



Dundonnell Wind Farm

Frequently
Asked
Questions &
Transmission
Line FAQs

November
2018

At a glance

Capacity	336MW
Location	23km north-east of Mortlake, Victoria
Investment	\$560m
Turbines	80 turbines
Blade tip height	189 metres

Other wind farm infrastructure
Underground 33kV cables between
the turbines, onsite quarry and
concrete batching plant

Transmission connection
38km of 220kV overhead transmission
line and a new substation

Wind farm landholders
12 host landholders over
approximately 4500ha

Transmission line landholders
12 host landholders

Construction timeframes

Commencement:
Mid January 2019

Connection completion:
Late 2019

Wind farm and project completion:
Late 2020

Who is Tilt Renewables?

Tilt Renewables is an experienced developer, owner and operator of renewable energy generation. We have eight wind farms across Australia and New Zealand, including the nearby Salt Creek Wind Farm, Snowtown Wind Farm (Australia's second largest wind farm) and Tararua Wind Farm (New Zealand's largest wind farm). You can read more about Tilt Renewables at: www.tiltrenewables.com

What was the planning approval process for the wind farm?

We had extensive consultation with the community and general public as part of the Environment Effects Statement (EES). Our planning permit applications were submitted to the relevant authorities in April 2015, and the EES process also included public notification and an inquiry and panel hearing.

Following this, planning approval for the wind farm was granted for up to 96 turbines, as well as approvals for the transmission line and offsite substation. In December 2017, the Minister for Planning granted an increase in the maximum turbine tip height to 189 metres and a reduction to up to 88 turbines.

What was the approval process before building a transmission line?

The project was approved under the Commonwealth environmental legislation, in addition to the EES and planning permit application process. Tilt Renewables has Cultural Heritage Management Plans in place to ensure heritage impact is minimal.

Prior to construction, every piece of work is approved from the crossing of existing infrastructure, waterways, and any work within road reserves.

What can I expect leading up to construction?

Through November and December investigations and surveying will continue around the site. Off site we are reviewing and finalising designs, management plans and our detailed construction plans.

What can I expect during construction?

The first phase of construction will be public road upgrades and building a track for access. During this phase, expect to see road work zones on Woorndoo-Streatham Road and a short section of Woorndoo-Dundonnell Road. These works will require road building equipment such as graders, rollers and excavators.

The main construction phase will commence after the road upgrades are complete and will be a busy period on and around the site. Access tracks, foundations (including concrete batching), electrical installations and turbine erection are the main activities.

Most of the materials for the works will be quarried and produced onsite in a temporary quarry near the centre of the site – and some materials may need to be brought in from external quarries to ensure they meet VicRoads standards. Wind turbine parts will be delivered from port using a preapproved route. This route is not yet confirmed, but will be communicated when known.

The final phase of construction is the commissioning of the wind turbines and electrical systems. This will take several months to complete.

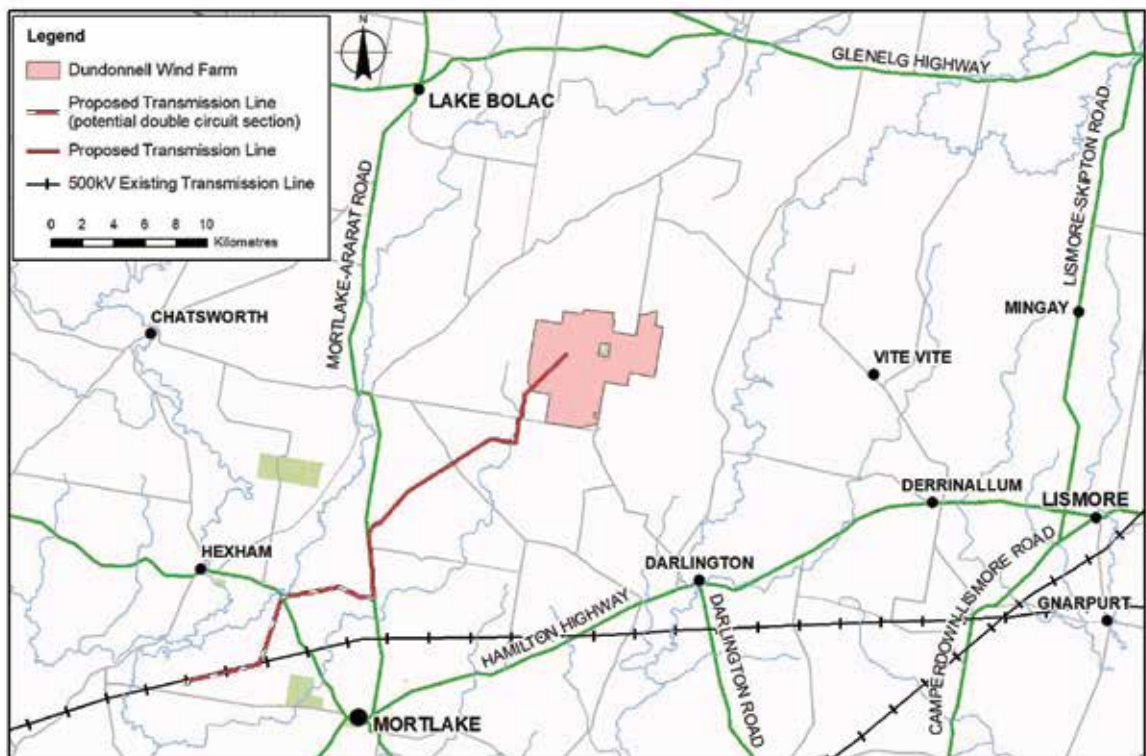
Construction of the transmission line will occur at the same time as the wind farm. Construction will be completed in a number of places along the 38km of transmission line at the same time. Work will not necessarily be undertaken in sequence along the line route but will move around.

We will continue to communicate with you and share additional information and details as we progress through construction.

How long will it take to build?

It will take about 24 months to complete. It is expected to be in full operation by late 2020.

The transmission line is expected to take around 14 months to build.



How many jobs will the project provide?

Dundonnell Wind Farm will provide 200 jobs during the construction period. It will provide an economic boost and employment opportunities by bringing demand for local goods and services. Our economic assessment has found that Dundonnell Wind Farm will provide over 1,500 indirect jobs as a result of its construction. Local businesses that will supply the construction of Dundonnell Wind Farm include:

- Electricians
- Transport operators
- Machine operators
- General labourers
- Quarry and material suppliers
- Concrete businesses.

Anyone interested in supplying local services or gaining employment is encouraged to register their interest on the goods and services register at the project website.

Once operational, Dundonnell Wind Farm will employ 10 full-time staff.

What are the environmental benefits of the wind farm?

The Dundonnell Wind Farm will produce enough energy to power more than 245,000 homes each year – or more than enough for all of Ballarat, Warrnambool and Geelong. It will save the emission of roughly 1.5 million tonnes of carbon – the equivalent of removing about 440,000 cars from our roads.

What are the community benefits of the wind farm?

Tilt Renewables is committed to providing support for the local community through benefit sharing programs to share the success of the Dundonnell Wind Farm.

Programs include a range of training and skills development programmes, and a community fund to support social and environmental programmes. The community fund will operate for the life of the wind farm and will be run by a community-led group.

Tilt Renewables consulted with the local community to determine the range of benefit sharing programs which will address key social, economic and environmental needs in the region.

Further information relating to benefit sharing will be communicated over the coming months.



Transmission Line FAQs

How long will it be?

The transmission line will be about 38 kilometres long. The majority of it will be located on private property, and the remaining 10 kilometres will be located within road reserves – Castle Carey Road and Mortlake-Ararat Road.

Why will it zigzag instead of going in a straight line?

There are many factors that need to be considered such as the availability of land access (both public and private), infrastructure constraints, native vegetation, areas of cultural heritage significance, and the configurations of property and dwelling locations.

During the development and approval phase of the project, a number of proposed transmission line routes were investigated. This included the review of environmental, planning, safety and social impacts, as well as active engagement with local landholders who would potentially be impacted by each proposed route.

How many poles will there be?

There will likely be 124 structure locations throughout the 38 kilometres, about 300 metres apart. There is a small section of transmission line between the new offsite substation on Connewarren Lane and the Mortlake Power Station (MOPS), which spans about 600 metres and will include two lattice towers to facilitate the 500kV connection at MOPS.

How big will they be and are they all the same?

The types of poles installed along the transmission line can generally be split into two categories – strain poles and intermediate poles. Single circuit transmission lines traditionally consist of three conductors plus a conductor for lightning protection and telecommunications, while double circuit lines would generally be twice that.

It is anticipated that less than 30 percent of the total poles will be the larger strain poles. The tallest strain poles may measure about 42 metres above ground level and have a base width of approximately two metres.

The strain poles are generally installed where the transmission line changes direction and/or crosses major roads or other infrastructure such as a powerline.

The height of the intermediate poles will range between 34 and 38 metres above ground level. The intermediate poles are generally utilised on the straight sections of the transmission line and have a base width between approximately 1.3 and 1.5 metres.

There is a small section (about 600 metres) of the transmission line between the offsite substation and the Mortlake Power Station (MOPS) which will include two lattice towers.

Some poles might require guy wires for support, however, the majority of poles will be designed to be free-standing.

While a pole without guy wires may be larger in size than one which has guy wires, it reduces the overall disturbance footprint of the transmission line, improves public safety around poles and reduces ongoing maintenance requirements.

What influences the design of the transmission line?

The design of the transmission line (including the size of the poles) is influenced by numerous factors, including:

- Voltage (e.g. 66kV, 132kV, 220kV), number of circuits, conductor (the wires) type/size, security level and design life requirements
- Line length, spans between poles, changes in direction and topography
- Structural loads due to the weight, wind, earthquake, ground water and others
- Electrical safety requirements
- Communication and earthing requirements
- Temperature limits and fluctuations
- Existing infrastructure constraints
- Native vegetation, planning requirements, areas of cultural heritage significance, property configurations and dwelling locations
- Road and traffic safety
- Fire safety.

What standards will the line be designed to?

The transmission line has been designed and will be constructed in accordance with (but not limited to) the following primary standards and regulations:

- Australian Standard AS/NZS 7000:2016 – Overhead line design
- Electricity Safety (Installation) Regulations 2009 (Victoria)
- Electricity Safety (Electric Line Clearance) Regulations 2015 (Victoria)
- The Road Management Act 2004.

Why steel poles?

The Dundonnell Wind Farm transmission line will use steel poles because they best meet all required standards. The use of steel poles for the 220kV transmission poles will also have less environmental and visual impact than lattice tower structures that may be used for transmission lines of this voltage or higher (note there is a small section between the offsite substation and Mortlake Power Station (MOPS) which will include two lattice towers to facilitate the 500kV connection at MOPS).

Another benefit of using steel poles is that they are likely to consist of three individual sections which fit together on site. This means they can be transported using conventional trucks and trailers, rather than over-dimensional transport methods.

Why can't it be underground?

For projects of this nature, it is not only cost prohibitive to install transmission lines underground for the distances they require, but there could also be a significantly greater environmental impact. This is because laying cables underground will likely impact a far greater area of native vegetation and environment due to trenching and the process of undergrounding the lines.

Can more than one wind farm share the same transmission line?

The short answer is yes – and Tilt Renewables is proud to have established an agreement for a shared transmission line solution which will be able to be used by other wind farm operators – avoiding the need for duplicate infrastructure.

However, there are many commercial, technical and regulatory considerations to enable this to happen. It also requires both wind farm operators to be fully committed to construction of these projects at or around the same time to allow for full coordination and agreement on the transmission line contractor/s, design, construction and operational contracts.

Tilt Renewables has worked closely with Woolnorth and AusNet Services over a long period to create a network solution to reduce the amount of transmission line infrastructure required for other proposed renewable energy projects in the region.

Who is building and will be responsible for the transmission line?

The new transmission line will be designed, built, owned and operated by AusNet Services. AusNet Services will engage a contractor to construct the line.



Above: Indicative single circuit steel suspension pole 31m



Above: Indicative double circuit steel pole



Above: Indicative double circuit steel pole

What gives the transmission network service provider the right to design, build, own and operate transmission lines?

Transmission lines are considered essential services under Victorian Government legislation. Under this legislation, the Essential Services Commission is responsible for granting transmission network service providers, such as AusNet Services, the right to use public land (including road reserves) for the installation of transmission lines.

Who pays for the transmission line?

While the transmission line will be designed, built, owned and operated by Ausnet Services, Tilt Renewables will pay for the installation, ongoing operation and maintenance of the network connection infrastructure.

Some of the poles are in the road reserves. Is road safety and flooding considered?

Road safety is certainly considered in the design and placement of poles in road reserves. To ensure all safety requirements are met, both local council and VicRoads engineers carefully review all plans and must sign them off.

To construct the sections of the transmission line in road reserves, works within road reserve permits are required, and both VicRoads and the Moyne Shire Council will inspect the poles located in road reserves during and following their construction to ensure issues of safety and flooding are addressed.

How will bushfire safety be considered?

The transmission line will be designed to meet or exceed appropriate design and safety standards. The transmission network service provider will apply electricity industry best practice to the maintenance of the transmission line (including for example, vegetation clearance) and ensure all required regulations in relation to electricity safety and bushfire mitigation are met (such as Energy Safety Victoria requirements).

Once the transmission line is built, it will be managed in accordance with an Electricity Safety Management Scheme for the Victorian Transmission Network, which must be accepted, approved and regularly audited by Energy Safety Victoria.

What inspections or checks will be undertaken during and after construction?

Compliance audits will continue to be conducted during construction by the AusNet Services (the transmission network service provider), Tilt Renewables, WorkSafe Victoria, the Office of Aboriginal Affairs, and the Department of Environment, Land, Water and Planning, as well as others as required.

The transmission network service provider must submit commissioning and compliance documentation to the relevant authorities to energise the transmission line, including the Australian Energy Market Operator (AEMO).

The transmission line can only go 'live' once AEMO is satisfied all of their requirements are met.

