victoria (Geoscience Australia, n.d.). The Project's location has consistently high average wind speeds, making it an ideal location for utilising the power of naturally occurring wind to generate renewable electricity.

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 in Victoria (DEECA, 2023). Up to 62% of Australia's coal fleet is expected to close before 2033 (AEMO, 2023). As Victorians prepare for the closure and decommissioning of the coal powered generation fleet, there is an urgent need for improved energy security in the state. To achieve this, Victoria must undergo a once in a generation energy transition.

The closure of coal fire 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, 2024). The NEM facilitates the exchange and distribution of electricity, between generators (such as coal plants and wind farms) and the end user such as households and businesses. Disruptions to the reliability of the NEM could result in impacts on consumers through reduced supply and increased prices.

Reliability gaps are forecast in all mainland NEM regions in the next decade, signalling a need for further commitment and delivery of generation and transmission, particularly renewable energy generation. It is essential to prioritise energy security during this transition where old technology is to be replaced by clean and renewable energy sources.

An insufficient level of generation capacity has been committed to address the reliability gaps forecast in the NEM (AEMO, 2024). Without additional investment beyond present commitments, reliability gaps are forecast in Victoria from 2024-2025 against the Interim Reliability Measure and from 2028-2029 against the reliability standard (AEMO, 2024) (see **Plate 1.1**). The reliability gap will increase the risk of load shedding (reduction in electricity supply to consumers) across Victoria and the amount of unserved energy (energy required by a customer which cannot be supplied).

Modelling undertaken by the Victorian Government has found that from 2025 to 2030 an additional 4,000 megawatts (MW) of large-scale renewable energy generation and storage capacity is required in the state (DELWP, 2022). In Victoria, this additional build capacity in large scale renewables is mostly in wind energy (DELWP, 2022).

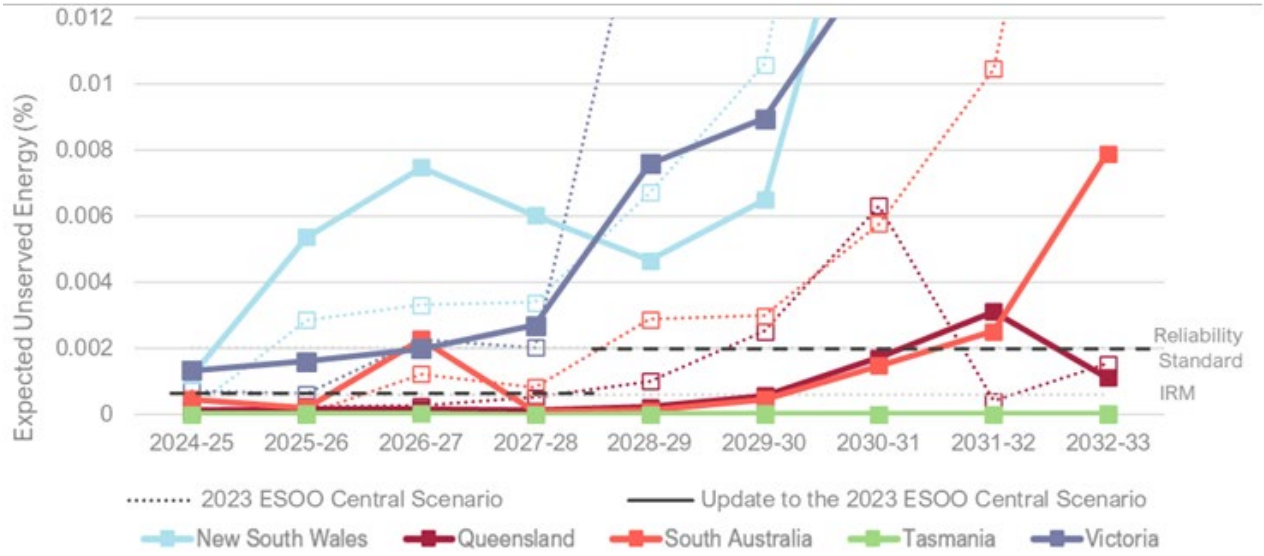


Plate 1.1: Expected unreserved energy (%) in the NEM (AEMO, 2024).

Alcoa operates the Portland Aluminium Smelter, which produces around 19% of Australia's aluminium (Alcoa, 2022). The smelter is connected to the grid at a private substation on the dual 500 kilovolt (kV) transmission lines running from Portland to Heywood. The Proponent and Alcoa would work together to ensure grid security solutions on this section of the network are coordinated.

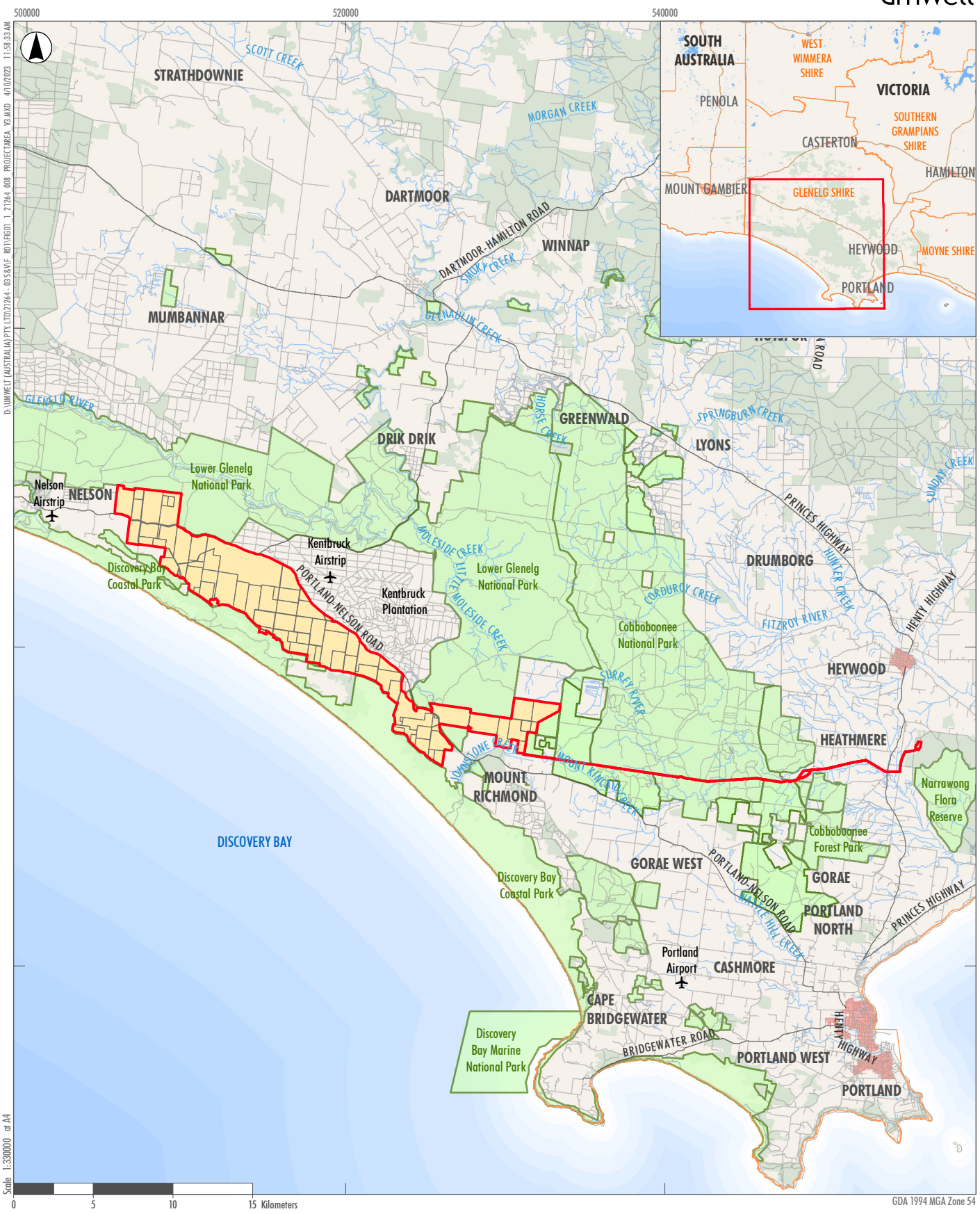
The Portland Aluminium Smelter is the largest employer in the region, injecting approximately $61 million into the Victorian community in 2020 through direct salaries, wages and benefits, and $108 million in Victorian supply contracts (Alcoa, n.d.). The Proponent is investigating opportunities for the Project to supply renewable energy to the Portland Aluminium Smelter from 2026 onwards, to assist in Alcoa's plans to produce green aluminium products and reduce the smelter's reliance on aging coal power plants. The smelter's current electricity supply contract is due to expire in 2026, and the Project is currently one of the few options available to ensure the smelter can obtain low cost electricity and continue to operate. While offshore wind projects are proposed to supply electricity to the Portland Aluminium Smelter, the Project's development timeframe is consistent with the smelter's electricity supply contract timeframe and represents a proven technology solution.

The Project 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.

1.3 Project overview

The Project is located within the Glenelg Shire Council (GSC) local government area (LGA), approximately 8 km east of the South Australian/Victorian border. The township of Nelson is located 3 km west of the wind farm site, with the city of Portland 30 km to the south-east. The Project is situated inland of Discovery Bay.

The wind farm site is primarily located in managed pine plantation that adjoins Portland-Nelson Road to the north and Discovery Bay Coastal Park to the south. A small section of the wind farm site is also located on agricultural land that abuts the Lower Glenelg National Park to the north and Cobboboonee Forest Park to the east. The majority of the underground transmission line would be located beneath an existing road through Cobboboonee National Park and Cobboboonee Forest Park (the Parks), with the remainder located in agricultural land between the Parks and the existing Heywood Terminal Station located near Heywood (**Figure 1.1**).



Legend

- Project Area
- Involved Properties
- Parks and Reserves
- Local Government Areas
- Roads
- Watercourses

FIGURE 1.1

Site Context and Project Area

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

The Project involves the following key components:

- A wind farm of up to 600 MW, comprising up to 105 wind turbines with a maximum tip height of 270 metres (m) above ground level.
- A new 275 kV underground transmission line connecting the wind farm to the existing electricity transmission network.
- Associated infrastructure, including a main wind farm substation and collector substations, meteorological monitoring masts, underground and overhead powerlines connecting the wind turbines to the collector substations and to the main substation, permanent hardstand areas, and temporary infrastructure including construction compounds, concrete batching plants and laydown areas.
- A limestone quarry to provide material for hardstands and for upgrades to existing access roads or construction of new access roads.
- Connection of the Project transmission line to the existing Heywood Terminal Station.

For the purposes of this EES, the terminology outlined in **Table 1.1** is used to describe the Project.

Table 1.1 Project terminology

Terminology	Definition
Project Area	The total area in which the Project would be developed, including the wind farm site and transmission line corridor, of approximately 8,350 hectares (ha).
Wind farm site	The parcels of land on which the wind farm would be located, covering an area of approximately 8,318 ha.
Transmission line corridor	The corridor of land in which the transmission line would be located, covering an area of up to 21 ha. The exact location of the transmission line within this corridor would be determined during detailed design of the Project.
Heywood Terminal Station	Upgrade works at Heywood Terminal Station are proposed to connect the Project into the existing electricity network. Heywood Terminal Station covers an area of approximately 11 ha.
Construction footprint	The indicative area that would be directly impacted by the Project during construction, subject to changes based on the final construction design, of approximately 455 ha. This is approximately 5% of the Project Area.
Operational footprint	The indicative area needed for operation of the Project, excluding land that may be used for unscheduled maintenance, subject to changes based on the final design, of approximately 342 ha. This is approximately 4% of the Project Area.

1.3.1 How wind energy works

Air passing across the blades of a wind turbine causes the turbine rotor to spin. The rotor is connected to a generator in the turbine housing (nacelle). As the rotor turns, the rotational energy of the rotor is converted into electricity by the generator.

The effectiveness of the conversion from kinetic energy in the air to rotational energy and then to electricity, at any given site, is indicated by the capacity factor (Geoscience Australia, n.d.). The capacity factor describes the actual electricity generated by a power plant (such as a wind farm) as a proportion of the electricity that could be generated by the power plant if it was operating continuously at its rated capacity (NMPP Energy, 2017). A capacity factor of 1 (100%) means that the power plant is operating at full power all the time.

Recent estimates of capacity factors for a range of utility-scale technologies, calculated by the United States National Renewable Energy Laboratory (NREL), show that onshore wind farms typically have capacity factors ranging from 25% to 53%, with an average around 39–43% (NREL, 2015). The Project is estimated to have a capacity factor of 43%, which is towards the higher end of the typical wind farm capacity factors. This indicates that the Project Area has an excellent wind resource. This is discussed further in **Section 2.3.1.**

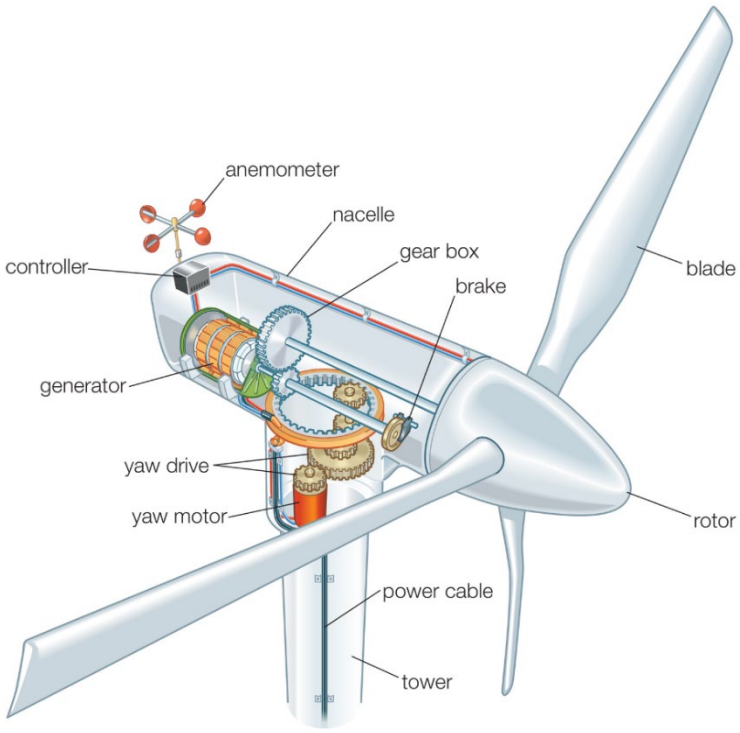


Plate 1.2: Diagram of a wind turbine (Badurek, 2015)

1.4 The Proponent

The Proponent is an independent producer of renewable energy listed in Compartment A of the Euronext Paris market, founded in France in 2008. The Proponent's total capacity in operation and under construction is currently over 8.4 gigawatts (GW), with a target of more than 10 GW by the end of 2025. The Proponent is involved in all four stages of an asset's lifecycle: design and development, financing, building and operating. It owns and operates 90% of its power plants.

The Proponent commenced operations in Australia in 2012 with the establishment of Neoen Australia Pty Ltd. The Proponent has over 4 GW of renewable assets in operation or under construction in Australia, comprising 2.4 GW from wind and solar farms and 1.6 GW from energy storage, representing over $4 billion Australian dollars in investment. In Victoria, the Proponent operates the Bulgana Green Power Hub (a 204 MW wind farm with a 20 MW battery), the Numurkah Solar Farm (128 MW) and the Victorian Big Battery (300 MW). The Proponent intends to reach 10 GW of assets in Australia by 2030.

The Proponent is committed to the health and safety of its employees, subcontractors, partners, customers and the environment. Its approach to health, safety and the environment is centred on limiting harm to people, assets and the environment. In accordance with the Proponent's commitment to avoiding or minimising environmental harm as much as possible, the Proponent complies with all applicable statutory and regulatory requirements and has no existing record of having been the subject of any prosecution or civil proceeding under Victorian, State, Territory or Commonwealth environmental or natural resources legislation which is relevant or material to this EES.

The Proponent has particular regard for compliance with standards and the establishment of provisions and guarantees for the dismantling of its installations at the end of a project's useful life, so as to leave behind a site that can be reused for other renewable energy plants or any other type of activity.

The Proponent is particularly committed to avoiding and minimising impacts on biodiversity. It does so by undertaking surveys to reduce impacts in the earliest stages of project development. Each new project area is rigorously selected using mapping designed to identify and minimise potential impacts on biodiversity, heritage and archaeological values. Further information on the Proponent can be found at its website: https://www.neoen.com/en.

1.5 Environment effects statement

1.5.1 Requirement for an EES

The Project was referred to the Minister on 24 July 2019 in accordance with Section 8(3) of the *Environment Effects Act 1978* (Vic) (EE Act), seeking the advice of the Minister as to whether an EES should be prepared for the Project. On 25 August 2019, the Minster determined under Section 8B(3) of the EE Act that an EES would be required for the Project due to the potential for significant environmental effects. The following reasons were provided for this decision:

- The Project has the potential to have significant effects on:
  - threatened fauna listed under the *Flora and Fauna Guarantee Act 1988* (Vic) (FFG Act) and *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
  - threatened flora and ecological communities listed under the FFG Act and EPBC Act
  - Aboriginal cultural heritage values
  - landscape values
  - surface water and groundwater and related beneficial uses, including wetlands such as Long Swamp and the Glenelg Estuary and Discovery Bay Ramsar site (the Ramsar Site).
- The Project may have other effects, including those associated with acid sulfate soils (ASS), the local community, and amenity.
- Assessment of potentially significant effects is necessary to ensure their extent and related uncertainties and acceptability are sufficiently investigated. This includes identifying measures to avoid and minimise potential effects, for example by amending the Project layout, modifying design or operation of key components of the Project, and evaluating their effectiveness in achieving acceptable residual environmental risks.
- An EES would enable a single integrated, rigorous and transparent process for considering the Project's environmental effects and risks, including their acceptability, which would inform relevant statutory decision-making, including under the *Planning and Environment Act 1987* (Vic) (P&E Act), *Aboriginal Heritage Act 2006* (Vic) (AH Act), FFG Act, *Mineral Resources (Sustainable Development) Act 1990* (Vic) (MRSD Act) and *Water Act 1989* (Cth) (Water Act).

On 7 November 2019, a delegate for the Commonwealth Minister for the Environment and Water (the Commonwealth Minister) declared the Project to be a controlled action due to the potential for significant environmental impacts on matters of national environmental significance (MNES), requiring assessment and approval under the EPBC Act. The delegate considered that the Project has the potential to have a significant impact on the following MNES:

- Listed threatened species and communities
- Listed migratory species
- Ramsar wetlands.

The delegate also made the decision for the Project to be assessed under the Assessment Bilateral Agreement between the Commonwealth and Victorian Governments. This agreement allows the Victorian State Government to conduct a single environmental assessment process for matters of both State and Commonwealth importance, including MNES. Following the Minister's assessment of the Project, the Victorian and Commonwealth statutory authorities will make separate approval decisions on the acceptability of the Project.

1.5.1.1 Role of this EES

The role of this 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.

An EES is not an approval process itself. An EES is a transparent, integrated assessment of a project that has been determined by the Minister as being capable of having a significant effect on the environment. The Minister then makes a final assessment of the effects of a project and provides this to decision makers to enable them to make decisions about statutory approvals. Statutory decision makers (including ministers and statutory authorities) will consider this EES and the Minister's assessment of this EES when determining whether to grant the Project's approvals and if so, what the conditions of approval would be. The statutory approvals required for the Project are outlined in **Chapter 5 *Assessment and approvals framework.***

This 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 from the Project with recommended mitigation measures in place.
- Provides an EMF to manage potential environmental effects during construction, operation and/or decommissioning of the Project.

1.5.2 Scoping requirements

The matters to be investigated and documented in this EES are set out in the *Scoping Requirements for Kentbruck Green Power Hub Environment Effects Statement* (Scoping Requirements). Draft Scoping Requirements for the Project were released for public exhibition in December 2019. The Minister issued final Scoping Requirements in February 2020 following consideration of public submissions received. This EES has been prepared in accordance with the final Scoping Requirements.

The purpose of the Scoping Requirements is to ensure this EES appropriately responds to the Minster's decision that an EES is required and that it identifies potential significant environmental effects of the Project. They also ensure that this EES contains sufficient and appropriate information to allow the Minister to make an assessment on the environmental effects of the Project.

The Project has addressed the Scoping Requirements through a range of technical studies prepared by specialist consultants and other investigations and assessments, as presented in this EES (see **Table 1.3**). The Scoping Requirements provide evaluation objectives that describe the desired outcomes to be achieved for each of the topics to be addressed in this EES. These objectives are framed in the context of key legislative and statutory policies, as well as the principles and objectives of ecologically sustainable development and environment protection as described in the *Ministerial Guidelines for Assessment of Environmental Effects* (Ministerial Guidelines) (DELWP, 2006), including net community benefit.

The EES draft evaluation objectives are provided in **Table 1.2** along with references to the EES chapter in which each objective has been addressed. The Scoping Requirements relating to each evaluation objective are provided in the relevant technical reports.

This EES may also address other significant issues not identified in the Scoping Requirements that emerge during the EES investigations and consultation process.

Table 1.2: EES draft evaluation objectives

EES draft evaluation objective	Relevant EES chapter
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	**Chapter 7 *Biodiversity*** **Chapter 8 *Brolga*** **Chapter 9 *Surface water, groundwater and groundwater dependent ecosystems***
Cultural heritage To avoid or minimise adverse effects on Aboriginal and historic cultural heritage and associated values	**Chapter 11 *Cultural heritage***
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	**Chapter 9 *Surface water, groundwater and groundwater dependent ecosystems*** **Chapter 10 *Soil contamination and acid sulfate soils***
Landscape and visual To minimise and manage potential adverse effects on landscape and visual amenity	**Chapter 12 *Landscape character 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	**Chapter 16 *Land use and planning*** **Chapter 17 *Socio- economics*** **Chapter 18 *Safety, hazard, and risk***
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	**Chapter 13 *Air quality*** **Chapter 14 *Noise and vibration*** **Chapter 15 *Transport*** **Chapter 18 *Safety, hazard, and risk***

It should be noted that the Scoping Requirements were issued when the superseded Environment Protection Act was in force (*Environment Protection Act 1970*). Some of the requirements and evaluation objectives in the Scoping Requirements use language that is no longer recognised under the new *Environment Protection Act 2017* (Vic) (EP Act) and Environmental Reference Standard (ERS). For example, the term 'beneficial uses' was formerly described under the *State Environment Protection Policy (Waters)* which was subordinate to the *Environment Protection Act 1970*, but has now been replaced with 'environmental values' as defined in the ERS. This EES and the corresponding technical reports are consistent with the terminology in the EP Act and ERS, while the Scoping Requirements cross-referenced in EES documentation are not.

1.5.3 Structure of this EES

This EES has been structured to reflect the matters to be addressed as per the Scoping Requirements (**Table 1.3**).The appendices contain the technical reports that underpin the technical chapters and other reports that have been prepared for the Project such as the transmission line options assessment.

Table 1.3: Structure of this EES

Executive Summary

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Abbreviations & glossary

VOLUME 1

CHAPTER 1: Introduction
CHAPTER 2: Project rationale
CHAPTER 3: Project description
CHAPTER 4: Project development
CHAPTER 5: Assessment and approvals framework
CHAPTER 6: Community and stakeholder engagement
CHAPTER 7: Biodiversity
CHAPTER 8: Brolga
CHAPTER 9: Surface water, groundwater, groundwater dependent ecosystems
CHAPTER 10: Soil contamination and acid sulfate soils
CHAPTER 11: Cultural heritage
CHAPTER 12: Landscape character and visual amenity

VOLUME 2

CHAPTER 13: Air quality
CHAPTER 14: Noise and vibration
CHAPTER 15: Transport
CHAPTER 16: Land use and planning
CHAPTER 17: Socio-economic
CHAPTER 18: Safety, hazard, and risk
CHAPTER 19: Environmental management framework
CHAPTER 20: Conclusion
References
Appendix A: Transmission Line Options Assessment
Appendix B: Legislation and Policy Report

VOLUME 3

Appendix C: Flora and Fauna Existing Conditions and Impact Assessment - Part 1

VOLUME 4

Appendix C: Flora and Fauna Existing Conditions and Impact Assessment - Part 2

VOLUME 5

Appendix D: Brolga Impact Assessment
Appendix E: Southern Bentwing Bat Impact Assessment

VOLUME 6

Appendix F: Surface Water Impact Assessment
Appendix G: Groundwater Impact Assessment
Appendix H: Groundwater Dependent Ecosystem Impact Assessment
Appendix I: Environmental Site Investigation

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Appendix J: Aboriginal Cultural Heritage Technical Report
Appendix K: Historical Heritage Assessment
Appendix L: Landscape and Visual Assessment

VOLUME 8

Appendix M: Shadow Flicker Blade Glint Assessment
Appendix N: Air Quality Impact Assessment
Appendix O: Environmental Noise and Vibration Assessment
Appendix P: Transport Impact Assessment
Appendix Q: Land Use and Planning Impact Assessment

VOLUME 9

Appendix R: Social Impact Assessment
Appendix S: Economic Impact Assessment
Appendix T: Aeronautical Impact Assessment
Appendix U: Electromagnetic Interference Assessment
Appendix V: Bushfire Risk Assessment and Mitigation Plan

VOLUME 10

Appendix W: Quarry Work Plan Requirements Report
Appendix X: MNES Report
Appendix Y: Draft planning Scheme Amendment documents

VOLUME 11

Appendix Z: Draft consent application under Section 27 of the *National Parks Act 1975*
Appendix AA: Draft Bird and Bat Adaptive Management Plan

1.6 Project timeline

The indicative timeline for the Project is outlined in **Figure 1.2**. The Project is currently at step five in this timeline, with this EES recently submitted to the Minister. It is anticipated that an independent inquiry will be appointed by the Minister pursuant to the EE Act to consider and advise on this EES as well as submissions received during the public exhibition period. It anticipated that the EES inquiry will be jointly appointed as an advisory committee by the Minister pursuant to the P&E Act to consider and advise on the Planning Scheme Amendment (PSA). The independent inquiry that follows, and the Minister's Assessment, are anticipated to be completed by early 2025, with the statutory decision makers going through their relevant consent processes in the two months following the Minister's assessment (refer to **Chapter 5 *Assessment and approvals framework*** for information on the approvals required for the Project). Construction is expected to commence in 2026.

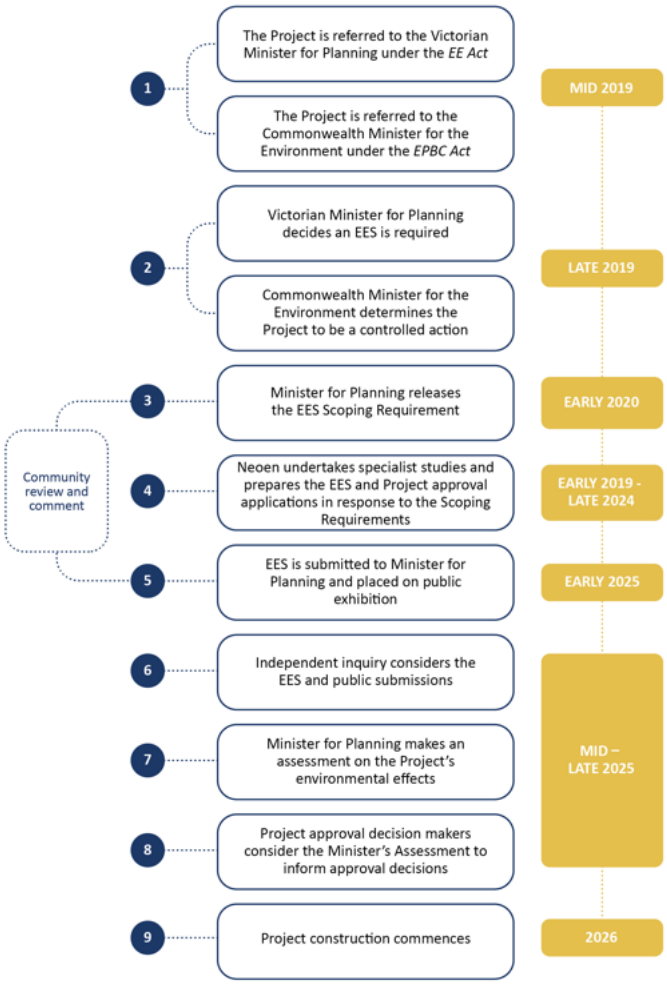

Figure 1.2: Project timeline

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