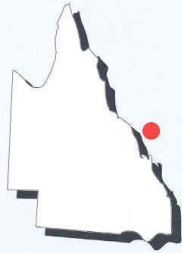


# North Keppel Island's Environmental Education Centre (NKIEEC)

Off-grid, distributed generation, renewable, Queensland



Australian  
Business Council  
for Sustainable  
Energy



**Owner:** Education Queensland  
**Capacity:** 30 kW (nominal)  
**Location:** North Keppel Island, approx 15 km offshore and 550 km north of Brisbane

**Demographic:** Provincial  
**Commissioned:** December 2004  
**Capital cost:** \$425,000  
**Designer/Developer:** Ergon Energy Corporation Limited

**Construction contractor:** Ergon Energy  
**Operator:** Education Queensland's NKIEEC

**Fuel source:** Solar/wind (LPG fuelled back-up generator)

**Solar Modules:** New 112 × 85 W BP solar modules (arranged in two arrays)  
Refurbished existing solar array of 45 × 83 W Solarex modules

**Wind turbine:** 10 kW Westwind wind turbine with new controller

**Battery:** 2 × 120 V Sonnenschein A600S

**Inverter:** 30 kW 3 phase inverter

**Control:** 30k W 3 phase generator interactive sine wave inverter charger, RAP-30-120, DC and AC switchboards, 6 × AERL Maximum Power Point Trackers (MPPTs)

**Number of equivalent full-time employees:** Four during construction

#### For more information:

**Owner:**  
Education Queensland,  
Capital Works Unit  
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#### The site

This site is the only educational facility in Australia situated on a National Park island. An increase of power supply was required after the installation of air conditioning units. Rather than increase the use of LPG fuelled generation, Education Queensland were keen to meet the increased load with renewable energy.

Being positioned in an extremely sensitive ecosystem, the station power plus stand-alone power supply (SPS) system was designed to have minimum impact. Renewable energy sources were included to minimise the use of LPG.

"Ergon Energy have developed a stand-alone power supply system which is one of the largest in Australia. The North Keppel Islands Environmental Education Centre is proving a winner for the environment and for education in central Queensland."

Kirsten Livermore MP, Member for Capricornia

#### Technology

The SPS system at NKIEEC is one of the largest stand-alone power supply systems in Australia. The system was designed by Ergon and built in Cairns, and all major components except the batteries were made in Australia. In order to maximise the amount of renewable energy produced for the system (and minimise the use of LPG), maximum power point trackers were installed on all solar arrays (the old array was rewired to accommodate these) and a new wind controller fitted to the existing wind turbine.

#### Energy purchase and supply

The plant is expected to produce 60 GWh of electricity per annum. Power generated from the project is not sold into the grid as this is an isolated system on an offshore island. The 51 kW Cummins gas (LPG) fuelled generator operates in a backup mode, at times of heavy demand or at times of peak load (usually in the evening). At times of low demand the generator may only operate once or twice a month.

#### Environmental impact

The project is expected to save at least 33 tonnes per annum of greenhouse gas emissions (equivalent to removing seven cars from our roads). Care was taken during installation to keep site disturbance to a minimum. Batteries from the old system were collected by a recycling firm.

#### Funding arrangements and acknowledgements

Installation was made possible with a grant from EPA under the Renewable Energy Diesel Replacement Scheme which covered over 40 per cent of the total system cost. The scheme does not cover the cost of fossil fuelled equipment.