

## As a renewable source of energy, wind power enables electricity to be generated without any carbon dioxide emissions



Wind farms deliver green power in a rural environment while co-existing with the traditional pastoral land use.

Great care has been taken in the design, construction and operation of the [Blayney Wind Farm](#). The engineering and environmental planning included detailed consideration of potential impacts related to noise, visual impact, archaeology, aerial and terrestrial fauna. This will ensure that there is no significant disturbance to the natural environment.

Sophisticated computer modelling of wind patterns allowed turbines to be located to provide the most efficient and aesthetically pleasing layout. Where possible, access roads and transmission lines are located to minimise visual impact, and electrical cables have been placed underground.

[Blayney Wind Farm](#) will produce clean energy without any greenhouse gas emissions. Compared to conventional coal-fired generated electricity, the wind farm will save 400,000 tonnes of carbon dioxide (CO<sub>2</sub>) emissions over the life of the project. This reduces the need for fossil fuel generation that produces greenhouse gases.

Eraring Energy, owners of the Wind Farm, feed all electricity generated into Advance Energy's transmission grid for distribution to their [Green Power](#) customers.

### Description

The 10 MW Blayney Wind Farm involved the construction of 15 wind turbines, each with an electricity capacity of 660 kW.

An illustration of a typical wind turbine unit and its main components are detailed on Page 2.

**Tower** - the height of the tapered steel supporting structure is approximately 43 metres above the ground and its approximate diameter is 3 metres at the base and 2 metres at the top.

**Foundation** - the tower is located on a reinforced concrete foundation with dimensions of about 10 metres x 10 metres. The foundation is located below ground level and after construction is backfilled with soil and then grassed.

**Blades** - each turbine is 3-bladed, about 47 metres in diameter and rotates at approximately 28 revolutions per minute when operating. The blades are constructed of a fibreglass material and are attached to a steel hub and drive. The turbine hub height is 45 metres above the ground.

**Nacelle** - the nacelle is the housing, constructed of steel and fibreglass, that is mounted on top of the tower. The nacelle encloses the rotor bearing, gearbox, generator and controls. Weather monitoring equipment located on top of the nacelle provides data for the automatic operation of the wind turbine.

**Controls** - the wind turbines have a control system that faces them into the wind so that the turbine is upwind of the supporting tower. The controls start the turbines at a wind speed of about 4 metres/second (15 kmh). The turbines reach full output at 16 metres/second (55 kmh) and the controls shut the turbines down for safety purposes when the wind speed reaches 25 metres per second (90 kmh).

# Blayney wind farm

### From wind turbine to the customer

Each turbine is regulated to ensure that a wind farm operates at the maximum possible output for all situations. Each turbine has its own local computer control system that optimises its own energy output.

Data on the performance of each wind turbine is continually collected and transferred to the operations centre for analysis and evaluation.

