



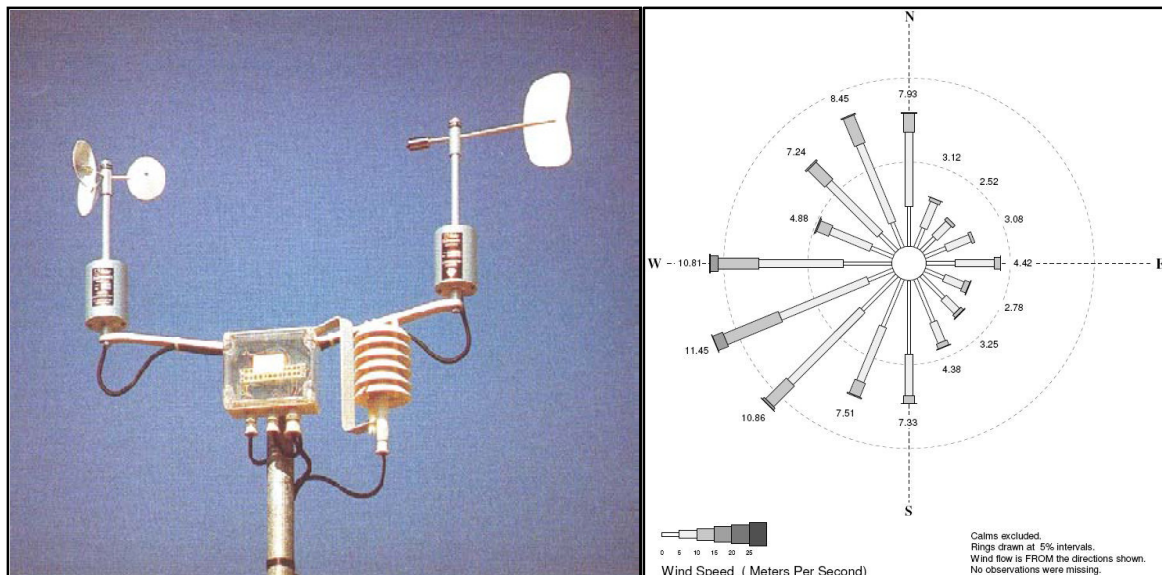
WIND RESOURCE ASSESSMENT SERVICES

INTRODUCTION

When assessing the potential of a site for wind energy generation, a number of factors need to be taken into account. A good site for a potential wind farm will have the following key attributes:

- **Consistently strong wind.** This is usually found on exposed hilltops inland, or coastal areas;
- **A nearby power line.** Extending power lines over any distance is an expensive process, and likely to affect the viability of a site. A 33kV or 66kV line is cheapest to connect into. The amount of spare power carrying capacity on the line will determine the amount of wind energy that can be connected;
- **Good access to the site.** Existing roads in reasonable condition can usually be upgraded, but there may be limitations on the gradient and corner radii for transport vehicles and cranes depending on the size of wind turbine;
- **Suitability of the site for wind farm construction.** There needs to be enough room on the site for a crane to erect the turbines, as well as for foundation pads and access between the turbines. The topography, ground cover and soil conditions will affect this;
- **No significant barriers to obtaining resource consent.** It is likely to be easier to obtain resource consent for a site if it is away from heavily populated areas, and if the landscape is not of special interest.

Many of these factors can be assessed through desktop study and a site visit. However, it is necessary to measure the wind resource over a period of at least three months to get an initial indication of the strength and consistency of the wind.



Typical monitoring station with cup anemometer and wind vane

Windrose plot

MEASURING AVERAGE WIND SPEED

1 m/s = 3.6 km/h = 2 kt

Wind speed and direction are normally measured with a cup anemometer and wind vane. A typical meteorological mast would be set up with anemometers at different heights to gain an indication of how the wind varies with height (the wind shear). Ideally the wind speed would be measured at hub height (30 metres for a Windflow 500) but masts of this size are expensive and require resource consent. It is usually preferable to put up a 10 metre mast initially to see how much potential there is on the site. A larger mast can be erected at a later stage if required.

Measuring over a minimum of three months will give a reasonable indication of the available wind resource. Preferably the wind should be measured over at least a year, to assess seasonal variations, and correlated with any long term data (of 10 years or more) in the surrounding area. The figure usually quoted is the mean annual wind speed, which will include seasonal and daily variations. In the current economic climate, a wind speed greater than 8 m/s is normally needed for a wind farm to be viable.

Measurements are made over a 10 minute period, and record the average wind speed, the peak gust and variability of the wind. This data can be downloaded remotely via a cellular connection.

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To assess the potential of a site for wind generation, a site visit would be conducted initially, together with a desktop study, to determine the feasibility of establishing a wind farm. During the visit a suitable location for a mast would also be established. A report would be provided at this stage with a recommendation as to whether it is considered to be a viable site for wind generation.

We would then set up a 10 metre mast with two anemometers and a wind vane, for a period of three months. At the end of this period, we would analyse all the data and provide a second report, which would give a good indication of the potential energy output from the site.

Please contact us to discuss your site and specific requirements.



Operational 10m meteorological mast

FOR FURTHER INFORMATION, PLEASE CONTACT:

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