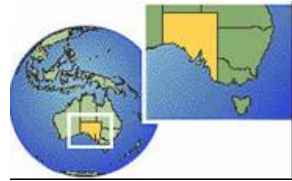


# PROJECT DATA

## King Island Renewable Energy Installations



### CLIENT

Hydro Tasmania Renewables Development

### PROJECT LOCATION

King Island

### DATE OF PROJECT

1998 (phase 1) 2003/4 (phase 2)

### SERVICES PROVIDED

- Site identification and liaison with land owners to secure site
- Feasibility studies for all phases including wind monitoring and energy estimates
- Obtaining development approvals
- Detailed designs and specifications for:
  - civil works (roads, foundations, buildings)
  - electrical works (cabling, protection, communications, control system, interface with diesel generators and Vanadium Redox battery)
- Supervision of construction

Lying in the path of prevailing westerly winds, King Island has world-class resources for the generation of wind power.

King Island residents have enjoyed the benefits of wind generation since 1998, when the island's first renewable energy from the three wind turbines on Huxley Hill began to power their homes, schools, farms and businesses.

The Huxley Hill Wind Farm was the second commercial wind farm to be established in Australia.

Since then, the three 250kW Nordex wind turbines have generated about 18 percent of the island's electricity needs, with the balance generated from a diesel-fired power station.

From the beginning, Hydro Tasmania began investigating ways to further increase the contribution of renewable energy to the island's power requirements including mini-hydro, wave power, co-generation and pumped storage. The investigations identified additional wind energy as the best option.



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# PROJECT DATA

## **Working with the community**

During the planning and development stages of the wind farm, Hydro Tasmania has consulted widely with the local community and other stakeholders.

Before the first site work began, extensive field surveys and impact assessments gathered data on a range of issues including Aboriginal and European heritage, social, economic, visual, flora and fauna values.

## **Wind Farm Expansion**

Hydro Tasmania expanded the wind farm in 2003 with the addition of two new 850kW Vestas turbines, a state-of-the-art 200kW Vanadium Redox Battery and an innovative control system.

The expanded Huxley Hill Wind Farm provides a total installed capacity of about 2.5 MW of wind generation.

The wind farm expansion reduces annual diesel consumption on the island by more than a million litres and results in renewable energy contributing above 40 percent of the island's energy requirements and reducing greenhouse gas emissions by about 4600 tonnes.

A further expansion is planned using two 2MW wind turbines combined with an energy storage system using carbon blocks.

## **Innovations**

A drawback of wind power is the fact that it is limited by the variability of the wind. The Huxley Hill Wind Farm incorporates a large-flow Vanadium Redox battery, which helps to smooth out the variability of the wind by storing excess wind energy and releasing it back into the system in a controlled way. It is the first time that this battery technology has been used in Australia and the first application worldwide of using Vanadium Redox Battery technology to assist in harnessing additional renewable energy for a remote power system.

An innovative central computer-controlled system optimises the efficiency of the wind farm and maintains power system stability by balancing power production between the wind turbines, diesel generators and the battery.

The carbon block heat storage system will significantly enhance the level of energy storage in the system and take renewable energy levels to approximately 80%.

