CASE STUDY: Westborough School

LOCATION: Southend-on-Sea

CLIENT: Balfour Beatty Construction Scottish & Southern

CONTRACT VALUE: £1.4m

The Project

The £1.4m refurbishment project included the enlargement of the existing school hall and the creation of an open, flexible space for school and community use. This was a pioneering project to explore how the carbon footprint of the school can be reduced with the ultimate goal to become a zero carbon school, the first of its kind in the UK as part of a research project into sustainable schools led by Balfour Beatty with funding from the Department for Children, Schools and Families (DCSF), Zero Carbon Task Force and Balfour Beatty.

Westborough School was developed as trial of building methods, energy management and renewable energy provision. The aim was to show that a significant reduction in emissions could be made towards the ultimate goal of a zero carbon refurbished school design.
The Benefits

The design process and carbon reduction technologies showcased at Westborough School provide an excellent example of what can be achieved in a school environment. Additionally the success of this project will inform the decisions made during design and construction of future Balfour Beatty projects.

By achieving a reduction of approximately 67 tonnes of CO₂ emitted by the school per year, we have been able to assist our client towards achieving their goal of eventually becoming the UK’s first zero carbon school.

The Process

Project works were targeted to reduce carbon use by three methods: reduce energy demands, supply those demands efficiently and installation of renewable energy solutions.

Reduction of energy demands achieved by; insulation of existing walls, insulation of roof and installation of inner roof lining, installation of secondary glazing, improvement of air tightness and insulation of distribution pipework.

Efficient supply of energy; modification of fluorescent lights to accept T5 lamps, lighting control by PIR and daylight sensors, computer energy management, new heating plant and optimisation of heating plant operation periods, local hot water heating and heat exchange systems in the ventilation and heating systems.

Renewable energy solutions; solar PV panels installed on south facing roofs of the new playground timber canopy, biomass boiler, rainwater harvesting for toilet flushing.

Key Learning Points

Gas, biomass and electricity meter readings have been taken over a period of almost 6 months since completion and these readings have been used to analyse the performance of the new building and to forecast the use over the first year.

<table>
<thead>
<tr>
<th>Before Refurbishment</th>
<th>After Refurbishment</th>
<th>Saving</th>
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</thead>
<tbody>
<tr>
<td>Energy</td>
<td>CO₂</td>
<td>Energy</td>
</tr>
<tr>
<td>Gas</td>
<td>152</td>
<td>29,488</td>
</tr>
<tr>
<td>Electricity</td>
<td>55</td>
<td>23.21</td>
</tr>
<tr>
<td>Biomass</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Total</td>
<td>207</td>
<td>52,698</td>
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</tbody>
</table>

Learn more

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For more information on The Green Construction Board visit www.greenconstructionboard.org or email green.board@bis.gsi.gov.uk