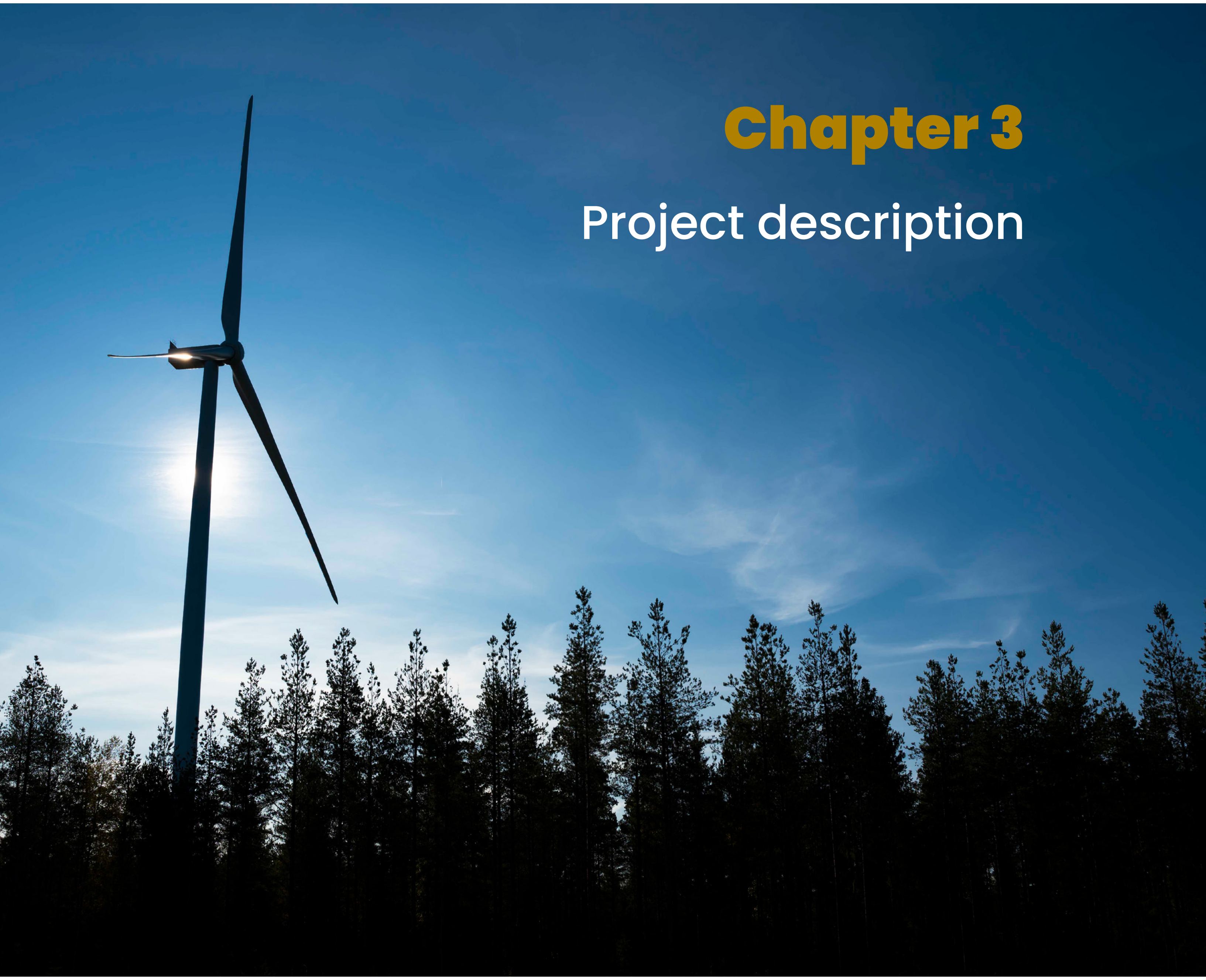

Chapter 3

Project description

Kentbruck green power hub

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.

3 Project description

3.1 Project overview

Neoen Australia Pty Ltd (the Proponent) is proposing a renewable energy development, known as the Kentbruck Green Power Hub (the Project), comprising a wind energy facility (wind farm) with associated infrastructure. The Project would be mostly located in an actively managed and harvested pine plantation in south-west Victoria, between Portland and Nelson, in the Glenelg Local Government Area (LGA) (**Figure 3.1**).

The Project would involve two main components:

- A wind farm of up to 600 Megawatts (MW) comprising up to 105 wind turbines and associated permanent and temporary infrastructure.
- A new 275 Kilovolt (kV) underground transmission line, which would connect the Project to the existing AusNet electricity transmission network. The transmission line would extend from the eastern boundary of the wind farm site to the existing 275/500 kV Heywood Terminal Station and would be up to 26.6 km in length.

Further details about the main components of the Project are provided in **Section 3.3**.

For the purposes of this EES, the following terminology is used to describe the Project:

- **Project Area:** The total area in which the Project would be developed. It comprises the wind farm site, the transmission line corridor and Heywood Terminal Station. The Project Area covers an area of approximately 8,350 hectares (ha).
- **Wind farm site:** The parcels of land on which the wind farm would be located. The wind farm site covers an area of approximately 8,318 ha.
- **Transmission line corridor:** The corridor of land in which the transmission line would be located. The exact location of the transmission line within this corridor will be determined during detailed design of the Project. The transmission line corridor covers an area of up to 21 ha.
- **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. The Project would not require any additional land at Heywood Terminal Station.
- **Construction footprint:** The indicative area that would be directly impacted by the Project during construction, subject to changes based on the final construction design. The construction footprint is estimated to be 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 construction design. The operational footprint is estimated to be approximately 342 ha. This is approximately 4 % of the Project Area.

3.2 Site description

3.2.1 Region

The Project Area is located wholly within the municipal boundary of the Glenelg Shire Council (GSC), which was amalgamated from Portland City, Glenelg Shire and Heywood Shire in 1994 (Glenelg Shire Council, n.d.). The Glenelg LGA is located approximately 360 km west of the Melbourne city centre and consists of many towns including Portland, Casterton, Heywood, Dartmoor, Nelson and Cape Bridgewater. The Glenelg LGA, along with the municipalities of Corangamite, Moyne, Southern Grampians and Warrnambool, are within the Great South Coast Region of the Barwon South West Region, which is known for its agriculture, tourism and energy production industries (Great South Coast Group, 2021). Glenelg Shire is home to a range of natural landscapes and Indigenous heritage sites including the Budj Bim Cultural Landscape, Cape Bridgewater and the Discovery Coast, and numerous National, State and coastal parks.

3.2.2 Project Area

3.2.2.1 Overview

The Project would extend along the southern coast of the Glenelg LGA, between the city of Portland and township of Nelson. The wind farm site is predominantly (86 %) located within an area used for commercial radiata pine forestry operations which has been heavily modified. Approximately 14 % of land in the wind farm site is freehold land that is primarily used for grazing. Less than 0.1 % of the wind farm site is public land. Around two thirds (17.6 km of the total 26.6 km length) of the transmission line length would be located beneath an existing road in Cobboboonee National Park and Cobboboonee Forest Park (the Parks), with the remaining to be located in freehold agricultural land. Tenure of land within and surrounding the Project Area is shown in **Figure 3.1**.

Once operational, the total amount of land occupied by the Project would be approximately 342 ha (4 % of the total Project Area). Land not needed for wind farm infrastructure would continue to be used for forestry and grazing.

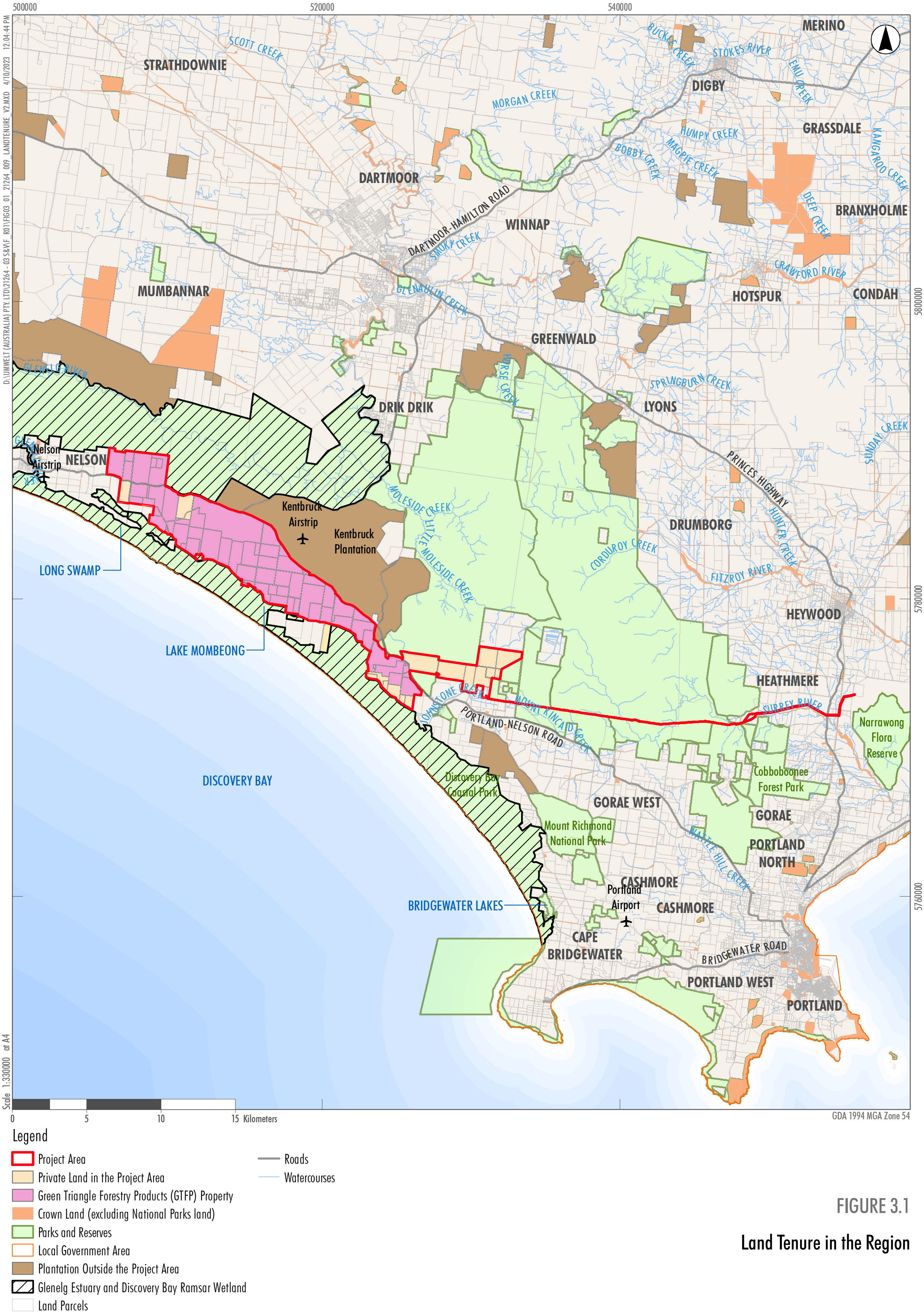

FIGURE 3.1

Land Tenure in the Region

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

The region surrounding the Project Area is characterised by the following land uses:

- The eastern and western portions of the wind farm site are characterised by freehold agricultural land generally used for grazing.
- The Parks are located east and north-east of the wind farm site. The transmission line corridor traverses east-west beneath an existing road (Boiler Swamp Road) which bisects the two parks.
- The nearest township to the Project Area, Nelson, is located approximately 3 km west of the wind farm site.
- Discovery Bay Coastal Park extends along the coastline south of the wind farm site. Discovery Bay is a popular tourist destination with spectacular views and environmental values.
- Kentbruck Plantation, a Victorian owned state forest leased by Hancock Victorian Plantation (HVP), is situated north of Portland-Nelson Road and north of the wind farm site.
- The Glenelg Estuary and Discovery Bay Ramsar site (the Ramsar site) is located to the north-west and south of the wind farm site, outside the Project Area boundary. This Ramsar site was listed in 2018.
- Lower Glenelg National Park is located north of the wind farm site, outside the Project Area boundary.
- The Glenelg River runs to the north and west of the wind farm site, outside the Project Area boundary.

The Project Area covers an area of up to 8,350 ha. As shown in **Table 3.1**, this comprises 8,318 ha for the wind farm site and 21 ha for the transmission line corridor. The Project Area is located across 121 individual land parcels owned by 22 different public and private landholders.

Table 3.1: Area and number of land parcels in the wind farm site and transmission line corridor

Project area component	Area (ha)	Number of land parcels	Number of landowners	% of area is freehold (plantation)	% of area is freehold (non-plantation)	% of area is public land
Wind farm site	8,318	89	9	85.7	14.2	0.05
Transmission line corridor	21	33	15	0	51.7	48.3
Heywood Terminal Station	11	1	1	0	0	100
Project Area	8,350	121*	22*	85.4	14.3	0.3

*Several of the same land parcels and landowners occur within both the wind farm site and transmission line corridor. The total number of land parcels and landowners in the Project Area is therefore not the numeric sum of each component of the Project Area.

There is an existing network of public roads both surrounding and internal to the Project Area, as well as several private access roads within the plantation in the wind farm site (see **Figure 3.2**). Public roads in the plantation are used by plantation vehicles and by members of the public accessing destinations south of the plantation along the coast. Portland Airport is located approximately 17.5 km east of the wind farm site, Nelson Aerodrome is 3.9 km to the west, and a private airstrip (Kentbruck Airstrip) is located within the HVP Kentbruck Plantation north of Portland-Nelson Road and 2.4 km from the wind farm site (see **Figure 3.1**).

The Project Area is a highly viable wind farm location due to its strong and consistent wind resource. Additional advantages of the site include a low population density in surrounding areas, extensive existing road networks, and proximity to the existing AusNet 500 kV transmission network. This electrical infrastructure would allow electricity produced by the Project to be transported to the Portland Aluminium Smelter (the major load centre in western Victoria) and other parts of the State.

3.2.2.2 Land tenure

The Project Area includes freehold land used for forestry purposes and smaller freehold landholdings. The Proponent will enter into commercial agreements with private landholders to host the Project.

Land not under private ownership includes local and State roads and Crown land parcels. Crown land is located throughout the southern and eastern portions of the Project Area and in surrounding areas, including Cobboboonee and Lower Glenelg National Parks and 'paper roads' (parcels of land that are legally recognised as roads but have not been formed into roads). Approximately 17.6 km of the transmission line route would be located beneath an existing road that passes through the Parks (see **Figure 3.3**).

Approximately 1,219 ha (15 %) of land within the Project Area is subject to a Native Title determination with the Gunditjmara People and is held by the Gunditj Mirring Traditional Owners Aboriginal Corporation (GMTOAC). The Proponent is sponsoring the Gunditj Mirring Registered Aboriginal Party (RAP) to prepare a Cultural Values Assessment (CVA) to inform preparation of an Indigenous Land Use Agreement (ILUA) and Cultural Heritage Management Plan (CHMP). Relevant lease and licence arrangements for elements of the Project on Crown land would be finalised with the Victorian Department of Transport and Planning (DTP) following planning approvals being obtained.

3.2.2.3 Environmental and cultural assets and sensitivities

The Project Area is bound by conservation areas, commercial plantations and agricultural land (see **Figure 3.1**). North-east of the Project Area is Lower Glenelg National Park, within which a section of the Glenelg River is located. The park is known for its cultural landscape which is highly valued by the Gunditjmara people.

South of the Project Area is Discovery Bay Coastal Park, which features a range of coastal landscapes with extensive beaches, coastal cliffs, dune fields, wetlands, and woodland forest communities. This park is also known for the Cape Nelson Lighthouse and Cape Bridgewater fur seal colonies.

Located east of the wind farm site are the Parks, which offer a range of outdoor activities including camping, bushwalking and horse riding. The Parks are characterised by areas of lowland forests, heathlands and wetlands.

The wind farm site is not located within any national parks or state forests. The transmission line would pass through the Parks and would be constructed beneath an existing road (Boiler Swamp Road).

The Ramsar site is located to the north-west and south of the Project Area (see **Figure 3.2**). It was designated as Australia's 66th Wetland of International Importance in 2018. The site covers an area of approximately 22,289 ha and comprises three broad systems that support different wetland types: freshwater wetlands, the Glenelg Estuary, and the beach and dune system. These systems support a range of ecosystems that provide habitat for a diversity of waterbirds, fish, and plants. The area is popular for recreational and tourism activities and is of cultural significance to the Gunditjmara people who have a living association with the site (DELWP, 2017). The Ramsar site comprises two nationally important wetlands: Long Swamp and Glenelg Estuary (see **Figure 3.2**).

No part of the Project Area is located within the Ramsar site (see **Figure 3.1**). All turbines have been located to be at least 500 m from wetlands within the Ramsar site. The topography of the plantation and the western area of agricultural land within the wind farm site generally falls towards the Ramsar site. This suggests that rainfall of the wind farm site would flow either overland or underground towards the Ramsar site, eventually reaching Discovery Bay. **Chapter 9 *Surface water, groundwater and groundwater dependent ecosystems*** contains more information on the Ramsar site and an assessment of potential impacts from the Project.

There are seven current mapped wetlands in the north-east section of the wind farm site within agricultural land (DEECA Mapshare Vic 2023). The **Brolga Impact Assessment (Appendix D)** prepared for the Project also identified numerous smaller depressions located outside the boundaries of these wetlands. There are several creeks located east of the wind farm site, including Johnstone Creek and some unnamed creeks. The Glenelg River is located north and west of the Project Area. The transmission line would cross the Surrey River three times. Horizontal directional drilling (HDD) is proposed for these crossings.

A large portion of the Project Area covers recognised areas of cultural heritage sensitivity and areas of high archaeological potential, with several sensitive landform-systems likely to contain Aboriginal cultural heritage. The Victorian Aboriginal Heritage Register indicates that there are several items of Aboriginal cultural heritage value recorded within the Project Area. These range from single to multiple flint artefacts to larger artefact scatters and shell middens. More information on Aboriginal cultural heritage values in the Project Area is provided in **Chapter 11 *Cultural heritage***.

Two places of historic heritage value are located within the Project Area: The Former Kentbruck School (H7121-0053), which was recently listed on the Victorian Heritage Inventory (VHI) as a result of the Project investigations, and the Boiler Swamp Sawmill which has been delisted from the VHI. No items of local heritage value are located within the Project Area. More information about places of historic heritage value is provided in **Chapter 11 *Cultural heritage***.

The Project Area is located within the Glenelg Plain and Bridgewater bioregions, where several threatened ecological communities (TECs) and species listed under the *Flora and Fauna Guarantee Act 1988* (Vic) (FFG Act) and *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) are identified with the potential to occur. **Chapter 7 *Biodiversity*** provides more information on the TECs and threatened and migratory species that may be impacted by the Project.

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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

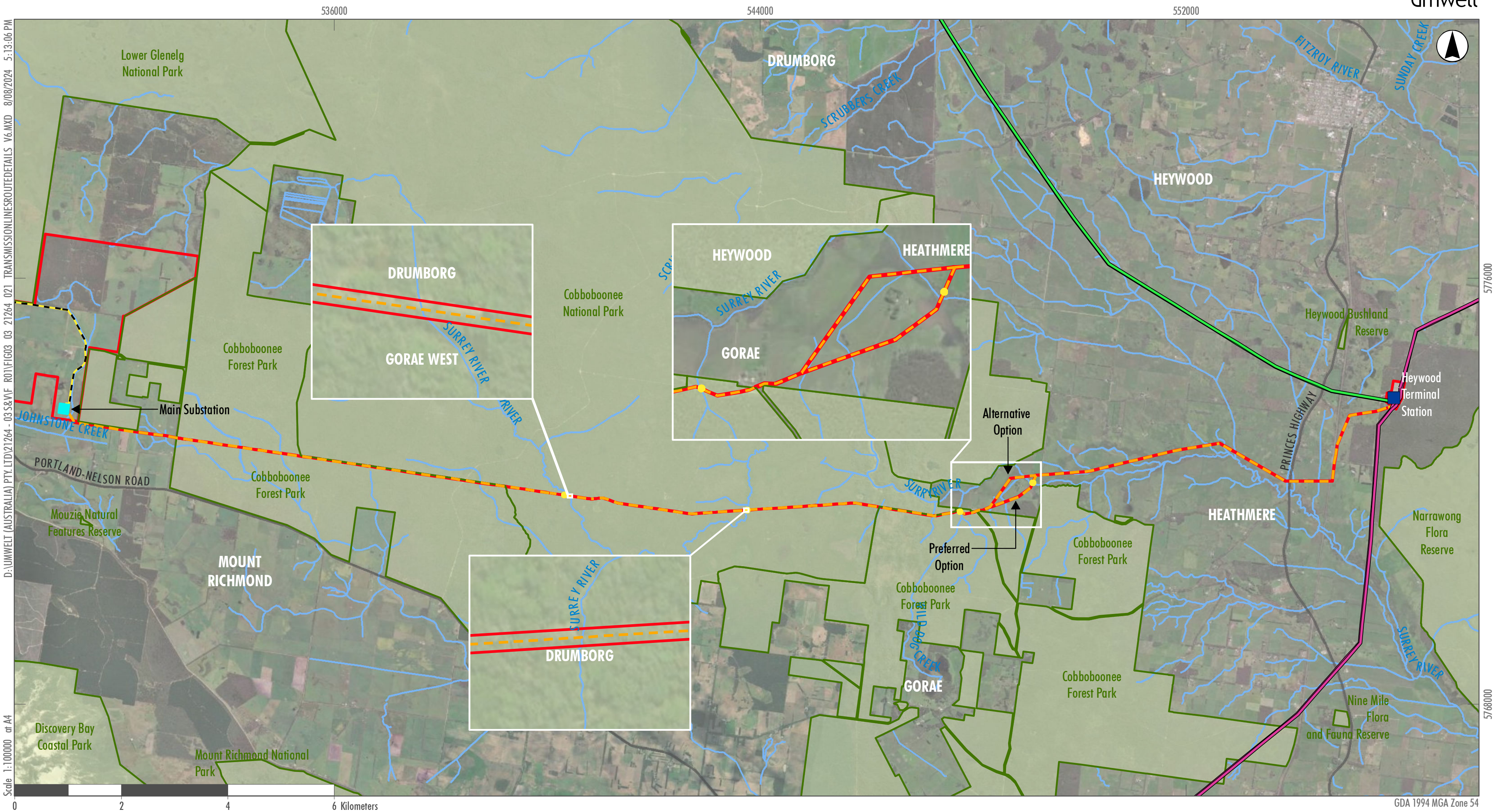
Temporary Wind Farm Infrastructure

- Concrete Batch Plant
- Laydown Areas
- Site Compounds

FIGURE 3.2

Wind Farm Details

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



Legend

Project Area, Roads, Watercourses, Parks and Reserves

Transmission Line Infrastructure
- Underground Transmission Line

Existing Transmission Network
- 275 KV
- 500 KV

Permanent Wind Farm Infrastructure
- Substation
- Internal Access Roads
- 275 kV Powerline - Underground

FIGURE 3.3

Transmission Line Route Details

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

3.3 Project components and layout

As shown in **Figure 3.2**, the Project would involve the following key components and permanent infrastructure:

- Up to 105 wind turbines
- Permanent hardstand areas and foundations at each turbine location
- Up to three collector substations
- Underground and overhead powerlines connecting the wind turbines to the collector substations
- A main wind farm substation to which all the collector substations would be connected
- A high voltage powerline connecting the collector substations to the main substation, which would be a combination of overhead and underground cabling
- Transition stations at which the high voltage powerline would transition from overhead to underground or vice-versa (if needed)
- A 275 kV underground transmission line connecting the main substation into the electricity network
- Access roads, including:
    - Site access points: Existing site access routes into the commercial forestry operation would be utilised to minimise the need for new site entrances
    - Internal access roads: Existing access tracks within the commercial forestry operation and on land currently used for agricultural purposes would be used where possible.
- An onsite quarry
- Up to eight meteorological monitoring masts (met masts) within the wind farm site
- Up to two permanent site compounds, including 30 carparking spaces at each location.

Temporary infrastructure associated with construction of the wind farm would include:

- Up to three concrete batching plants
- Laydown areas with a footprint of approximately 0.6 ha located at each turbine
- Up to six construction compounds, each containing a site office, carparking, storage, amenities, and a workshop.

The Project would also require offsite works to facilitate the Project, including intersection upgrades along the delivery route of Project components (see **Section 3.3.9**).

3.3.1 Wind turbines

The Project would include up to 105 wind turbines, each made up of three blades to harness the wind and turn a rotor. The rotor is connected to a shaft within the nacelle which sits on top of the turbine tower. The nacelle houses a generator that converts mechanical energy into electricity and the wind turbine control systems. Each turbine would produce between 4 and 8 MW of peak power output, with a total wind farm capacity of approximately 600 MW and annual production of approximately 2,000 gigawatt-hours (GWh). Typically, each turbine will start producing power when wind speeds reach 3.5 m/s.Each wind turbine would have an approximate hub height of 175 m and maximum rotor diameter of 190 m, with blade tip height extending from 60 m above ground level to up to 270 m above ground level (as indicated by the schematic in **Plate 3-1**). The exact dimensions would be determined during detailed design of the Project depending upon selection of the turbine model. Wind turbine towers are typically constructed of steel but hybrid concrete steel towers are possible.

3.3.1.1 Hardstand areas and foundations

Hardstand areas would be required at the base of each wind turbine to provide a stable platform for construction of each turbine's tower, nacelle, and rotor components. Each hardstand will also allow for maintenance activities during the Project's operation. The hardstand areas proposed as part of the Project would have a footprint of approximately 0.4 ha, subject to the final wind turbine model selected and its dimensions. The turbine hardstand areas would be retained during operation of the Project.

Each wind turbine would also have a concrete slab (gravity) or rock anchor foundation, which will be subject to detailed geotechnical assessment. Foundations would have a circular or polygonal footprint with a nominal diameter of 25 m and depth of approximately 4 m.

Additional construction laydown areas would be required within the wind farm site for delivery and temporary storage of Project equipment during construction, as discussed in **Section 3.3.7**.

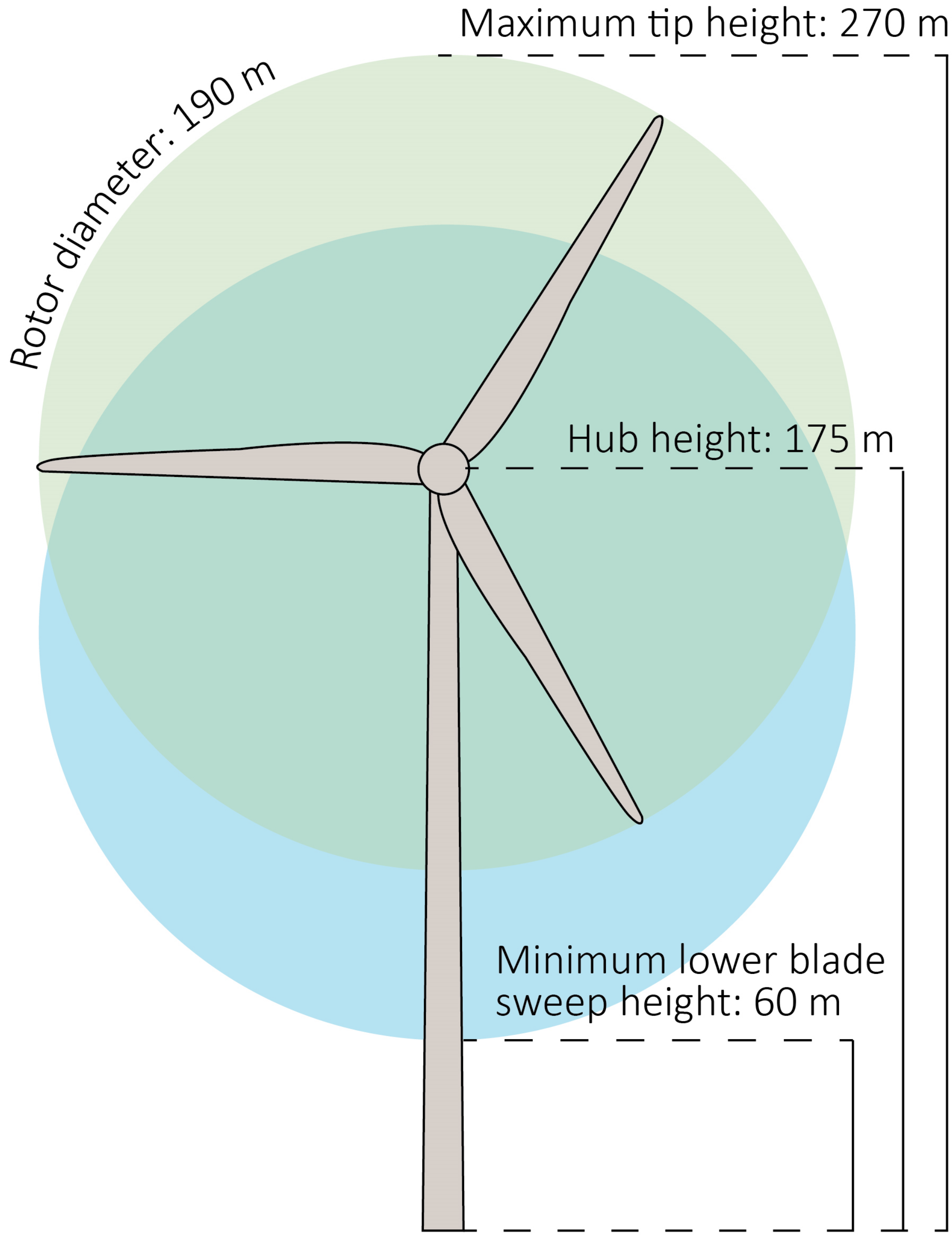


Plate 3-1: Indicative wind turbine dimensions

3.3.2 Electrical reticulation

The Project would require new electrical reticulation that involves the construction of underground and overhead cabling throughout the wind farm site and electrical substations. Electrical reticulation transfers the electricity produced by each wind turbine to the Project's collector stations and main substation. A new transmission line to connect the Project from the main substation to the existing electricity network is also proposed.

3.3.2.1 Main electrical substation

A main electrical substation would be constructed in the wind farm site to facilitate connection of the Project to the existing electricity network. This substation would be located near the eastern boundary of the wind farm site to minimise the distance between the substation and the connection point to the transmission network (at the Heywood Terminal Station) (see **Figure 3.2**).

The main substation would have a footprint of up to 3.3 ha with a maximum height of approximately 40 m. It would contain protection equipment and a control room with communications equipment, with tanks for storing water and oil for maintenance of the collector and main substation equipment. The substation would be constructed on a hardstand, with appropriate contamination/stormwater controls used around the oil tanks such as bunding and concrete slabs. The substation would be fully enclosed in security fencing with sufficient space for a fire break and screening around the perimeter.

3.3.2.2 Collector substations

Up to three collector substations would be constructed within the wind farm site to facilitate collection and distribution of electricity generated from the wind turbines into the main substation, and ultimately the existing electricity network. Indicative locations of the collector substations are shown on **Figure 3.2**.

The collector substations would have a footprint of approximately 1 ha with a maximum height of approximately 35 m. Each substation would contain a range of electrical equipment including step-up transformers, protection equipment (including lightning protection), and a high voltage bus bar connecting to the high voltage overhead powerline (see **Section 3.3.2.3**). The collector substations would be constructed on hardstands, with the transformers mounted on concrete slabs. The collector substations would be fully enclosed in security fencing.

3.3.2.3 Onsite wind farm powerlines

The Project would involve the installation of up to 190 km of underground powerlines (33 kV or 66 kV) connecting the wind turbines to the collector substations, and up to 27.8 km of high voltage overhead and underground powerline (likely 275 kV, subject to detailed design) connecting the collector substations to the main wind farm substation (see **Figure 3.2**).

The overhead section of the high voltage powerline would run along Portland-Nelson Road from the western collector substation to the eastern collector substation. The powerline would then run adjacent to existing roads in the Green Triangle Forest Products (GTFP), pine plantation to the Portland-Nelson Road / Sandy Hill Road intersection.

The underground section of the high voltage powerline would run from the transition station beneath Portland-Nelson Road, then continue underground to the main wind farm substation.

The proposed alignment of the powerline is shown in **Figure 3.2**.

The underground route through the GTFP plantation is the preferred option.

3.3.2.4 Transition stations

The Project may require a transition station to facilitate transition of the high voltage powerline from overhead to underground. The transition station would be located near the south-eastern corner of the wind farm site at the Portland-Nelson Road / Sandy Hill Road intersection (see **Figure 3.2**). **Section 3.3.2.3** contains a description of the 275 kV powerline route options, only one of which would include a transition station (one of the options would involve transitioning the powerline from overhead to underground at the collector substation, where a standalone transition station would not be required).

The transition station would have a footprint of approximately 1 ha and would contain terminal poles, cable termination structures, switchgear and protection equipment, enclosed within a security fence. If required, a small building (15 m x 4 m) would be located adjacent to each transition station to house spare equipment.

3.3.3 Transmission line

The Project would require a new 275 kV transmission line to connect the Project to the existing transmission network. The transmission line would be entirely underground between the Project and the transition station proposed adjacent to the existing Heywood Terminal Station.

To identify a preferred route for connecting the Project to the electricity grid, an assessment of feasible route and configuration options for the transmission line was undertaken (refer to **Transmission Line Options Assessment (Appendix A)**. The assessment identified a preferred option for consideration in this EES. The preferred route is described in the following sections.

The transmission line route is approximately 26.6 km and would extend underground from the main wind farm substation near the eastern boundary of the wind farm site to the existing Heywood Terminal Station (see **Figure 3.3**). The transmission line would bisect the Parks for approximately 17.6 km, where it would be installed beneath the road formation of an existing road (Boiler Swamp Road).

After exiting Cobboboonee Forest Park the underground line would continue for 1.2 km through freehold agricultural land. As shown on **Figure 3.3**, two options have been identified for this section of the transmission line. The slightly shorter southern route is the preferred option, but due to its proximity to a swampy area adjacent to the Surrey River it may not be feasible for underground construction. The viability of this option will be determined in response to geotechnical investigations to be undertaken during detailed design and only one option would be constructed.

The transmission line would then continue underground for 7.8 km until its connection point into the Heywood Terminal Station. Before entering Heywood Terminal Station, the transmission line would connect into a transition station, where it would transition into an overhead line within Heywood Terminal Station.

The underground route through the Parks is well understood and has been delineated into a 6.5 m-wide construction footprint. The construction footprint would be entirely within the road formation. No direct removal of native vegetation within the Parks is proposed as a result of the transmission line, however possible encroachment of tree protection zones (TPZs) has been accounted for in the Project's determination of potential impacts on native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP 2017) (Native Vegetation Guidelines) (see **Chapter 7 *Biodiversity***). The section east of Cobboboonee Forest Park would have a construction footprint width of 9 m. The construction methodologies for the two sections of transmission line are described in **Section 3.5.2.**

3.3.3.1 Boiler Swamp Road

Boiler Swamp Road is an unsealed public road that extends from Blacks Road at Mount Richmond in the west to the intersection with Cut Out Dam Road at Gorae in the east, through the Parks. The transmission line connecting the wind farm to the existing electricity network would be installed beneath Boiler Swamp Road.

Boiler Swamp Road is recorded on the Victorian Department of Energy, Environment and Climate Action (DEECA) Register of Public Roads. Any road recorded on a Register of Public Roads is a 'public road' for the purposes of the *Road Management Act 2004* (Vic). Boiler Swamp Road is a Rural Class 5 road as defined by Austroads, and has a sub-class of 5C Class Type 'Minor'. It is managed by DEECA as described in the *Road Management Plan October 2019* (DELWP and Parks Victoria, 2019). The roadway (i.e. the trafficable section) is generally between 5 and 6 m wide. Managed shoulders on each side of the road are between 1 and 1.5 m wide.

3.3.3.2 Connection to the Heywood Terminal Station

The Project transmission line would connect to the existing Heywood Terminal Station. The transmission line would connect into an existing 275 kV busbar within the terminal station. A busbar is a component of the substation that conducts electrical current between the transmission line and the substation.

The Heywood Terminal Station is the main terminal station interconnecting the Victorian 500 kV transmission with the South Australian transmission network via a double circuit 275 kV line. Heywood Terminal Station also supplies the Portland aluminium smelter via a double circuit 500 kV line.

3.3.4 Site access

The Project Area is bound by and encompasses roads managed by the Head of Transport for Victoria, GSC and DTP and other public road assets. Access to the wind farm site for construction and operational traffic would be via Portland-Nelson Road. Ten site entrances to the wind farm site are proposed off Portland-Nelson Road at the road intersections outlined in **Table 3.2.** These site entrances provide access to an existing network of internal access roads in the commercial forestry site and adjoining farmland (**Figure 3.2**).

All site entrances, except for Cowlands Lower Road, would facilitate delivery of wind turbine components. Cowlands Lower Road would be used for accessing the main construction compound and onsite quarry (see **Figure 3.2**).

The nine access points proposed to be used for the delivery of Project components would be used by oversize and overmass (OSOM) delivery vehicles and would need to be widened (e.g. with laying of temporary pavement and temporary removal of fences and other infrastructure at some locations) (see **Table 3.2** below). **Chapter 15 *Transport*** contains more detail on transport requirements of the Project.

Upgrade requirements for each access point are outlined in **Table 3.2**.

Table 3.2: Site access points and upgrade requirements

Site Access ID	Intersection	Upgrade requirements
SE1	Portland-Nelson Road – Sandy Hill Road	• Temporary pavement to be constructed along OSOM wheel-path.
SE2	Portland-Nelson Road – New site entrance (opposite Sandy Hill Road)	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path • Remove and reinstate property boundary fence and gate (if required).
SE3	Portland-Nelson Road – Wilson Lower Road	• Temporary pavement to be constructed along OSOM wheel-path.
SE4	Portland-Nelson Road – Windmill Road	• Temporary pavement to be constructed along OSOM wheel-path.
SE5	Portland-Nelson Road – Cowlands Lower Road	• N/A – not used for OSOM access.
SE6	Portland-Nelson Road – Nine Mile Road	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path.
SE7	Portland-Nelson Road – Lightbody Road	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path • Extend pipe culvert to suit new intersection (remove and replace if necessary).
SE8	Portland-Nelson Road – New site entrance (adjoining Dewars Road)	• Temporary pavement to be constructed along OSOM wheel-path • Remove and reinstate wooden street marker post.
SE9	Portland-Nelson Road – Unnamed Road	• Temporary pavement to be constructed along OSOM wheel-path.
SE10	Portland-Nelson Road – New site entrance (adjoining Nelson No. 1 Road)	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path.

Blacks Road would be used by light vehicles during the brolga breeding season, creating an alternative access point to the wind farm site east of Portland-Nelson Road. Blacks Road would also be the main construction access point for the transmission line and main substation.

The existing plantation roads are 5-10 m wide and are all unsealed. As discussed in **Section 3.3.4,** some internal access roads and intersections would need to be upgraded to facilitate delivery of the wind turbines and other large Project components (e.g. using temporary pavement). The need for these upgrades will be confirmed once the turbine model has been selected and dimensions are known.

3.3.5 Onsite quarry

A new limestone quarry would be established in the wind farm site adjacent to the existing quarry operated by GTFP, on North Livingston Road (see **Figure 3.2**). The cemented "cap rock" quarry would operate during both construction and operation, with the extracted material to be used for hardstands and for upgrades to existing access roads or construction of new access roads. The quarry would have a life in the order of 27–32 years (wind farm operation of 25–30 years plus the 2 to 2.5 year Project construction period).

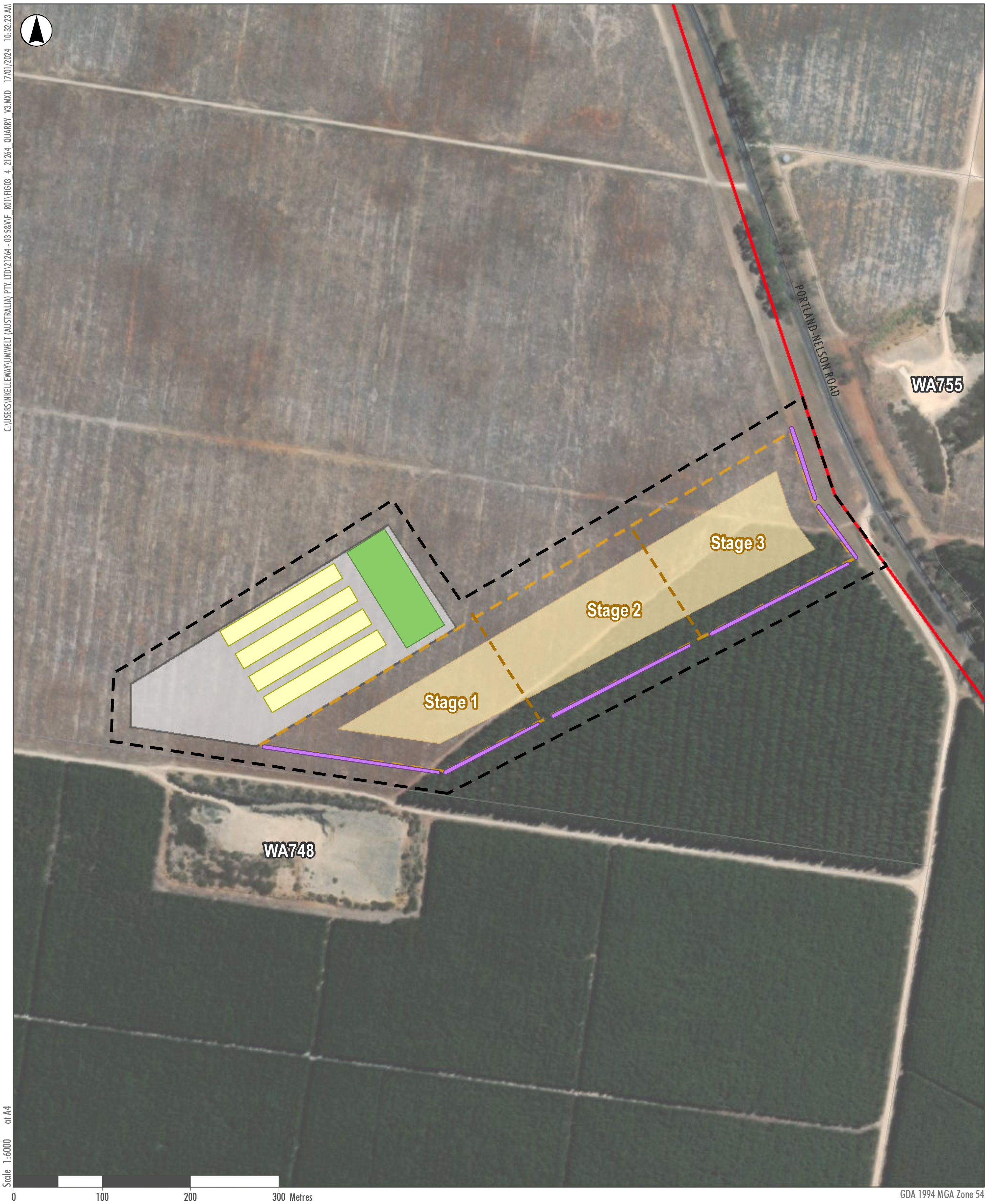
The total extracted volume is estimated to be up to 300,000 cubic metres (m^3), with material to be extracted progressively during construction. It is anticipated that the Project would require approximately 230,000 m^3 of material for road sub-base (< 100 mm) and 70,000 m^3 of material for road base/pavement (< 30 mm) during the construction phase. The quarry would not be producing aggregates for use in concrete.

The proposed extraction area contains a viable resource of up to 450,000 m^3 (which is approximately 150 % of the Project's construction material requirements). This would allow for contingencies in resource viability, additional incidental works, as well for any road maintenance works required during the Project's lifetime.

The quarry would require a Work Authority of approximately 18 ha, comprising approximately 9 ha of extraction area, 3.5 ha of overburden and product stockpiles and 1ha of quarry office/parking infrastructure, with the remainder of the Work Authority being buffers (see **Figure 3.4**). The quarry would be a traditional soft rock extraction operation and would not involve any drilling or blasting. The maximum depth of the extraction, including overburden, would be approximately 14 m.

In addition to the extraction area, associated infrastructure would also be established including a processing area, stockpiling areas, water storage tanks, office and amenity facilities, and car parking.

The quarry would be a new Work Authority and would only be available to supply material for the life of the Project. The Work Authority would be surrendered at the decommissioning of the Project, and the quarry will be rehabilitated to a landform that will be suitable to continue use as a source of plantation timber. The Work Authority for the quarry would not be an extension of the adjacent existing quarry Work Authority (WA748) owned by GTFP. Refer to the **Quarry Work Plan Requirements Report** (**Appendix W**) for further details on the quarry.



Legend

Project Area
Parks and Reserves
Roads
Watercourses
Work Authority Boundary
Extraction Limit
Disturbance Area
Hardstand
Product Stockpile Area
Soil Stockpile Area
Stage 1 Overburden Stockpile Area

FIGURE 3.4

Proposed Quarry

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

3.3.6 Meteorological monitoring masts

The Project would involve installation of up to eight met masts. Each met mast would measure wind speed, wind direction and other meteorological conditions to be used by the wind farm operator to evaluate the performance of the wind farm. All met masts would be permanent structures supported by a small concrete foundation and guy wires. Met masts would house equipment such as anemometers (wind speed sensors) and pyranometers (solar irradiation sensors).

The height of each met mast would be approximately three-quarters (75 %) of the hub height of the installed wind turbines. This is expected to be no higher than 160 m above ground level. The locations of the masts are not currently known and would be determined during detailed design of the Project.

3.3.7 Permanent site compound

The Project would involve construction of one or two permanent site compounds for operation and maintenance of the Project. Each compound would include offices, sheds, carparking, and laydown areas, and would be established at a construction compound location within the wind farm site (see **Figure 3.2**). Each compound would have a footprint of approximately 0.35 ha (50 x 70 m).

3.3.8 Temporary ancillary infrastructure

Ancillary infrastructure required for construction of the Project would include:

- Up to three concrete batching plants located in the wind farm site. Onsite concrete batching reduces the number of vehicle movements on public roads. The concrete batching plants may be mobile to allow concrete batching to occur close to wind turbine foundations. Each plant would have a footprint of approximately 1 ha and be accessed by internal access roads.
- Construction laydown areas located in the wind farm site. These laydown areas would be used for temporary storage of wind farm and transmission line equipment and materials and would be rehabilitated following completion of construction. Each laydown area would have a footprint of approximately 1 ha and be accessed by internal access roads.
- Up to six ancillary construction compounds which would house temporary site offices, carparking, storage, amenities and a workshop, with a footprint of up to 2 ha each.

The indicative locations of this ancillary infrastructure are shown in **Figure 3.2**, but are subject to change during detailed design of the Project.

3.3.9 Offsite works

Delivery of Project components from overseas is expected to be via the Port of Portland, given its proximity to the Project Area and deep harbour which allows it to receive wind turbine components. Other options include the Port of Geelong and Port of Melbourne, which are both located further from the Project Area. From the Port of Portland, Project components more than 4.4 m in length (e.g. wind turbine blades and tower sections) would be transported from the Port of Portland to the Project Area via the following public roads: Madeira Packet Road, Cape Nelson Road, Malings Road, Bridgewater Road, Henty Highway, and Portland-Nelson Road (see **Figure 3.5**). All other components would be transported directly to Portland-Nelson Road via Madeira Packet Road and Henty Highway.

The transmission line route would be accessed using the network of existing roads that intersect with Portland-Nelson Road, including Boiler Swamp Road, Mt Kincaid Road, Jennings Road, Jarretts Road, Meaghers Road and Rifle Range Road (see **Figure 3.3**). The existing Heywood Terminal Station would be accessed via the Henty/Princes Highway, Meaghers Road and Rifle Range Road. The Portland-Nelson Road and Blacks Road intersection would be used for construction access to the main substation and commencement of the underground transmission line construction.

In addition to the upgrades needed to the site access points in **Table 3.2**, three narrow points along the OSOM route have been identified which would need to be widened to allow for transport of wind turbine blades (see **Table 3.3** and **Figure 3.5**). These pinch points would require vegetation/infrastructure removal from within the blade swept path and/or temporary road pavement. Sections of road, including within the wind farm site, may also need to be upgraded (e.g. widened or improved road pavements). The need for these upgrades would be determined as the detailed design of the Project progresses and as part of the Traffic Management Plan (TMP). Potential traffic and transport impacts of the Project on these roads and the broader public road network are assessed in **Chapter 15 *Transport***.

Table 3.3: Intersection upgrade requirements along OSOM route

Pinch Point ID	Intersection	Upgrade requirements for OSOM vehicles
PP1	Portland-Nelson Road – Henty Highway-Portland-Nelson Road	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path • Road signs to be made removeable • Remove and reinstate property boundary fence (if required).
PP2	Portland-Nelson Road and Cashmore Road	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path, including diversion of swale drain • Power poles to be protected • Street light poles to be protected (or removed if required) • Traffic island to be made driveable • Road signs to be made removeable.
PN3	211 Portland-Nelson Road	• Remove vegetation within blade swept path • Remove and reinstate property boundary fence (if required) • Temporary pavement to be constructed along OSOM wheel-path.

Legend

- Pinch Points
- Site Access Points Requiring Upgrades
- Site Access Points not Requiring Upgrades
- Project Area
- Vehicles with Loaded Height <4.4m
- Vehicles with Loaded Height >4.4m
- All Vehicles

FIGURE 3.5

Proposed Transport Routes from the Port of Portland to the Wind Farm Site

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

3.4 Pre-construction

Before construction can commence, a range of pre-construction activities would be undertaken including geotechnical investigations and preparation of environmental management plans in accordance with the Project's Incorporated Document (refer to **Planning Scheme Amendment Documents (Appendix Y)**.

3.4.1 Geotechnical investigations

Geophysical investigation would be undertaken to determine ground conditions within the Project Area. Investigations would be undertaken at each wind turbine location, along access tracks, at the construction compounds, main substation and collector stations. This work would inform the detailed wind turbine foundation design, as well as identify any micro-siting requirements for Project infrastructure. Geotechnical investigations may consist of:

- Testing where external roadworks are required and along Boiler Swamp Road including test pits adjacent to the seal edge to assess existing pavement thickness and properties as well as the subgrade properties, dynamic cone penetration testing to refusal and laboratory testing of existing subgrade and pavement materials.
- Test pitting at each turbine location, the quarry location, substation locations, construction laydown areas, and key access tracks.
- Boreholes at selected wind turbine locations, substation locations, quarry, HDD locations and major creek crossings.
- Thermal resistivity and electrical resistivity testing at selected wind turbine locations and substation locations.

3.4.2 Management plans

Detailed management plans would be prepared before construction commences in consultation with the Responsible Authority and relevant environmental regulators.

The Incorporated Document requires a Construction Environmental Management Plan (CEMP) and associated sub-plans be approved prior to construction of the Project. The CEMP would be required to be prepared in a manner that meets, at a minimum, the requirements of all relevant environmental laws, Project approvals, approval conditions, the Project's Environmental Management Framework (EMF) (see **Chapter 19 *Environmental management framework***) and proposed mitigation measures.

The CEMP is the overarching management document for construction of the Project, and will be developed as a single document with a series of stand-alone sub-plans for specific aspects. Monitoring plans will be appendices to management plans as required.

Plans outlined in the Incorporated Document that will sit within the CEMP include:

- Native Vegetation Plan (NVP)
- Flora and Fauna Management Plan (FFMP)
- Sediment, Erosion and Water Quality Management Plan (SEWQMP)
- Hazardous Substances Management Plan
- Air Quality Management Plan
- Construction Noise and Vibration Management Plan (CNVMP).

Plans outlined in the Incorporated Document that will sit outside the CEMP however align with the construction phase include:

- Traffic Management Plan (TMP)
- Emergency Response Plan
- Community and Stakeholder Engagement Plan
- Complaints Investigation and Response Plan.

An Independent Auditor will be sought to audit and to verify compliance of these plans with the associated requirements. The CEMP will be treated as a live document that allows for continual improvement and adaptive management throughout construction of the Project.

3.5 Construction

The Project would be constructed in either a single stage or over two stages. **Figure 3.6** provides indicative workforce numbers for each month of construction. A single stage of construction would involve up to 350 workers, with construction occurring over a two-year period. If constructed over two stages, the construction period would be extended to 2.5 years and have a smaller peak workforce. The average workforce would be 250 workers for single stage construction and 190 workers for two stage construction. Construction would be restricted to a 12-hour window on Monday-Saturday, where possible unless in the case of unexpected risks to the Project and extenuating circumstances only.

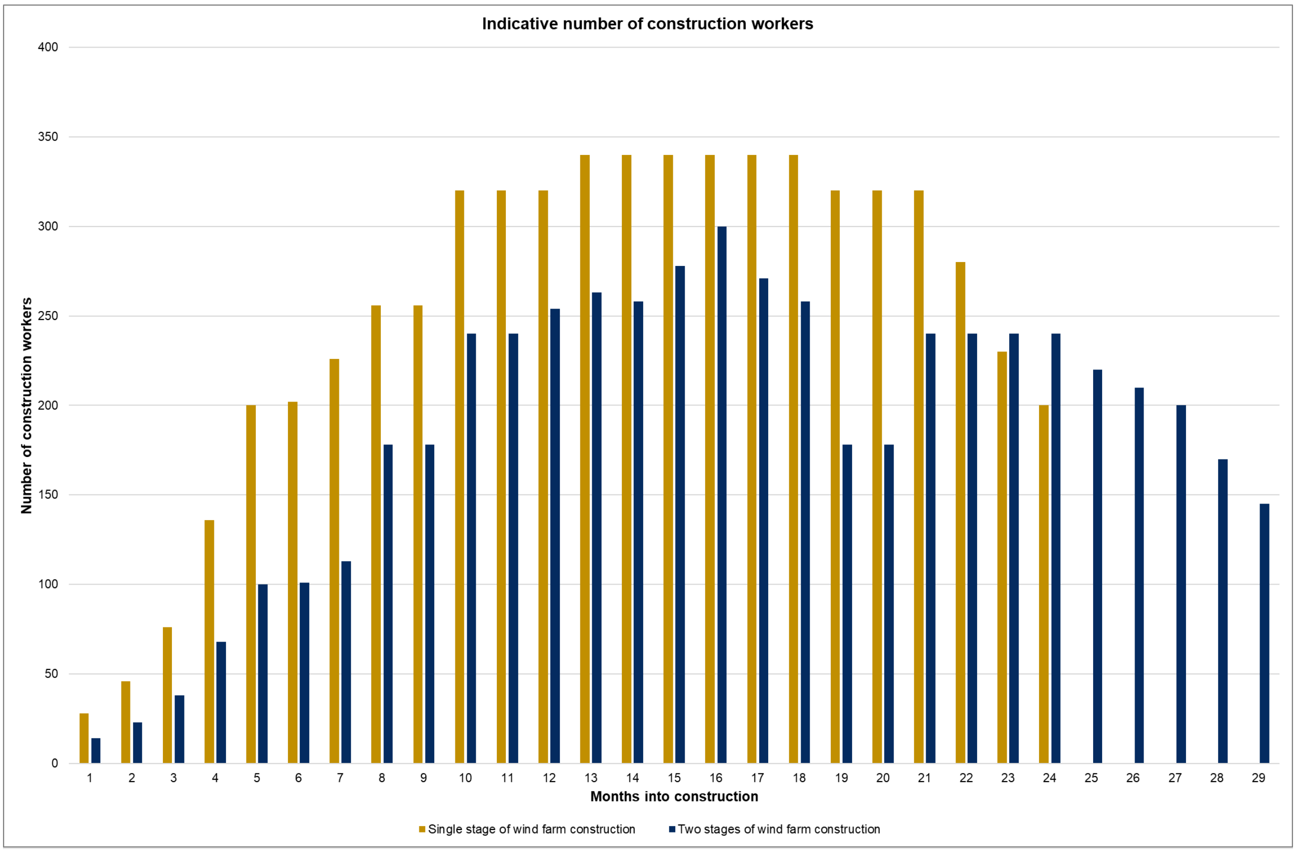


Figure 3.6: Indicative number of construction workers throughout the project's construction period

Construction of the Project would involve two main components: the wind farm and the transmission line. The following key construction activities would be undertaken:

- Preliminary works including clearing of pine trees within the plantation, removal of vegetation from agricultural land, and removal and storage of topsoil for future use
- Internal access road and public intersection upgrades
- Construction of internal access tracks (where needed)
- Establishment of concrete batching plants and construction of site buildings and construction compounds
- Establishment of new onsite quarry to provide road-base material. Material would be extracted progressively throughout the Project construction period
- Construction of hardstand and laydown areas
- Excavation of turbine foundations and form work
- Construction of cable trenches and power pole foundations; laying of bedding materials, cables and backfill; and replacement of topsoil
- Construction of the main wind farm substation, collector substations and operation and maintenance building, involving excavation and pouring of building foundations and concrete pads at switchyard and transformer locations

- Installation of wind turbines, collector substations, main wind farm substation, cabling and powerlines and other ancillary electricity infrastructure
- Progressive rehabilitation of the site and landscaping.

3.5.1 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 include:

- Site investigations and testing
- Vegetation clearing
- Establishment of construction compound areas
- Upgrades and/or construction of public and internal access roads (see **Section 3.3.4** and **Section 3.3.9**).

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 circular or polygonal footprint with 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 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. The remaining excavation material would be used for onsite road infrastructure where needed, or disposed of in accordance with relevant legislation and regulations. The number of foundations being constructed concurrently would be dependent on the final Project schedule, but is anticipated to be up to 15 at any one time.

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 HDD (under boring) are required. The general procedure for the laying of underground cables via trenching would be as follows:

- Pre-construction work, involving clearance of vegetation within the powerline route and stripping of topsoil. Topsoil would be stored adjacent to the trench to be used for rehabilitation of the trenches.
- Trench excavation in 50-100 m sections. Excavated material would be stored adjacent to the trench for subsequent backfilling, in separate piles to the topsoil.
- Trench dewatering if groundwater is intersected, followed by laying the cables within a bed of protective sand or thermally stable backfill if required.
- Backfilling and compaction of previously excavated material if suitable.
- Placement of tape warning of the presence of electrical cables followed by reinstatement of topsoil.
- On completion, the powerline route may be marked with small marker posts. The surrounding vegetation would be allowed to regrow.

Approximately 210,000 m^3 of concrete would be required for construction of the Project. Concrete would be batched onsite and be used primarily for the construction of turbine foundations and ancillary infrastructure. Material for concrete batching would come from offsite quarries as the material available on site is not suitable for use in concrete.

A source of water would be required during Project construction for dust suppression, road-base construction, and to make concrete for turbine foundations and concrete slabs (e.g. at substations). Water supply requirements are estimated to be up to 250 megalitres (ML) over the Project’s 24-month construction period and would be met through the extraction of groundwater from several production wells across the plantation sub-area.

3.5.1.1 Quarry

Approximately 300,000 m^3 of crushed rock would be required during construction of the Project and would be sourced from the onsite quarry. Crushed rock would primarily be used for upgrading and constructing internal access tracks and establishing hardstand areas.

The quarry would be a traditional soft rock extraction operation and would not involve any drilling or blasting. Extraction would be with dozers or excavators ripping and pushing the material into stockpiles. The stockpiles would then be either loaded directly into trucks for despatch or delivered to the quarry stockpiles for storage or further processing / sizing. Mobile equipment typically used on site would consist of:

- A dozer for ripping and pushing.
- A mobile sizing / processing plant.
- Multiple excavators for ripping, feeding the processing plant, stockpiling, loading
- A wheel loader for stockpiling, feeding the processing plant and loading trucks
- Road trucks for transporting the material from the extraction area to the stockpile area.

3.5.1.1.1 Extraction

The maximum depth of extraction, including overburden, would be approximately 14 m and the quarry would operate with either a series of benches or a continuous batter slope, depending on rock quality and specific product requirements. Regardless of the working face profile (either benches or a continuous slope) the profile would not be steeper than 1V:3H (1 vertical:3 horizontal), from the extraction crest to the quarry floor.

Development of the quarry and the proposed extraction process would consist of the following steps:

- Approximately 18,000 m^3 of soil removed and stored in mounds along the edge of the disturbance area prior to use in progressive rehabilitation or stored in temporary stockpiles at the edge of the disturbance area. Soil stockpiles would be limited to a maximum height of 2 m.
- Approximately 120,000 m^3 of overburden removed and used to create the initial hardstand, plant, and stockpile areas, then placed in storage mounds within the disturbance area, or later on used directly in progressive rehabilitation or backfilling/reprofiling. Overburden stockpiles would be limited to a maximum height of 12 m.
- Resource extracted and either loaded directly for despatch or hauled to the mobile processing plant or stockpile area. Resource stockpiles would be limited to a maximum height of 10 m.
- Cut off drains, soil mounds and other surface water management control features would be continually updated and modified to ensure dirty water is directed to the quarry sumps in the excavation and clean water is directed away from the disturbance area.

The staging methodology would be to start the quarry at the south west end of the extraction area, close to North Livingston Road and opposite the existing quarry used by GTFP. The overburden from this initial area would be used to create the hardstand and stockpile areas. After removal of sufficient overburden extraction of the resource would commence, with the majority of the material being placed into stockpiles to allow for quick dispatch when required. Material may be loaded directly from the working face as well as from the product stockpiles if product demand requires this.

The initial excavation would expand to the full width of the extraction area, then progressively develop north-east, cutting terminal faces to a batter not steeper than 1V:3H. It must be noted that extraction is a fluid process and that the staging lines as presented on the **Figure 3.4** is indicative only to demonstrate the sequence of working.

Refer to the **Quarry Work Plan Requirements Report** (**Appendix W**) for further details on the proposed quarry.

3.5.2 Transmission line construction within the Parks

The underground section of the transmission line would be installed in excavated trenches. Boiler Swamp Road is lined by native vegetation on both sides that needs to be avoided and protected to avoid the proposed works having a substantial effect on Cobboboonee National Park. To minimise potential impacts on native vegetation, the underground cabling would be placed under the existing road rather than within or outside the road shoulder. The proposed method of trenching and cable laying is by way of an integrated trenching wheel excavator, laying unit box, track mounted carrier unit and cable reel. 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.

Multiple lengths of cable would be needed to construct the full length of the underground transmission line. Cable drums that hold 800 m cable lengths would be used, requiring each 800 m length of cable to be joined to the following 800 m length. Joint bays would be installed approximately every 750 m, providing 50 m of cable slack to allow for maintenance activities. These joint bay locations would take into consideration the culvert locations, and conservation significant species such as the Apple Jack *(Eucalyptus splendens).*

Once the machinery has installed 750 m of cabling, it would turn around to install the second parallel length of cabling, and then turn around again to install the third and final cable. This would minimise disruption along Boiler Swamp Road, with just one 750 m section to be closed to the public at any one time for safety reasons. The construction methodology and footprint allow for emergency vehicles to pass at any time.

The 1.25 m trench depth is required to allow sufficient cover for traffic loadings and protection of services, and to allow sufficient depth of thermal sand for electrical performance of the cables. The 1 m spacing between trenches is required to avoid caving in of adjacent trench walls and backfill material between successive passes.

3.5.2.1 Excavation method proposed along Boiler Swamp Road

The proposed excavation method for constructing the transmission line within the Parks involves an integrated trenching wheel excavator, laying unit box, track mounted carrier unit and cable reel. It uses a single pass operation where excavation, laying and backfilling are done in a linear progression (see **Plate 3-2**). A potential cable installation contractor has advised that a 6.5 m-wide corridor would provide sufficient space for cable installation and a bypass vehicle. The width of the main cable laying vehicle is 3.5 m, accompanied alongside during cable laying by a sand supply vehicle, which can tuck in behind or in front of the cable laying vehicle with a few moments notice, therefore clearing a minimum of 3.0 m road plus 1.0–1.5 m verge width, sufficient for a full size general or specialist fire appliance to pass, which are maximum 3.0 m wide and require a 3.5 m wide passage.

This method is the best option for constructing the Project's underground transmission line through the Parks as it has the smallest construction footprint of the available options, which will allow for impacts on native vegetation to be minimised within the constrained Boiler Swamp Road formation. The trenching wheel can be offset from the centre line of the cable laying vehicle allowing for minimisation of the construction corridor (see **Plate 3-3**). It will also provide the largest possible space on the road for facilitating emergency vehicle access and minimising impacts on Parks Victoria and DEECA operations.

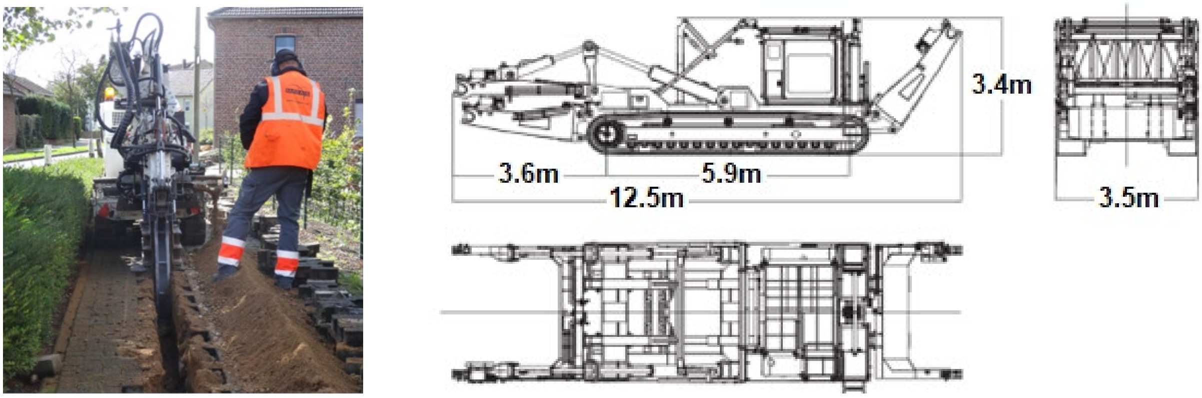


Plate 3-2: Integrated Trenching Wheel

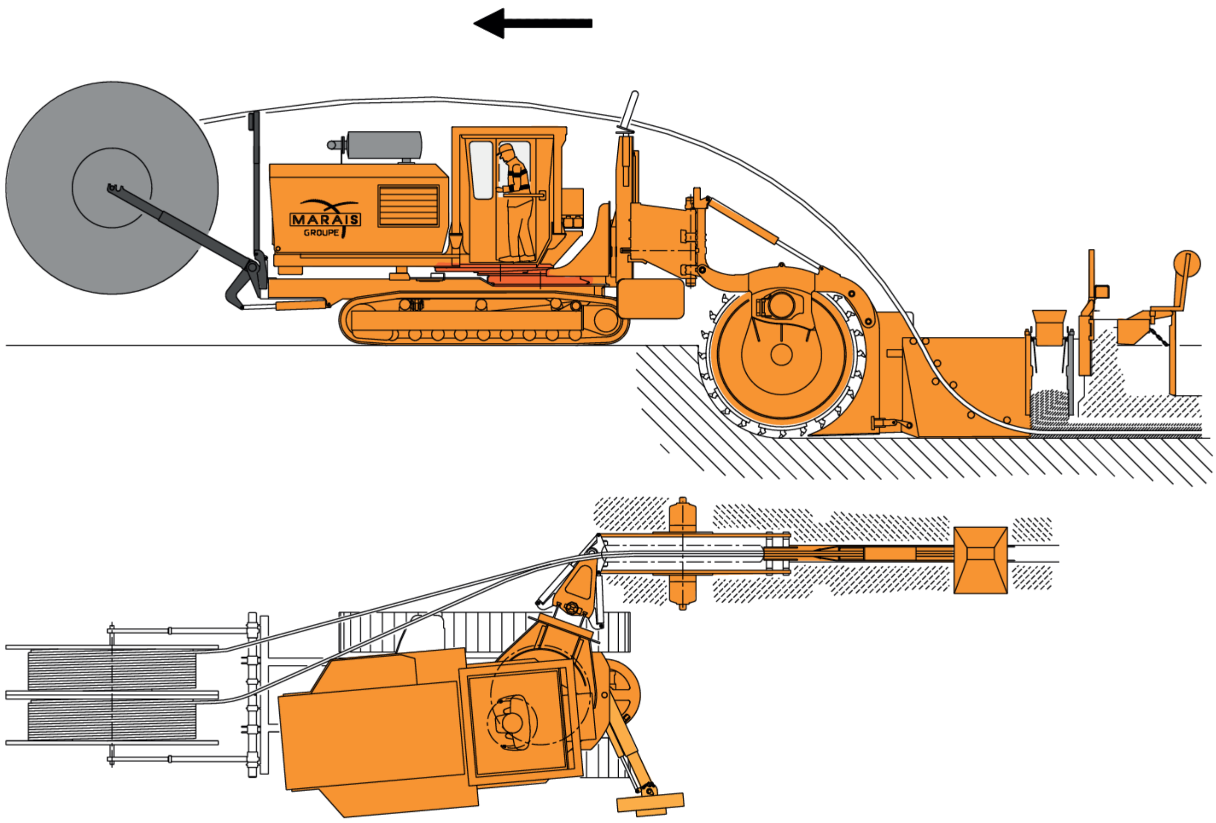


Plate 3-3: Indicative technical diagram showing trenching wheel offset

(Source: https://www.tesmec.com/sites/default/files/2020-07/FC_GD2_01-2019_EN.pdf)

3.5.2.2 Non-excavation methods proposed

Underboring, specifically HDD would be used at several locations along Boiler Swamp Road, HDD originated in the oil fields in the 1970s and evolved through the merging of technologies in the utility and water well industries. It has become the preferred method of pipeline installation in urban areas and for crossing obstacles such as rivers and roads. HDD is a 'steerable system' for the installation of pipes, conduits and cables in a shallow arc using a surface-balanced drilling rig, as illustrated in **Plate 3-4**.

HDD is completed in two main stages:

- Pre-construction:
  - A detailed design plan and profile drawings are produced for each section of HDD
  - Site preparation is performed by setting up the drilling rig, with slurry to lubricate the borehole
  - Conduit is placed at the exit point, ready for pulling back once the cable has been installed.
- Installation:
  - Two pits are created at the entry and exit points
  - A pilot hole with a small diameter is drilled along the designed path, with a bottom hole assembly (BHA) drill bit and usually with survey tools and tracking technology
  - Once the pilot hole is complete and the drill bit leaves the ground at the exit point, the BHA drill bit is replaced with a larger diameter reaming tool to enlarge the pilot hole. This is completed in stages until the desired circumference is met
  - Pullback then occurs, with the drill bit replaced by a pull head, reaming tool and swivel, which ensure the hole remains open and lubricated as the conduit is pulled back from the entry pit.

It is anticipated that cable entry and exit points would be between 5 m and 10 m from the riverbed/terraces. Exact lengths and depths of cabling will be determined during detailed design following detailed survey of the road. HDD along the full length of the transmission line is not feasible as a single HDD length can be up to approximately 150 m.

Plate 3-4: HDD Installation

HDD is proposed for crossing the Surrey River at three locations within Cobboboonee Forest Park. It may also be used to cross concrete culverts that would not be able to be reinstated if removed for trenching. The construction methodology to be used at culverts will be determined during detailed design and in consultation with relevant road authorities and land managers. All culvert crossings would be inspected following construction and any damage rectified. A regime for inspection and rectification procedures would be set out in the CEMP.

HDD would also be used to avoid and minimise impacts on Apple Jack in the Parks, including their root systems. Most tree roots will typically be within the top 600 mm, but there is potential for some roots to extend deeper than this. It is likely that Apple Jack root systems would be shallow below the road surface, as these areas are generally highly compacted and have reduced availability of resources including water.

Detailed root investigations are required to accurately identify the depth of roots of Apple Jack and Western peppermint trees within the soil profile. A sample of sites could be assessed to determine if roots are present beneath the road, and at what depth. The findings would be used to detail the design to specify locations appropriate for the use of HDD.

In accordance with AS 4970-2009, directional drilling at a depth of 600 mm or greater is an appropriate technique to avoid impacts on roots within tree protection zones of Apple Jack trees. It is therefore likely roots would be avoided if directional drilling at a depth of 600 mm or greater is maintained.

3.5.2.3 Cable installation and backfill management

The integrated cable installation process proposed allows for the reuse of excavated material as backfill. Any minor amounts of excess spoil would be spread and rolled back into the road surface where appropriate to do so. Excess spoil that needs to be removed would initially be laid on tarpaulins at existing road intersections within the Parks (where no impact on native vegetation would occur), then transported at the end of each day to either an agreed location within the Parks (identified in consultation with DEECA and Parks Victoria), or if no location within the Parks is identified, to offsite laydown areas to be reused elsewhere for wind farm construction or offsite disposal at an appropriate licensed facility. Disposal locations would be identified in the CEMP to be prepared in consultation with relevant authorities.

The timing and methodology of the cable installation will be carefully considered to ensure that open trenches, which are a safety hazard, are managed appropriately. The Project wou;d ensure that trenches are backfilled as soon as possible. This is one of the reasons why the integrated trenching wheel method is the preferred approach for the Project. The linear operation allows for trench backfilling to occur in the same pass as trench excavation and cable laying. This process can occur at a rate of approximately 500 m to 800 m per day, with other options far slower.

The backfill would be controlled and tested to ensure it meets compaction requirements of Parks Victoria and DEECA, and to ensure the finished surface is robust and trafficable in a way that matches the pre-existing condition. This would ensure the ongoing use of Boiler Swamp Road is not affected beyond the construction period.

3.5.2.4 Joint bay and link box installation and backfill management

Joint bays are required approximately every 750 m or less along the underground transmission line to connect consecutive lengths of cabling. The joint bays would be installed at roughly the same time as the adjoining cabling to minimise the duration of road closures for Boiler Swamp Road. The cables would be laid inside the joint bays then capped and coiled and left in place until the adjoining section of cable has been installed and is ready to be joined.

Link boxes may be required adjacent to each joint bay to provide a weatherproof environment for connecting links used for earthing or cross-bonding of the metallic sheaths of high voltage cables. The link boxes would comprise a pre-cast concrete box with cast iron cover.

The joint bays and link boxes would be installed within the transmission line’s 6.5 m construction corridor. The joint bays and link boxes would be buried at a depth of approximately 500 mm below the road surface which would allow road maintenance activities to be undertaken as normal, with no risk of damage to the infrastructure.

3.5.2.5 Road surface reinstatement

DEECA is responsible for the ongoing management of Boiler Swamp Road, which is classified as a Class 5C Public Road. The classification of a road is primarily determined by its function, with 5C roads considered to be minor roads that provide links to low and moderate use visitor sites, parks and forests areas. Class 5C roads generally have the following features:

- All weather, single lane, two-way unsealed formed road, lightly gravelled
- Fair quality service road
- Designed for speeds of 20 to 60 km/hr
- Minimum carriageway width of 4 m.

Reinstatement of Boiler Swamp Road for the Project would take into consideration the classification of the road and the maintenance standards it must meet. For example, potholes with a depth of more than 200 mm and length of more than 0.5 m will be reinstated to road surface level, in accordance with the maintenance requirements for Class 5C roads as specified in the Road Management Plan (DELWP and Parks Victoria, 2019).

Once construction of the transmission line has been completed, the entire length of Boiler Swamp Road will be graded to ensure its condition is returned to the same consistent standard across its entire length. Boiler Swamp Road is currently graded twice per year.

Table drains and verges will also be reinstated to pre-construction condition if impacted during construction.

Cables are buried at minimum 1 m below the natural ground surface, with an additional nominal 200 mm road base plus nominal 50 mm pavement thickness. Cable marker posts and construction drawings/documentation will clearly show the location of all infrastructure, so accidental exposure of cables during any future maintenance operations would not occur, given normal minimum works planning and authorisations processes.

3.5.2.6 Carparking, construction compounds and stockpiling

At the end of each work day, the cable laying vehicle would be parked at the side of Boiler Swamp Road adjacent to the work site for the following day. This section of the road would remain closed to the public until all cable lengths have been installed, but emergency access would be maintained by parking the vehicle to the side of the road. No light vehicles would be parked within the Parks overnight. For longer duration parking (e.g. over the Christmas holiday period), construction vehicles would be parked at the site compound located outside of the Parks.

Construction compounds and overnight laydown areas for the underground transmission line would be located on farmland outside of the Parks. These areas would be used for storing construction materials such as cable drums, equipment and plant when not in use, and as temporary facilities for construction staff (e.g. with kitchen and bathroom facilities). The Proponent is currently in discussions with landowners to identify laydown areas to be used during construction of the transmission line.

The laydown areas would also be used for the temporary stockpiling of any backfill and spoil as required. The preferred construction methodology for the underground transmission line, which involves integrated excavation, cable laying and backfilling equipment, has a relatively small construction footprint due largely to its ability to trench and backfill in the same pass, minimising spoil generation. Most of the excavated material is proposed to be reused as backfill during the cable installation process, with minor amounts of excess spoil to be spread and rolled back into the road surface where appropriate to do so.

Excess spoil that needs to be removed would initially be laid on tarpaulins at existing road intersections within the Parks (where no impact on native vegetation would occur), then transported at the end of each day to either an agreed location within the Parks (identified in consultation with DEECA and Parks Victoria), or if no location within the Parks is identified, to offsite laydown areas to be reused elsewhere for wind farm construction or offsite disposal at an appropriate licensed facility. Disposal locations would be identified in the CEMP to be prepared in consultation with relevant authorities.

3.5.2.7 Vehicle turnaround locations

Existing road intersections in the Parks are proposed to be used as construction vehicle turnaround locations. As demonstrated in **Plate 35**, these intersections are large, cleared areas which would not require any vegetation removal to facilitate turning of Project construction vehicles.

Plate 3-5: Major Intersections Along Boiler Swamp Road, such as with Fish Hole Road, are Proposed to be Used for Construction Vehicle Turnaround and Daily Storage of any Spoil

3.5.2.8 Bushfire management

Bushfire management during construction of the transmission line will be considered as part of the TMP in terms of emergency access and egress for Project workers and emergency services personnel and vehicles. The Proponent will continue to consult with DEECA, Forest Fire Management Victoria (FFMV), Emergency Management Victoria and the Victorian Country Fire Authority (CFA) and any other relevant authorities to ensure adherence to regional guidelines regarding bushfire risk management, including maintaining emergency vehicle access.

Turnaround facilities for construction vehicles associated with the underground transmission line would also likely be used by the CFA where road closures are in place during construction. These turnaround locations would be located at existing road intersections within the Parks to meet specified CFA requirements (such as those shown in **Plate 3-6**). It is envisaged that offsetting the three trenches to one side of the road provides better operational flexibility for fire management authorities.

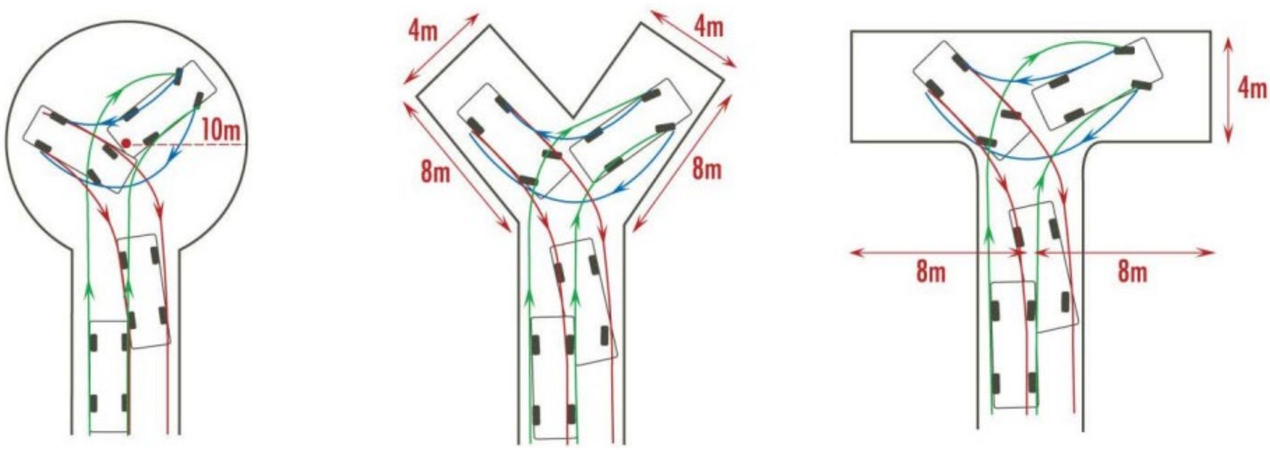


Plate 3-6: Minimum Vehicle Turnaround Dimensions for an 8 m-long Rural Fire Trucks (Downer, 2022)

In the event of a bushfire and mobilisation of large machinery by the emergency services, there would be adequate time for construction vehicles to cease operations and evacuate the section of road where cable laying activates are underway.

Furthermore, given the multiple road crossings along Boiler Swamp Road, it is likely emergency vehicles would only require access to a specific section of road if the bushfire is actually on that same section of road, and in such an event the cable laying team will be well aware and will take steps immediately to de-mobilise.

3.5.2.9 Maintenance considerations

In general, maintenance of the underground cable would be minimal. Underground assets including cables and joints are expected to be maintenance free throughout their respective design lives. Regardless, regular monitoring would be undertaken by the Proponent remotely. If a fault is detected, the joint bays or link boxes would be accessed for repair or further testing. These inspections would involve removal of the joint bay / link box lids and visual inspections of the pits. Emergency vehicle access along Boiler Swamp Road would be always maintained. Public access would be maintained where possible, however works required to the central joint bay, link box or cabling may require that the section of road be closed to the public and detours put in place.

The Proponent would consult with DEECA and Parks Victoria before carrying out maintenance of the transmission line. Consent from DEECA would be required to close sections of the road.

The design allows for approximately 50 m of cable slack at the joint bays. This would facilitate and reduce the time needed for maintenance, minimising disruption along Boiler Swamp Road. Maintenance would be infrequent and only in response to potential issues with the joint bays or link boxes.

3.5.2.10 Traffic management

Traffic management considerations relate to both Project construction traffic and public accessibility during transmission line construction or maintenance activities. Safety and environmental considerations for the Project include the planning of road closures and temporary detours, along with public notifications, barricading and signage. TMPs will be prepared for the Project, including the transmission line component, and will include vehicle management such as managing any two-way vehicle movements (e.g. of construction vehicles, or construction vehicles and emergency vehicles). The 6.5 m construction corridor is considered sufficient to manage any two-way vehicle movements required. Key stakeholders including DEECA and Parks Victoria will be consulted during development of the TMP.

Members of the public would not be permitted access through construction areas and would be diverted along alternative routes through the Parks, utilising Wrights Swamp Road, T and W Road, Fish Hole Road and Cut Out Dam Road. Sections of Boiler Swamp Road with a length of up to 1 km would only be closed when construction is underway for cable installation. This would reduce the length of road closures required and minimise disruption to road users.

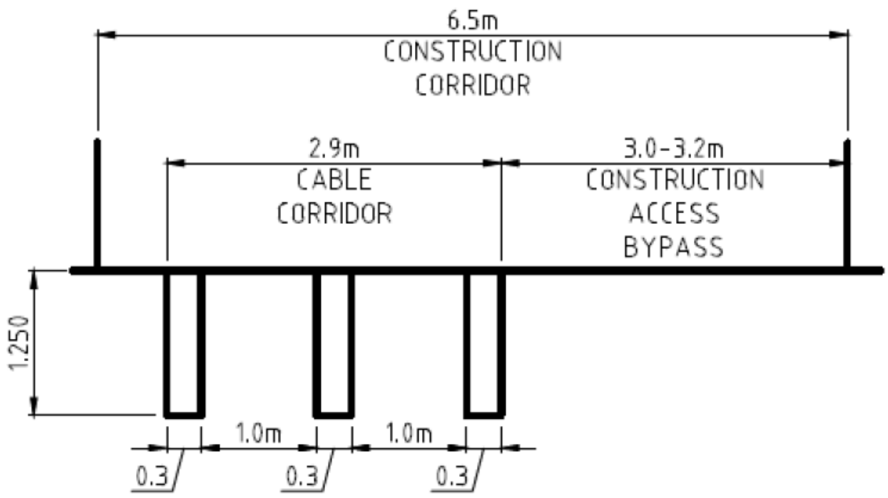


Plate 3-7: Indicative design of the underground section of the transmission line, comprising three trenches underneath an existing road with space for construction and emergency vehicles to pass alongside the trenches

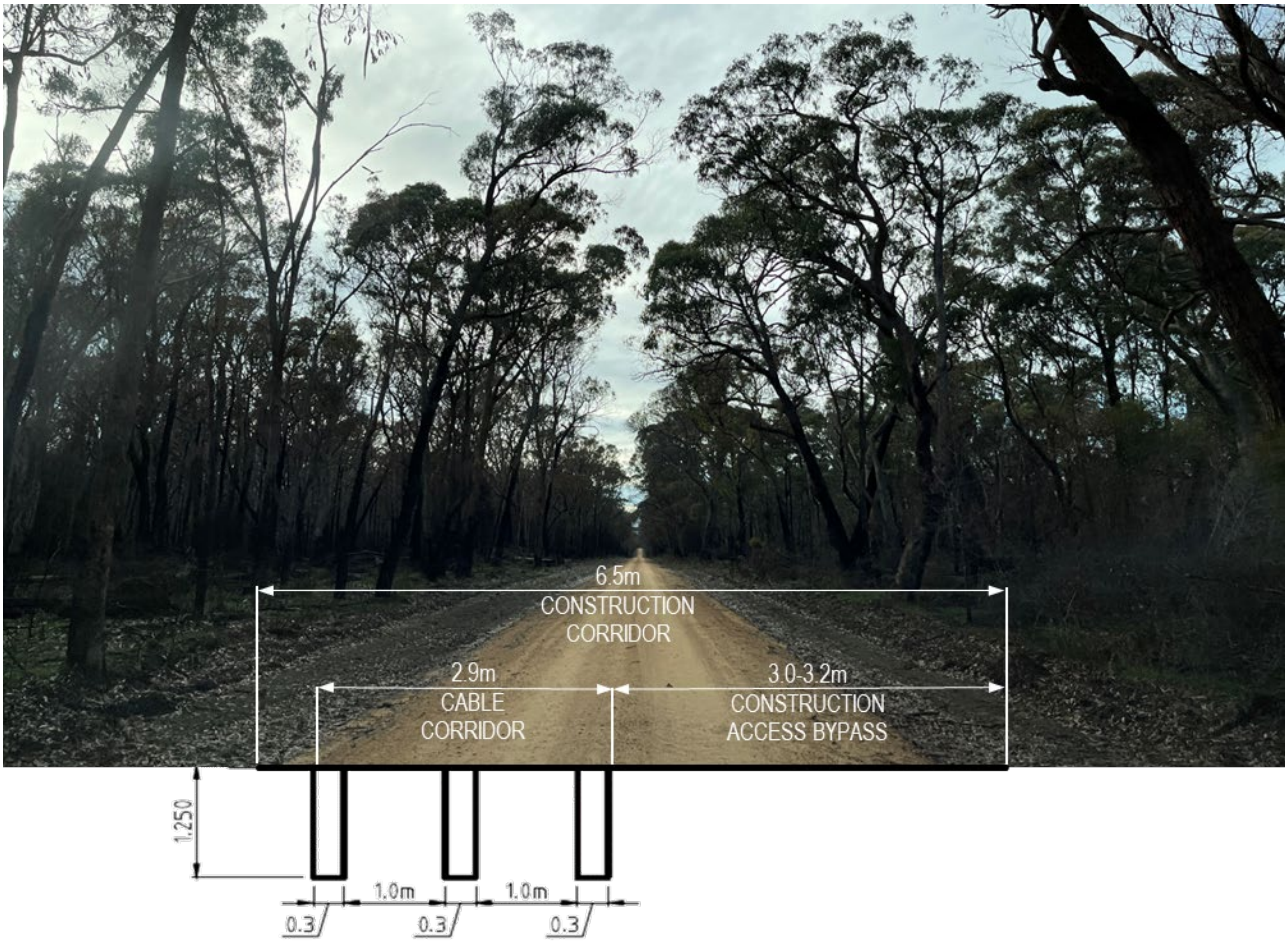


Plate 3-8: Indicative design of the transmission line along boiler swamp road (modified from (Downer, 2022))

3.5.3 Transmission line construction outside of the Parks

To the east of Cobboboonee Forest Park, the transmission line would be constructed using traditional open-cut trenching methods involving an excavator bucket. Excavator buckets are digging attachments with teeth that can be fixed to the arm of an excavator, as shown in **Plate 3-9**. The buckets are controlled by the excavator operator using controls in the cabin. This section of transmission line would have a maximum construction footprint width of 9 m.

Measures to manage construction impacts including those relating to spoil management, traffic and access and potential amenity effects would be implemented via the CEMP that would be prepared for the Project and that would incorporate the suite of measures outlined in **Chapter 9** ***Environmental Management Framework.***

Plate 3-9: Traditional excavator bucket (Downer, 2022)

3.6 Operation and monitoring

Before operation commences, detailed management plans would be prepared in consultation with the Responsible Authority and relevant environmental regulators. The overarching management document for the operational phase of the Project will be the Operations Environmental Management Plan (OEMP), as required by the Project's Incorporated Document. The OEMP will be developed in accordance with the requirements of the EMF and mitigation measures and address potential environmental impacts of operation and maintenance activities associated with the Project.

The operational life of the wind farm is expected to be between 25 and 30 years. During this period, operation, maintenance, and monitoring of the wind farm would include the following activities:

- Service 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 approval conditions.

A Supervisory Control and Data Acquisition System (SCADA) and other site equipment including met masts (see **Section 3.3.5**) would enable remote monitoring and control of the Project's electricity generation.

In general, maintenance of the transmission line would be minimal. Underground assets including cables and joints are expected to be maintenance free throughout their respective design lives. Regardless, regular monitoring would be undertaken by the Proponent remotely. If a fault is detected, the joint bays or link boxes would be accessed for repair or further testing. These inspections would involve removal of the joint bay / link box lids and visual inspections of the pits.

3.7 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.

The Project would comply with any relevant requirements for decommissioning as prescribed under any planning approval or subsequent permit or licence. A Decommissioning Environmental Management Plan (DEMP) would be prepared to manage the potential environmental impacts associated with decommissioning activities. The DEMP would specify controls for management of waste at the end of the Project's life, including the removal/replacement of turbines.

3.8 Waste management

The Project would generate various non-hazardous recyclable and non-recyclable wastes during construction, operation, and decommissioning. Waste would be managed in accordance with the environmental management plans prepared for the Project, including the CEMP, OEMP and DEMP. The plans will outline strategies to be implemented on site to manage, reuse, recycle and safely dispose of waste including:

- Separation and storage of recyclable and non-recyclable materials
- Reuse and collection/transportation of waste
- Procedures for tracking waste storage and disposal.

All non-hazardous general waste will be securely stored in appropriate containers at appropriate locations within the Project Area (i.e. temporary construction facilities and operation and maintenance facilities). Waste management facilities for all phases of the Project will allow waste to be segregated into streams that reflect the waste management principles of avoid, reduce, reuse, recycle and proper disposal.

Solid waste would be removed from the Project Area and disposed of by licensed contractors in accordance with Environment Protection Authority (EPA) requirements. Appropriate bins would be located where food is consumed to keep the Project Area tidy and free of litter. Recyclable materials (such as aluminium cans, glass and recyclable plastics) would be collected and sent to a licensed recycler by a licensed waste contractor.

Any waste hydrocarbons (such as oils, greases and hydraulic fluids) that may be produced by mobile plant and equipment during Project construction, operation, and decommissioning would be stored in suitable containers for removal at an EPA approved facility.

Wastewater generated by amenities during the Project construction phase will be collected in a tank(s) and periodically removed by a suitably licenced waste contractor. During the operational phase of the Project, the volume of amenities wastewater will be significantly lower than that generated in the construction phase and will be managed by either collection in a tank(s) and periodic removal by a suitably licenced waste contractor or in an on-site wastewater management system.

3.9 Safety and security

The Project will work to adhere to the highest safety and security standards, which would be managed in accordance with the environmental management plans prepared for the Project, including the CEMP, OEMP and DEMP. Plans outlined in the Incorporated Document that would also contribute to safety and security include:

- Traffic Management Plan (TMP)
- Emergency Response Plan
- Community and Stakeholder Engagement Plan
- Complaints Investigation and Response Plan.

These plans will include measures to ensure:

- All activities undertaken during the Fire Danger Period are appropriate under the *Country Fire Authority Act 1958* (Vic) and adhere to Country Fire Authority (CFA)'s *Design Guidelines and Model Requirements for Renewable Energy Facilities* (2024).
- All construction and operational works follow appropriate Work Health and Safety requirements.
- Clear communication with landowners, relevant stakeholders and the community regarding daily activities.

Security measures will also be implemented to limit public access to parts of the Project Area. These measures will include:

- Security fencing around electrical reticulation infrastructure and the operations and maintenance facility and exclusion zones around active construction areas.
- Night lighting of ancillary infrastructure will also be installed including potentially for some construction works. These light sources will be limited to low-level lighting for security, night time maintenance and emergency purposes.

Additional information on safety relating to traffic, aviation, and bushfire risk can be found in **Chapter 15 *Transport*** and **Chapter 18 *Safety, hazard, and risk.***

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