Scope of project to install an off-grid power supply at Fenstanton Bowls Club

This document identifies the scope and costs to install a sustainable off-grid power source at Fenstanton Bowls Club. The requirements for the project are:

- Provide 24 hour year round mains power supply with sufficient capacity to support:
    - Automated irrigation system
    - 24 hour Security and internet connectivity
    - LED lighting in the clubhouse
    - Fridge
    - Boil a kettle a minimum of 10 times per day
    - Eliminate the use of a Generator

The club is currently powered by a Generator which is capable of powering a manually initiated irrigation pump and limited evening club events, but not simultaneously. This is an expensive and limited resource that limits the use of the clubs facilities and is not sustainable.

The cost of Installing a Mains Electricity Supply to the site is at least £40,000 which is beyond the financial means of the club.

An off-grid solution using a Solar Panel array with Batteries has been determined to be both Sustainable and Cost effective. A modest array of 8 x 500W solar panels and a 10kW Battery will deliver the capacity to support all the normal identified needs of the club. The system capacity can be augmented for events using separate, independent Electric Vehicle V2L circuits.

The design solution will provide for the long term viability for the Club and the ability to use the facilities for other uses and functions for the Fenstanton Community.

Project Scope

Installation of a Solar Array of 8 X 500W requires an 18 m^3 area, south facing with an 30^0 slope to maximize output. The ideal location is a raised canopy in front of the Clubhouse that will provide a perfect mounting orientation plus provide shade for spectators.

There are some restrictions to constructing a raised canopy in front of the clubhouse which is a wooden structure:

- A canopy structure of this size requires planning permission. This should be possible as the land is owned by the Club, is more than 30m from any other property and will not cause solar glare issues. However this is an additional cost of £800 for the application. Plans will also be required and if we cannot provide them ourselves then the cost of an Architect will need to be added.
- The material used to construct the Canopy must be nonflamable or be spaced more than 1000mm clear of the wooden clubhouse
- An open above ground structure with a 9.3mtr long 30^0 incline roof area acts as a wing and therefore must be constructed and anchored in accordance with wind loading regulation. This equates to a foundation requirement of 10 concrete foundation pads with dimension of 60cm x 60cm x 60cm. (2.16 m^3 total)

- The Battery for the Solar system must be mounted on an elevated concrete or brick structure outside the clubhouse for safety reasons. This can be achieved by installing a 2 mtr concrete ‘wall’ made from several concrete fence post mounted adjacent to each other and anchored in a concrete foundation.
- There is a very large Spruce 3 meters in front of the clubhouse that must be removed to stop shadowing on the solar array. There is no protection order on this tree and the site is not in a conservation area.

The original cost estimates did not account for some of the above. The revised cost estimate (without contingency) is therefore **£12225** consisting of :

1.	Planning Application	£800
2.	Architect	£1000
3.	Tree removal	£1000
4.	Canopy Foundations	£325
5.	Battery mounting supports (4 x 8’ concrete posts)	£350
6.	Galvanized metal Canopy	£3500
7.	Solar panels, Battery, Inverter, rails Consumer unit, Installation	£5250
		Total £12225