

Attachment B: Project Description
from Planning Permit Application -
Ferguson Wind Farm October 2016

3.4 Geotechnical Aspects

A geotechnical review by Hardrock Geotechnical Pty Ltd suggested that based on the GSV (Geological Survey of Victoria) geological map, the proposed development area consists of Tertiary Dillwyn Formation “Shallow marine deposits” and the Tertiary Moorabool Viaduct Formation “Fluvial and minor shallow marine deposits”

The geotechnical review indicates that no significant difficulties will arise during construction of the wind turbine foundations. The Hardrock geotechnical review is included in Volume 2.

3.5 Wind Energy Generators

This section has been deleted and is addressed in the body of the amendment report.

3.6 Site Works

The proposed wind farm will consist of three turbines and associated infrastructure. This includes footings, access tracks, hard stand areas, a staging area, a control building, and underground cabling. The layout described in this section was developed in response to a number of considerations, the most important of which are flora and fauna and nearby residences. The proposal also includes the removal of some native vegetation from the road reserve and the subject site.

3.6.1 Turbine Layout

The turbine layout has been designed with a number of competing factors in mind, namely the minimisation of impacts on flora and fauna, the maximisation of setbacks to dwellings, and exposure to wind flow across the site. All three turbines are located in areas dominated by exotic grasses with little or no environmental value. The precise locations of each turbine are shown in the table below.

Table 4: Wind Turbine Locations MGA94 Z54

Wind Turbine No	Easting	Northing
1	690086	5724299
2	689750	5724020
3	689491	5724321

3.6.2 Turbine Foundations

Each turbine will require a foundation, which will consist of a 15 m x 15 m steel reinforced concrete slab. Cumulatively the three turbine foundations will take up approximately 675 m² of land. Following construction of the wind farm, the footings will be covered with topsoil. No native vegetation will be removed in the process of constructing the turbine foundations.

3.6.3 Access Tracks

The main site access tracks have been designed in consultation with the landowners, DELWP, EHP and the CFA. Its route was designed to avoid patches of native vegetation at the site entry, while ensuring it does not inconvenience the landowner (refer to Section 5 for further details). The access track is 5.5 m in width and

complete the access track will remain in place and will be used by the landowner and wind farm maintenance crews.

3.6.4 Hard Stand Areas

Hard standing areas measuring approximately 50 m x 30 m will be established at the base of each turbine during the construction phase of the wind farm. Cumulatively the hard standing areas will take up approximately 4500 m² of land. Because the wind turbines are located in areas dominated by exotic grasses, no native vegetation will be removed in the process of constructing the hard stand areas.

3.6.5 Staging Area

During construction a temporary staging area measuring 30 m x 50 m (or 1500 m²) will be located on the site. The staging area will house the site office, container storage and crew facilities, and will ultimately be the location of the Control Building which houses the grid connection equipment and protection systems. To ensure minimal impacts to native vegetation, the staging area will be located on the northern side of the access track, away from the patches of native vegetation at the entrance to the site.

Due to the small size of the project, no concrete batching plant will be required on site, nor will there be any need for large stockpiles of construction materials or turbine parts. Both construction materials and turbine parts will be delivered to site on a just in time basis.

3.6.6 Underground Cabling

The wind turbines will be connected to the electrical grid via underground electrical cables. These underground cables will operate at 22 kV and will follow the route of site access tracks in trenches approximately 300 mm wide and 600 mm deep. Because the access track avoids the area of native vegetation and the scattered trees located on the site, no environmental values will be impacted by the construction of the underground cabling.

3.6.7 Electrical Grid Connection

The wind farm will connect into the local electricity grid via the 22 kV powerline that follows Princetown Road. No sub-station will be required for the grid connection of this wind farm, however a control building approximately 6 m x 3 m in size will be located next to the point of grid connection to house metering and control equipment. This control building will be located on the site of the staging area where no native vegetation will be impacted. Indicative floor plans and elevations of the proposed control building are shown in Figure 4B. It is important to note that this drawing is indicative only and that the final design of the control building may differ marginally from the details and dimensions shown.

3.6.8 Provisions for Fire Management

The CFA recently released the Emergency Management Guidelines for Wind Energy Facilities (CFA Guidelines), May 2015, in order to provide guidance to wind farm planners and developers as to appropriate fire safety measures for proposed wind farms.

The layout of the proposed wind farm has been developed in reference to the CFA Guidelines, in consultation with the appropriate regional headquarters of the CFA. Accordingly, all wind turbines are sited on open grassed areas with a minimum setback from shrubs of 50 m and from trees of 75 m, and are spaced over 400 m apart in order to provide separation for fire suppression aircraft to operate in the event of an emergency.

The access tracks associated with the wind farm are all weather tracks designed to accommodate heavy vehicles and oversized loads and are therefore more than adequate for CFA vehicles. Moreover, each wind turbine will have a gravel buffer which serves as both a fire safety measure and a truck turnaround for CFA fire trucks.

It is proposed that a single above ground static water tank with a volume of 20,000 L (or greater) be situated at one of the site entrances in order to assist with firefighting in the event of an emergency.

Vegetation around site infrastructure including wind turbines and the control building will be managed during high fire danger periods.

A bushfire management plan will be prepared prior to the commencement of construction in consultation with the CFA. This plan will outline in detail the measures proposed above, as well as worksite practices that will be adhered to during construction, and emergency management procedures for the operational period of the wind farm.

3.7 Visual Reflectivity and Colour

It is now common practice to coat wind turbines in low reflectivity light grey paint in order to reduce their visual impact on the landscape and against the sky. These finishes are selected by the chosen turbine manufacturer according to standard industry practice.

3.8 Parking Areas

The wind farm will not require designated parking areas for its continued operation. The nature of the site will allow easy access to all turbines installed on the site. The majority of ongoing visits to the wind farm will involve general maintenance staff in 4WD vehicles, utilising the space surrounding the turbines for parking.

3.9 Access

The site is on a sealed rural arterial road, Princetown Rd, approximately 55 km road distance from a national highway, the Princes Hwy. Princetown Rd is a Vicroads road that carries large volumes of heavy traffic and oversized loads associated with the local agricultural economy. It is anticipated that all heavy traffic, and the vast majority of light traffic, will access the site via the following route: Princes Hwy, Camperdown – Cobden Rd, Lavers Hill – Cobden Rd, and Princetown Rd (see Figure 23). For a more detailed discussion of potential impacts to local roads and traffic movements, refer to Section 5.

3.10 Micro-siting

Prior to construction the proposed wind farm will undergo a detailed engineering development assessment, which may indicate a need for micro-siting of the turbines. Micro-siting is the process by which the original turbine layout is applied to the real landscape. This can involve moving turbine locations by distances of up to 100 m from their originally intended location.

Micro-siting can be necessary because turbine layouts are often designed at a desktop level and as such cannot take into account all on-site conditions such as local geotechnical bearing capacity. In the event that a wind turbine or turbines are moved during the micro-siting process, all aspects of the wind farm will maintain compliance with the conditions of development approval.

3.11 Reinstatement

At the completion of construction and commissioning, areas such as the site office will be returned to pasture. The access tracks will remain for ongoing maintenance requirements.

3.12 Construction Timeline

Once development approval has been received and financial close achieved, the longest lead time items are typically the turbines themselves as well as the availability of the highly specialised cranes and crews needed to erect them. Based on Future Energy's experience of constructing small wind farms, it is reasonable to estimate that the Ferguson Wind Farm will be operational within 12 months of receiving development approval. The actual time on site once work commences will be approximately 6 months.

3.13 Operation and Maintenance

The operation of the wind farm will not require anyone to be in attendance. Wind turbines automatically commence producing energy as the wind reaches a cut-in speed, and they likewise cease operating as soon as high wind speeds are reached. Energy produced is automatically fed into the local grid where it is utilised in the local area.

Like all modern wind farms, the Ferguson Wind Farm will be remotely monitored 24 hours a day by the chosen maintenance provider. Under a long term maintenance agreement, routine scheduled maintenance will be undertaken on each turbine every 6 months. The maintenance function is likely to be carried out by local personnel who have received training from the turbine manufacturer. This maintenance will take approximately 1 day per turbine.

3.14 Decommissioning

The Lease Agreement in place with the landowner requires the owner of the wind farm to remove the turbines from the land at the end of the life of the wind farm. Before this time the owner and the landowner may agree to one of the following options:

- Continue maintaining and operating the turbines;
- Upgrade the turbines to more current technology;
- Remove the turbines in accordance with the Landholder Lease and the EMP.

It is expected that a continuation or upgrade of the wind farm at the end of the lease period will require new permits and conditions. The procedure for the decommissioning of the wind farm will be detailed in the EMP. It will involve the removal of the wind turbines including the towers. Access tracks would remain to assist the landowner with farming activities. In accordance with the Guidelines the wind turbine footings would be covered with topsoil to return the area to pasture.