8. ENVIRONMENTAL & SUSTAINABILITY

ENVIRONMENTAL IMPROVEMENTS: PRINCIPLES

Wivenhoe Town Council are being advised by the specialist locally-based environmental energy consultancy: Greenpeaches. The extension and retrofit are being analysed with regard to the operational and embodied CO^2e (carbon dioxide equivalent) emissions with the aim of compying with the Councils Climate Emergency declaration, as well as providing a healthy and comfortable environment for the building users.

The environmental strategy that underpins the proposal can be summarised:

- **IMPROVE THE EXISTING BUILDING FABRIC AS FAR AS POSSIBLE: INSULATE AND MAKE AIRTIGHT**
- **DESIGN THE NEW EXTENSION TO BE HIGHLY ENERGY EFFICIENT**
- **RECYCLE AND RE-USE MATERIALS WHERE POSSIBLE**
- **WHERE REPLACEMENT IS REQUIRED, SPECIFY THE MOST ENERGY-EFFICIENT MATERIALS, FITTINGS AND SERVICES AS PRACTICABLE**
- **USE A COMBINATION OF LOW-TECH PASSIVE DESIGN AND SUSTAINABLE M&E SOLUTIONS TO REDUCE ENERGY CONSUMPTION IN ALL AREAS**

1. Improve the thermal performance of the existing building

All existing external walling will be lined with a layer of insulation. Timber battens will be fixed to the walling on the inner face, and a layer of insulation fitted between the battens. Plasterboard sheets will be fitted to cover the insulation, and painted. There will be a minor reduction in internal floor area. The new layer of insulation is shown on the proposed floor plans as a red shaded strip of approximately 100mm (10 centimetres).

Additional insulation will be set into the existing roof space.

Rather than replacing the existing single-glazed windows with new double-glazed windows, we will be retaining them, re-coating, re-painting and repairing as necessary and fitting secondary glazing internally. The new glazed panels will line through visually with the existing windows, so there will be no change to the external appearance. The upgraded windows will allow in just as much light and ventilation, and can still be used for escape in the event of fire.

The new patent-glazed entrance porch will reduce heat loss from the existing building.

The new extension will be designed and specified to conform to or exceed current Building Regulations standards for energy efficiency and thermal performance.

2. Reduce energy consumption

Insulating the building will mean that space heating bills will be lower. The drawings show Photovoltaic cells to the existing main roof: generating clean energy for use within the building.

The new extension is shown with a number of rooflights: these improve natural light levels and natural ventilation, reducing the requirement for electric lighting and air conditioning.

Potential overheating in summer will be taken into account with an emphasis on shading and a ventilation strategy to avoid the necessity for air conditioning.

A longer term initiative is to consider the use of a ground sourch heat pump to provide renewable heat and possibly add to cooling the building and also neighbouring buildings. This will be a feasibility study that is outside this scope of works, but that will be taken into account.

3. Reduce embedded carbon costs.

All materials and fittings for the construction and finishing of the proposal are to be specified with environmental improvement as a guiding factor.

Construction materials - including existing windows - are all to be recycled and re-used in the proposal wherever possible.

4. Airtightness.

When the existing windows are upgraded, it is very important that their re-installation is managed to ensure the building is airtight. These works will be carefully specified to ensure this.