# Whole building retrofit of Dorchester Town Council's Cricket Pavilion

Low Carbon DORSET

**Grant awarded: £20,046**

**Estimated annual saving: £10.5K** / 17 tonnes $CO_2$e***

**Project cost**
£50,114

**Estimated Saving**
17 tonnes of $CO_2$e* / £10,500 per year**

**Equipment / Installer**
Ground-source Heat Pump – Bioheat (£42,920),
Water Borehole– Bioheat (£4,355),
Earthwool loft roll insulation – Insulation Express (£1,965),
LED lighting – Whitty Electrical (£1,680)

## The Project

In the spring of 2021, Dorchester Town Council carried out a deep retrofit of their cricket pavilion. The project included installing a borehole-supplied ground-source heat pump (GSHP) with a new internal radiator system, additional roof insulation and new LED lighting. The town council also invested in a water borehole for cricket pitch watering.

This innovative whole-building approach will save an estimated 17 tonnes of $CO_2$e a year and just over £10.5K in energy costs (with RHI payments factored in) – reducing the overall emissions of the site by 70%.

### Getting started

In May 2019, in response to growing public concern, Dorchester Town Council declared a Climate Emergency and set the ambitious target of becoming zero-carbon by 2030 or before.

To achieve this target, the town council identified that they need to significantly reduce the amount of energy their buildings and operations consume – and ensure

*$CO_2$e, or carbon dioxide equivalent, is a term used to describe different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, $CO_2$e signifies the amount of $CO_2$ which would have the equivalent global warming impact. And allows us to express a carbon footprint consisting of lots of different greenhouse gases as a single number.

**Financial savings for LEDs and insulation measures are based on current average electricity price of 28p per kWh (May 22), financial savings for GSHP are based on average energy price of 25p per kWh to account for price difference in gas and electricity.

any energy that is used is produced by renewable sources only.

To put this plan in motion, the town council are carrying out energy efficiency and renewable energy projects at several of their sites. This case study focuses specifically on their efforts to reduce the carbon footprint of the cricket pavilion in Dorchester.

The pavilion building is owned by Dorchester Town Council and is now leased to Dorchester Cricket Club who hire it out throughout the year as a community space, whilst being used as a cricket pavilion in the summer.

## Ground Source Heat Pump (GSHP)

Prior to this project the heating and hot water in the pavilion were provided by gas and night-storage radiators at a cost of around £5,800 a year.

Inspired by the Powering Parks report produced by 'We are Possible', Dorchester Town Council were keen to explore how they could use the large green space next to their building to decarbonise their heat demand.

Powering Parks highlights the potential to take heat from the ground under green spaces and parks and use it to warm surrounding buildings. This is done using a ground-source heat pump which extracts the low temperature ambient heat from the ground, concentrates it, and then pumps it into buildings to warm them. This simple video explains how.

Heat pumps run off electricity and are very efficient - for every unit of electricity you put in you get up to five units of heat out. The installation of a ground-source heat pump at the pavilion eliminates the need for gas and uses far less electricity than the night-storage radiators it is replacing. It is expected that this new heating system will reduce the pavilion's energy demand by over 20,000 kilowatt hours a year, saving the town council around £5,100 in energy bills and reducing the footprint of the building by an estimated 11 tonnes of $CO_2e$ annually

As heat pumps are classed as renewable energy and the install happened before March 21, the town council are also able to claim Renewable Heat Incentive (RHI) payments for the renewable energy their heat pump produces. It's estimated they will receive around £2,100 a year for this (please note this scheme has now closed to new applicants).


There are currently only a handful of public parks in the UK that are exploiting their ground heat – and Dorchester Town Council hope that this project will help champion heat-pump technology and inspire others to tap into this opportunity for low-carbon heat.

## Insulation and LEDs

To reach their net-zero target, it is important that the town council also focuses on the energy efficiency of their buildings. By improving energy efficiency this will reduce the amount of renewable energy they need to source. It was quickly identified that the pavilion could benefit from swapping their old lighting for LEDs. This simple measure is expected to save two tonnes of $CO_2e$ and over £1,300 a year in electricity costs.

The council also made further improvements to the efficiency of the building by investing in insulation for the pavilion roof. This is expected to save a further three tonnes of $CO_2e$ and knock an additional £1,800 off their annual energy bills.

## Water borehole

Another source of emissions at the pavilion is the water required to keep the cricket pitch properly irrigated; prior to this project this was sourced from their mains-water supply. A huge amount of energy is needed to make mains water drinkable – a requirement that is not needed for watering cricket pitches.

To tackle the emissions from the pavilion's water demand, Dorchester Town Council installed a borehole at the site. This provides the water needed for irrigation with none of the associated emissions. This measure is estimated to save a tonne of $CO_2e$ a year.

This innovative project at the cricket pavilion shows the scale of savings that can be achieved when a whole-building approach is taken. By addressing the amount of energy they use as well as where they source it from, Dorchester Town Council has been able to drastically reduce their carbon footprint and their energy costs.

"As a result of this whole building approach, the ongoing running costs of the pavilion have been significantly reduced which has helped Dorchester Cricket Club to be able to invest its resources back into the Club.

"The Council is very grateful to Low Carbon Dorset who offered so much professional and helpful guidance so as to ensure that this project was a success."

Steve Newman, Deputy Town Clerk – Dorchester Town Council

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