SUSTAINABLE BUILDINGS
ENERGY SAVINGS & CARBON EMISSIONS

To ensure that a club house is energy efficient and will pass building regulations it is most likely the club will have to employ professional design engineers, rather than just rely on club members.
Questions you will need to ask yourselves are.

What do we need to consider for sustainability?
What will we need to do to comply with building regs?
What are the new developments? For example heat pumps & other renewable sources

What do we need to consider for sustainability?

Water usage –
with water meters, water saving equipment should be used, clubs need to look to ensure that appliances are not wasting water, this can be done by a variety of ways in the way you control taps, urinals and showers.
Energy -
What equipment do we need the energy for and what energy sources are available?
Your building will need - Heating, Hot water, Ventilation, as well as Power & Lighting
What Energy sources are available?

Electricity – where will this come from and is the supply large enough?
Gas - is there a supply near enough?
Oil – where can the tank go and would it be secure?
Solid fuel – most likely not an option for a club building.
Renewable – what options are there?

Electricity for items other than heating
To achieve an efficient building, **energy efficient lighting is a must**, controlled as much as possible by PIR (movement sensors) and possibly lux level sensors depending if there is a large amount of sun light through windows although with the security issues this is unlikely in your club house and other equipment such as a fridge etc should also be energy efficient.

Energy required for Heating & hot water
What fuel is available? – Will it be energy efficient? – What are the running costs going to be?
Maintenance is also a factor to consider, although with the rising cost of fuel this is becoming a minor cost in comparison.
Your planning permission may well make it a condition that renewable energy is a must, even though your building would pass building regulations.

What will we need to do to comply with building regulations?

The government to reduce carbon emissions are proposing changes to the building regulations. To obtain building regulations one needs to satisfy amongst other things:-

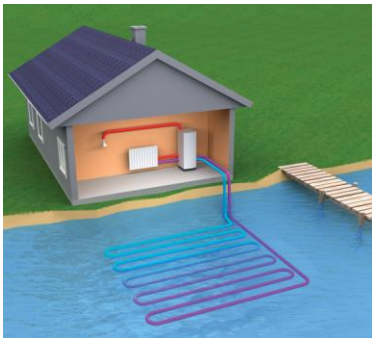
Part L - which deals with fuel & power
Part F - which deals with ventilation
SBEM – Energy calculations – These have to be carried out by a qualified engineer, and involve the services engineer and the architect working together to provide a building which has less CO2 emissions than the " notional building".

Always think more insulation, less energy waste !

To comply with building regs. and have a sustainable building
it needs to be energy efficient !
Gas & Oil boilers are improving in efficiency,
but what if there is no gas, and security for an oil tank
and electric is all that you can use?

What are the new developments? For example heat pumps & other renewable sources

There are constant developments with alternative methods of heating and powering buildings
Ground Source heat pumps & Air source heat pumps, which uses Electricity for heating, **but in an efficent way**, offen producing **3 Kw of Heat from only 1 Kw of electricity !**
But your club should bear in mind these require a large amount of ground, or for better results **a lake will improve the benefits**.
For example as being used on the boat house at Manvers Lake



As an alternative bore holes can be used but are very expensive.

Solar thermal panel for heating water

Solar equipment is being developed extensively all the time and even on cloudy days can provide a heat source.

Solar thermal panels can be integrated with other systems to reduce energy bills. The heated water can be used with heat store vessels to extend the period of time that the solar heated water can be used.

Solar panel for electricity (PV Panels)

Solar PV panels can provide electricity which can be used together with batteries providing an additional source of energy as part of your renewable energy programe, which may be part of your planing approval conditions.

However solar panels could be very vulnerable and the risk of vandalism high, the weight of solar panels needs to be calculated by the structual engineer, be aware that location and structure may well rule the use of solar panels out.

Wind Power

Wind power is a totally carbon efficient form of energy, requiring no input from other sources. Electricity can be stored in batteries, which can be drawn upon when wind speeds drop below normal.
Apart from occational maintainance the running costs are zero.
Wind power will depend on planning approval and wind speeds available,(currently not less than 5m/s) don't forget that a mast will require a substantial concrete base. Power can be sold back to the national grid.

Heat recovery

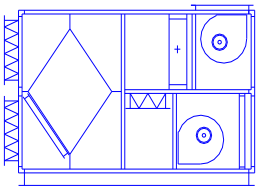
Ventilation is often a major item that gets forgotten,

A club proposing to have showers & changing rooms, toilets, and a first aid facility, shall need to provide ventilation and to comply with building regulations, must have a minimum of 6 A/C per hour.

This could equate to a heat load of **14kw. !!**
Just to heat the fresh air being dragged into the building

Heat recovery will save over half of this, no running cost at all.

No longer should you just install an extract fan in the wall !



As you see there is a lot to be considered on the services

To keep the running costs down, buildings must be energy efficient.
The services design engineer must take all these things into consideration, as well as the capital cost for the project.

This is a summary of the talk given on 30th January 2010 at the headquaters of Sport England in London

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