

### The evolution of wind turbine technology

Modern wind turbines are designed to be as efficient as possible. Over time technology has improved to allow turbines to capture larger amounts of wind. Bigger blades and higher towers have resulted in wind turbine technology now being competitive with traditional energy sources.

### Mt Fyans wind turbine selection

Woolnorth is seeking planning approval for a maximum of 87 turbines up to a maximum tip height of 200 metres. The

turbine model for Mt Fyans has not yet been selected; however the current models being considered have blade lengths of 65 - 75 metres.

### Pros and cons of larger turbine models

We understand that some people in the community have reservations about the visibility of modern turbines on the landscape north of Mortlake. At greater heights the turbines become more visible from farther afield. However, modern turbines are far more efficient and significantly fewer turbines are required to produce the same amount of energy. This means they can be spread out reducing the

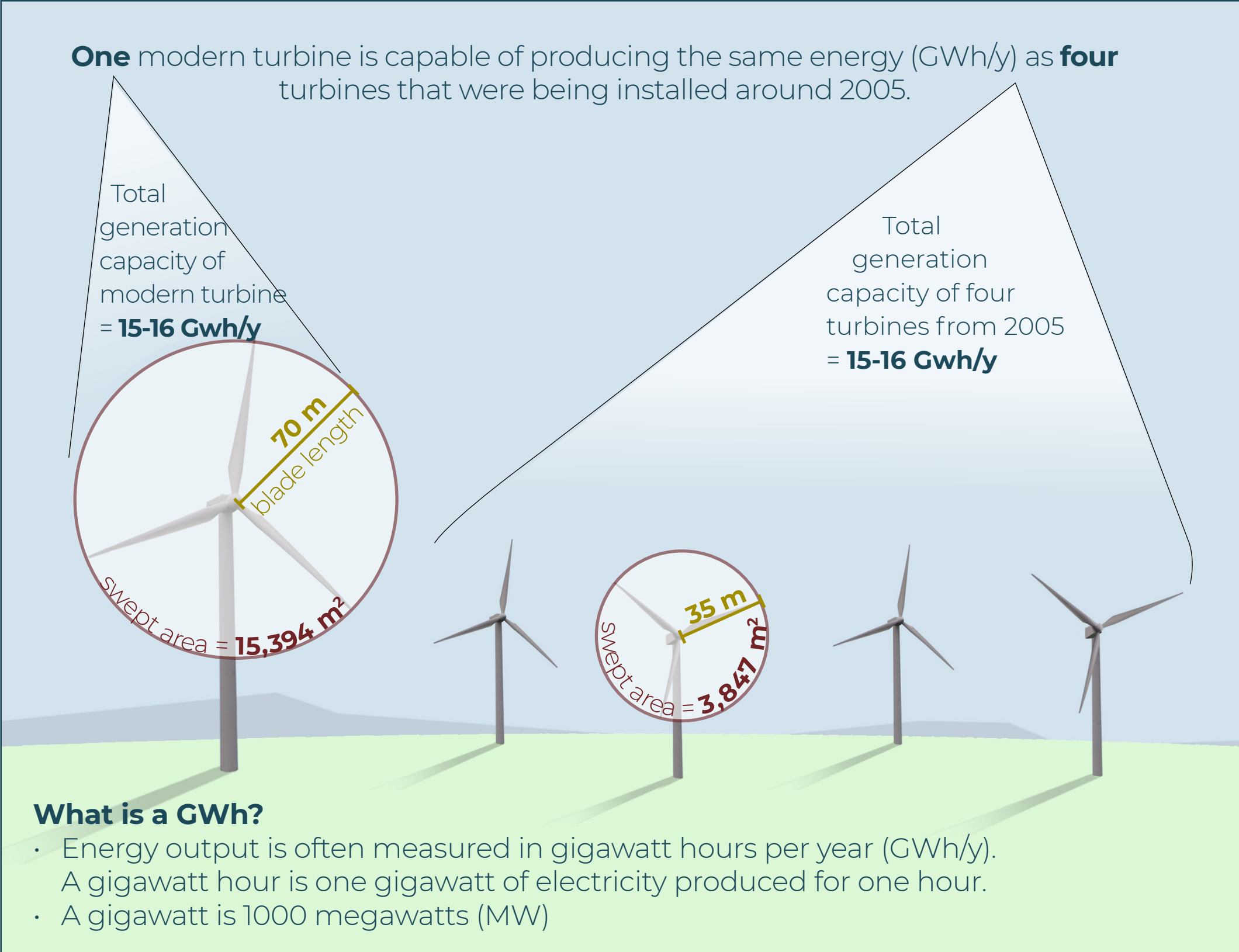
wind farm footprint and density, also increasing the opportunity for turbines to be setback from neighbouring properties.

### A machine twice the size produces four times the energy

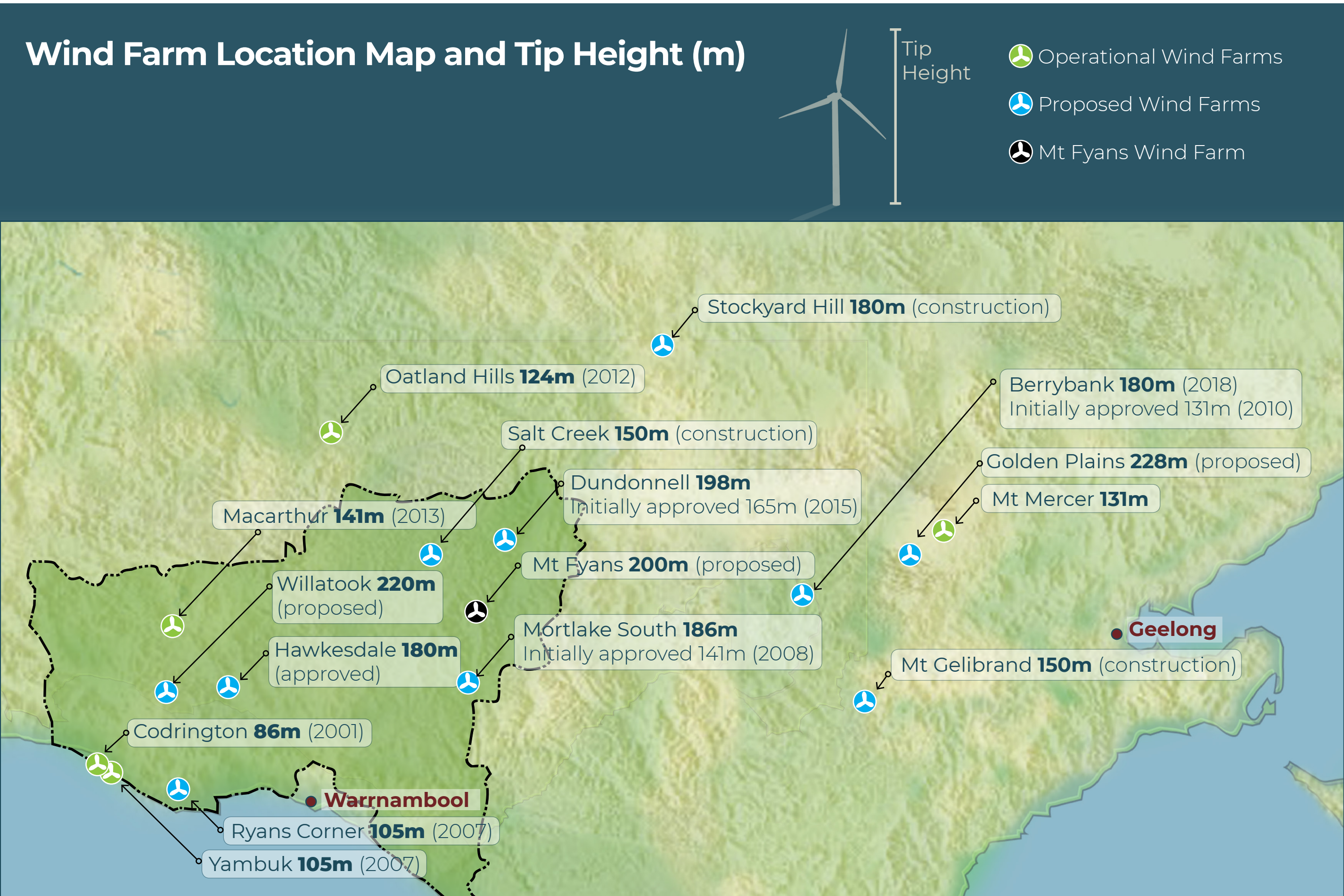
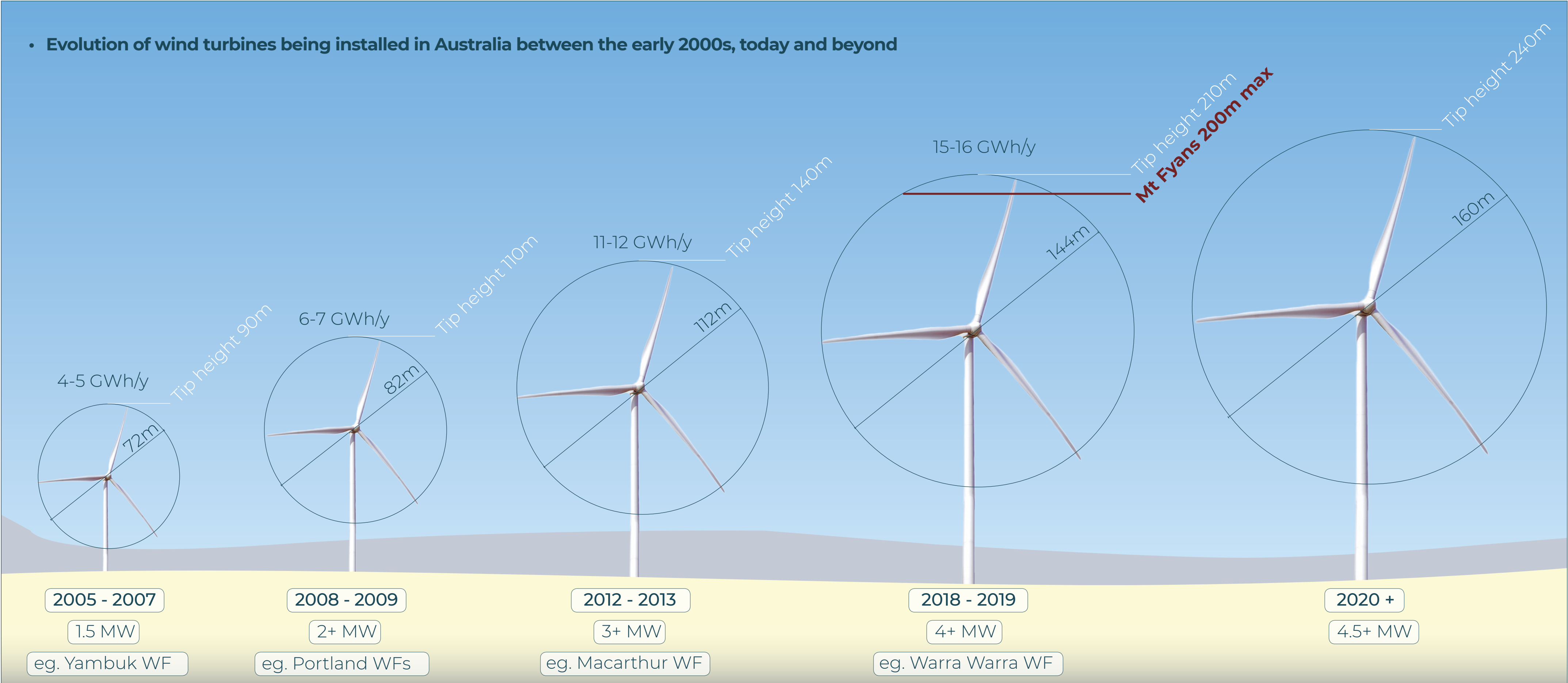
The amount of power that can be harnessed from the wind is directly related to the swept area of the blades.

As the size of the blades increases, power increases by a disproportionate amount. So for example, doubling the blade length will increase the power output by four times and tripling the blade length will increase it by nine.

### Wind Turbine Generation Comparison



### Wind Turbine Evolution



### Wind farm location map

The wind farm map (to the left) shows the location of several existing and proposed wind farm projects in South West Victoria.

It shows the permitted/ proposed or constructed tip height of each project. Tip height varies on when the project was built and it's available wind resource. Class I wind sites have access to strong wind resources that can be captured using turbines with lower hub heights and smaller swept areas. In comparison, Class II & III wind sites often require a larger tip height and swept area to capture lower wind speeds for comparative energy output. You will notice that a few projects on the map were given approval several years ago (Dundonnell and Mortlake South) for a smaller tip height and have since updated their planning permits as new technology has become available.

### Predicted Wind Farm Growth in Victoria

As of July 2018, the total installed capacity of major operating wind farms in Victoria is currently **1,601.4 MW**

The total capacity of approved wind farms in Victoria that are not yet operating is up to **1,571 MW**

Currently under assessment with the Minister for Planning is another **1,063.2 MW**