



#### PROJECT SUMMARY:



#### CLIENT

Westminster City Council

#### PROJECT

RE:FIT Energy  
Conservation Measures

## PROJECT OVERVIEW

Initially, Westminster City Council envisioned a £1m project in which Vital Energi would assess 20 buildings for energy conservation measures and then deliver the most effective decarbonisation measures. After securing £13m in Public Sector Decarbonisation Scheme (PSDS) funding, Vital were presented with the challenge of delivering maximum

decarbonisation within this budget. The scope of works was expanded to 70 buildings, of which 61 were chosen for improvements.

Despite the significant increase in size and complexity, the project still needed to be delivered within the same time frame to meet the PSDS funding requirements.

## VITAL SOLUTION

Vital initially delivered an investment grade proposal which involved surveying all buildings within the scope of works and then identifying the most effective carbon reduction measures. All work was delivered under an energy performance contract which guarantees carbon reduction and financial savings targets will be met.

The project proved to be a major undertaking, with 61 buildings eventually being chosen for 135 separate projects, which included:

- 1,700kw of air source heat pumps ranging from 20kw to 600kw
- Boiler room insulation across 26 sites
- 46 EC fan upgrade replacements across two sites
- Rooftop Solar across 12 buildings generating 660kWp of electricity
- BMS & Control Improvements across 20 buildings
- Draught Proofing
- 11,000+ LED Lighting replacements
- DNO power upgrades including new substation

#### Creating A Partnership to Ensure Success

Due to the extremely tight timescale, Vital Energi worked with Westminster City Council to schedule the works to deliver “quick wins” first and more complex technologies later in the programme.

This required a very flexible and collaborative relationship between Vital Energi and WCC, who ensured prevention of bureaucratic barriers to ensure a seamless and timely delivery, facilitating regular engagement with Planning, English Heritage and local DNO operators, which was key to a successful project within an extremely challenging time frame. Lighting and fan upgrades were delivered early in the programme and began saving carbon as soon as installed. These two measures deliver over 7% of the project's yearly guaranteed carbon savings. More intricate solutions, which required consultation, planning and structural enabling works, such as large-scale heat pumps, were scheduled later in the

#### THE BENEFITS:

- > Winner of the Public Sector Project of the Year category at the Energy Saving Awards
- > An accelerated programme designed to meet the PSDS funding requirements
- > Creative partnership designed to remove barriers and deliver maximum decarbonisation within the budget
- > Circa 1,600 tonnes of carbon reduction per annum

▶ (Right) A solar installation on the Sayers Croft outdoor learning centre. (Below) A larger solar installation on the roof of the Queen Mother Sports Centre



*“Our net zero target of 2030 is rapidly approaching, and we need to drive meaningful change. The ability to deliver impactful, carbon reduction swiftly is essential, and local authorities need to create more dynamic systems of governance to be able to fully take advantage of funding opportunities such as PSDS. By getting the right partner and complimenting each other’s strengths I feel we have achieved the ideal outcome for any partnership.”*

CLAIRE BARRETT - DIRECTOR OF PROPERTY & STRATEGIC ASSET MANAGEMENT, WESTMINSTER CITY COUNCIL

programme to allow these challenges to be overcome.

#### **Delivering Maximum Carbon Reduction Within the Budget**

This project will reduce Westminster City Council's CO2 emissions, whilst delivering outstanding value for money. The nature of this funding required solutions which would deliver each tonne of carbon reduction for a set price and we were able to beat this ambitious target by over 5%.

Innovative, blended technology solutions, such as installing solar PV, alongside air source heat pumps, further increased carbon saving and, overall, the measures installed will deliver 1,600+ tonnes of guaranteed CO2 reduction per year.

#### **Using A Bespoke Approach to Each Individual Building**

Phase one of the project saw us work in a wide range of building types which included libraries, leisure centres, maintained schools and offices. As each one of these building types had varying energy needs, we created a bespoke solution for each. We surveyed each building, testing every individual asset for performance and then comparing it with more modern upgrades to see which would deliver maximum improved performance. By having a comprehensive, granular approach we were able to see how each building consumed energy throughout the day and throughout the year.

#### **Utilising Solar PV in a Busy Urban Area**

One of the ways we helped Westminster City Council decarbonise their estate was through the installation of rooftop Solar PV. Due to the built-up nature of London, land for a ground mounted solar installation wasn't available, but we were able to identify 12 sites where we could put in rooftop solar PV.

On smaller rooftops, such as the Dementia and Memory Resource Centre, we were able to install 21 panels, whereas larger buildings, such

as the leisure centres, were able to accommodate hundreds of panels. Overall, we installed 1,649 solar panels throughout Westminster, capable of generating approximately 660kW of clean electricity.

#### **The Electrification of Heat**

Air source heat pumps are one of the most efficient ways of generating heat. When installed correctly, their coefficient of performance can be well in excess of 2:1, meaning for every 1kW of electricity put in, you can generate 2kW+ of heat.

This makes them an extremely valuable tool for organisations looking to decarbonise and we identified 9 buildings which housed 10 heat pumps with an overall capacity of 1.7MW.

As each building had different requirements, we created a range of solutions for housing the units. Smaller units of around 25kW could be placed outside, at ground level on concrete foundations in fenced off areas, whilst some of the bigger units sat on rooftops or were installed in purpose-built steelwork enclosures. As these can weigh up to 10 tonnes when fully loaded, we had to undertake extensive strengthening of the roofs to ensure they were suitable for the additional weight. Heat pumps installed on listed buildings involved extensive consultations with local planners and the production of heritage impact assessments, acoustic assessment, site investigation reports and full structural impact surveys. The largest installation came at the Queen Mother Sports Centre where we created a bespoke two-storey enclosure to house the heat pumps and other plant. The overall enclosure was approximately 70m long and included acoustic louvres to reduce the noise emissions. This scope of works also involved the local DNO installing a new dedicated electrical supply to serve the heat pumps into the site via a new dedicated substation.

Heat pumps provided, by far, the largest portion of decarbonisation, accounting for almost 73% of all guaranteed carbon reductions.

#### **A Comprehensive Lighting Upgrade Delivering Decarbonisation and Improving Quality of Light.**

By upgrading lighting to modern LED units, we are able to lower emissions, deliver strong carbon savings, but also improve the overall quality of light in a building.

Overall, we installed over 11,000 lighting upgrades across 50+ sites, with the largest installation replacing almost 1,000 and the smallest just 3 lighting units.

The financial returns on this see energy savings totalling almost £200,000 per year, whilst delivering 73 tonnes of carbon reduction.

#### **Identifying Insulation Opportunities for Quick Wins**

Whilst pipework insulation may not be the most high-tech of upgrades, it can be one of the quickest measures to install and generates strong carbon savings. We installed pipework insulation at 26 separate sites which will deliver an overall guaranteed carbon reduction of 108 tonnes per year.

#### **Upgrading the Fan System to More Modern Units**

We identified two sites where we were able to improve the air handling systems by upgrading the existing fans to more modern electronically commutated (EC) fans. This brought significant benefits and they are not only more efficient, but allow for precision control, ensuring the building management system can more accurately meet the buildings' needs. An additional benefit is that EC fans have longer lifespans due to the lack of carbon brushes which cause wear.

We installed 46 EC fans across Pimlico Library, Pimlico Academy and Porchester Leisure Centre and they will save 11.6 tonnes of carbon per year.