

# Retrofit of 19<sup>th</sup> century cottages:









## Eco-redevelopment of outbuildings & new-build extension



## Overview

|                      |   |
|----------------------|---|
| <b>Age:</b>          | Circa 1850  |
| <b>Bedrooms:</b>     | 3 Bedrooms  |
| <b>Location:</b>     | Chew Magna  |
| <b>Construction:</b> | Blockwork with Cavity walls   |
| <b>Type:</b>         | Originally two cottages, converted into one, with 2ft thick stone walls and floors. |

## Key Features

|   |                    |
|---|--------------------|
|  | Solar Thermal      |
|  | Solar PV           |
|  | Storage Battery    |
|  | High Insulation    |
|  | Double Glazing     |
|  | Skylights          |
|  | EV Charging        |
|  | Behavioural Change |

## Introduction

The homeowners, Nick and Sally have an ingrained climate consciousness and hence obvious interest in energy efficient home improvements. The 3-bedroom house in Chew Magna was built around 1850, it is situated in a conservation area. The house is originally two cottages which were mate into one in the 1950s. The house has 2ft thick stone walls and solid floors. Nick and Sally have owned the house for more than 20 years, and have been introducing energy efficiency measures from the get go, initially with insulation improvements.

## Key Features

### Insulation

The attic has been well insulated using glass fibre and Vermiculite. Insulation was also added to the rooms where applicable. Wooden Double Glazed windows were also installed throughout the house.

### Solar Panels

Solar thermal and Solar PV panels have been installed by Solasence. The solar energy and hot water is used in combination with forward

planning to run the washing machine, dryer, immersion heater and over.

### **Storage Battery**

The storage battery is made by GivEnergy, with a useful app and was supplied and installed by Cisco Homes.

### **Solar gain from skylights in new extension**

Skylights were added for the dual purpose of providing natural daylight into the new extension space while also increasing the solar gain potential in the winter months.

### **EV charging from PV and/or storage battery**

As well as servicing the household appliances, the electricity generated from the solar panels and electricity stored in the batteries is used to charge the Electric Vehicles on the property.

## **Performance**

The PV panels were installed when the government FIT payments had peaked, therefore the amount that the home generates to the grid, brings in around £1,200. The energy bills for gas and electricity cost about £1,200 so the overall energy bills work out at roughly zero cost. Most of the works were installed so long ago that the cost is unknown, however the storage battery and new inverter cost was around £5,000.

## **Other Features**

### **Other Implementations:**

- Rainwater harvesting for garden and vegetable plot
- Three large compost bays
- Use of EVs for three + years. Recently sold their second (diesel) car.
- Washing machine plumed in to take solar heated water rather than electrically heating it.

### **Behavioural Measures:**

- Washing line instead of tumble dryer
- More clothing instead of more heating
- Forward planning, to maximise the use of solar heated water.

## **Contacts**

### **Solar PV and Solar Thermal:**

Solarsense - <https://www.solarsense-uk.com/>

### **Solar Battery and Installation:**

GivEnergy - <https://givenergy.co.uk/>

Cisco Homes - 01752210007