**BIRD IN A TREE PROJECT**

The design is inspired by the palm trees in and around the boundaries that it is designed for.

 When designing this project we looked at the following considerations and how best to accommodate them;

1. The impact it would have on the surroundings
2. The impact it would have on the community and everyday life
3. The building cost vs the income potential
4. The environmental impact

**1. THE IMPACT IT WOULD HAVE ON THE SURROUNDINGS**

The objective here was to have a look at the surroundings and look at options of blending the project within the surroundings, this was fairly simple once we analysed the wind data we realised that there was a substantial amount of wind energy that we could harness. The next step we asked ourselves what would it look like?... a standard wind turbine does not blend into a natural environment and is usually and eye sore.

We then noticed the palm trees and thought we could try to mimic them as the palm trees are already apart of the landscape, so the design would not look to out of place.

**2. THE IMPACT IT WOULD HAVE ON THE COMMUNITY AND EVERYDAY LIFE**

As most coastal areas it’s all about the ocean views which for most people the oceans views are second to known, at this point we already had our sites on the palm tree design. We then realised that with a 30 cm pole width we can achieve 2 things

1. Keep structural strength.
2. Minimises the interruption of views by having a pole that is similar to the width of a palm tree if not slimmer as some palm trees can grow huge

**3. THE BUILDING COST VS THE INCOME POTENTIAL**

Here we decided to look at a simple low maintenance design that was eye catching, appealing and that could blend with its surroundings without breaking that bank and maximising the potential energy income.

 The overall design consists of 42 units over all boundaries including the 1 unit on Esplanade.

**THE UNIT SPECIFICATIONS AND DESIGNS ARE AS FOLLOWS;**

3500 Watt Turbine

1 x 3500 Watt turbine can produce 6,256.29 kWatt hours per annum

* Rotor Diameter: 4m (13.1ft)
* Number of blades: 3
* Blade Material: Epoxy Resin Fibreglass
* Rated sound Level: 56 dB (A)
* Tower Height: 12m (39ft)
* Tower width: 30 cm
* Tower Type: Monopole
* Tower Top Mass: 250kg (551lb)
* Tower foundation 1,5m x 1,5 x 1,2

The turbines have the ability to spin 360 deg, this allows for maximum efficiency as the turbine can adjust its position to wind direction changes.

The turbine blades are coloured with a green pigment to represent leaves, the turbine tail will be coloured with a white and blue pigment to represent a bird.

The tower will be covered with a layer of fibreglass that will be designed as the bark of a palm tree.

The maximum height each unit reaches will be 16 meters with the exception of 1 unit that will be on Esplanade which is the highest unit at 22 meters in height.

In order to add a unit to Esplanade we needed more height and used an 18 meter tower.

**42 UNITS COULD PRODUCE 262,764.18 KWATT HOURS PER ANNUM**

Based on the wind speed data analysed.

**4. THE ENVIRONMENTAL IMPACT**

**Local Impact**

If the average Australian household uses 6,000 Kwatt hours per annum, then an additional 43 households within Australia will be powered by green energy as soon as this project is up and running.

**Wildlife impact (Birds)**

 The curved blade design has been chosen to reduce, minimize and avoid bird collisions

**Noise**

The turbine Rated sound Level: 56 dB

Bellow are examples of sound levels

* Passenger car at 65 mph at 25 ft (77 dB)
* freeway at 50 ft from pavement edge 10 a.m. (76 dB)
* Living room music (76 dB)
* radio or TV-audio, vacuum cleaner (70 dB)