

## **The Planning Application**

In essence, this Planning Application seeks permission for the erection of a single storey Ranger Base, with associated external hard and soft landscaping. The development will consist of an entrance foyer, a meeting room primarily intended for use during public events held at Yeovil Country Park and as an educational facility for visiting schools and the general public, a rangers office, a restroom with kitchen area, washing and showering facilities for the rangers, public toilet facilities, a workshop with integral secure storage, a tea-room with refreshment serving area and an external over-spill area for public use. The entire development will be designed and constructed with an integral 'green agenda', one of the key project concepts, which has informed many of the design decisions.

### **Structure**

'ModCell Lime' will be used for the fundamental building construction. ModCell is a UK Award winning, sustainable, prefabricated straw bale construction panel system with a two-layer natural lime finish inside and out. This lime rendered product can be used structurally, which eliminates the need for a secondary steel or timber frame to support the roof, providing a large cost saving to the project. This straw bale construction technique has many sustainable benefits including: super insulative values, which helps to create a stable environment that is easy to cool and heat; ease of construction; material which is highly durable and is part of a completely sustainable production system; lime plaster finish which acts as a carbon sink for the life of the building as the lime absorbs carbon from the air; construction product which is natural and completely biodegradable, which also benefits from a low embodied energy.

### **Cladding**

Some sections of the building envelope will be overclad in FSC certified timber cladding, currently proposed as 'Ecotimber FSC Cumaru' type or similar. This timber has minimal embodied energy and is renewable, reusable and fully biodegradable. Although Cumaru is a lesser-known species of timber, there are many good reasons to specify lesser-known species, not only because of their technical properties and aesthetic appearances, but also because the use of lesser-known timber species lessens the pressure on well-known timber species therefore increasing the economic viability of sustainable forest management.

### **Roof**

The proposed roof covering is a clay plain tile type that has sustainable credentials, which are appropriate to the setting and context of the proposed building.

### **Lighting**

Sun pipes/tunnels will be installed within the roof. These will maximise natural light within the building and will minimise the requirement for artificial lighting therefore reducing CO<sub>2</sub> emissions. These will be low profile, flat glass roof lights with toughened glazing and can provide from 1000 to 2000 lux on a bright day. Energy efficient LED lighting with PIR motion and daylight sensors will be used internally.

### **Rainwater Harvesting**

Installation of a rainwater harvesting system is proposed in order to reduce the use of metered water and to reduce demand on the local drainage systems therefore reducing flood risk.

Water that would otherwise be lost can be used instead to flush toilets and water the surrounding landscaped area.

### **Heating**

It has been considered that the most logical solution for the project, not only for heating the building but also heating the water, would be to install an air source heat pump.

After much research and based on heating engineer recommendation along with company and product credentials, ICS Heat Pumps have been identified to supply the air source heat

pump selected. ICS Heat Pump technology has been accredited for a selection of their Delonghi air source and ground source heat pump products.

The 'Thermacell' Air Source Heat Pump has been selected due to its suitability to the project and the specific advantages are:

A renewable energy, which results in high CO<sub>2</sub> emission savings, the Thermacell heat pump will collect a mix of internal exhaust air and external ambient air that is then transferred into high-grade hot water and high grade heating for the Rangers Centre. The system can also cool the building if necessary during the warmer months. Accreditation obtained from the Microgeneration Certification Scheme (MCS), which enables a potential 50% grant funding from the Low Carbon Buildings Programme (Phase II). The air source heat pump is a compact, single phase model with low noise output, high efficiency and 3.4 Coefficient of Performance (COP) making it one of the best currently available on the market.

Increased flexibility regarding usage patterns throughout the day and throughout the different areas of the building, and a deeper level of control overall.

The associated thermal qualities of the straw bale building construction technique will reduce the electrical costs associated with the Air Source Heat Pump.

Heat recovery via exhaust air and the added benefit of extraction and ventilation capability would appear to make the installation of this unit an ideal solution to the heating and hot

water requirements of the Ranger Base.

## **Recycling**

A rudimentary recycling system run at each existing ranger base, will operate at the proposed centre for the usual paper, glass and plastic materials and this will be located within the workshop area.

The combination of sustainable heating and hot water provision, rainwater recycling, and maximising the use of natural light where possible, all within a highly sustainable building envelope with use of ModCell technology, will ultimately create a super insulated, high performance, low energy 'passive' building, built using renewable, locally sourced and carbon sequestering materials.

Together, these innovations can save energy, reduce costs and preserve natural resources whilst reducing environmental pollution. A well-designed, low energy building will also require

less maintenance than one that relies on large, mechanical systems.

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Yeovil Country Park Rangers Base

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