

CLIENT

Roth International UK

PROJECT

St George's Wharf, Vauxhall

ARCHITECT

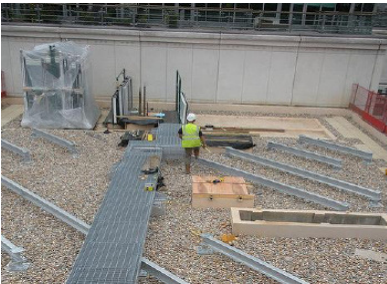
Broadway Malyan

VALUE

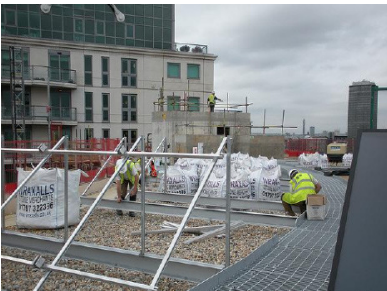
£0.5 million

SCOPE OF WORK

Design of a Solar Thermal Hot Water System providing 10% reduction in CO2 emissions



With the aim to provide high end urban residential apartments, matched with commercial outlets, St. George Wharf is an iconic mixed use riverside development designed by award winning architects 'Broadway Malyan'. Comprising of 13 blocks ranging from 10 to 15 floors together with a 49 storey tower block, St. George's Wharf is located on the southern bank of Thames river beside Vauxhall bridge in London.



To deliver the sustainability aspirations of Aquarius House, NLG Associates were appointed by Roth UK to design a 'Solar Thermal System' inline with planning requirements to reduce 10% of the building's CO2 emissions. The system would generate a significant proportion of the annual hot water requirement for the development through onsite renewable energy. Following the design brief, NLG Associates performed a series of calculations to determine the hot water requirements of the apartments. These results together with the occupancy level of the apartments were used as the basis to calculate the amount of Solar thermal panels required. In addition to these, buffer vessel capacities were calculated to balance the system against daily hot water peaks.



CO2 emission reductions being the primary aim of the Solar thermal proposal. Industry standard 'T.Sol' calculations were performed, matched with the derived buffer vessel capacities and hot water demand for the development. Results of the annual simulation indicated approximately 10% of the baseline CO2 emissions can be avoided, together with energy savings achieved and system efficiency. Coordination of the system with the various elements of the building was equally challenging as determining the system performance. Roof areas were assessed to optimise the effective installation of the system within confined space. NLG Associates design brief provided the basis for the developers to provide 3 No. rooftop solar plant rooms for enhanced system performance through minimising circulation pipe runs.



NLG Associates performed full calculations to size the thermal distribution Network involving circulator pumps, control panels, pipe sizing of the primaries from plant room to the individual apartments complete with tenant interfaces and safety controls. The design methodology was delivered through a series of drawings describing coordinated services routings and specifications. Heat distribution schematics highlighting full dynamics of the system together with hydraulic interfaces and connections in the plantroom were produced. An effective control strategy was devised for modulating hot water management in the apartments through solar and electric immersion heaters to meet the requirements in all seasons of the year.

NLG Associates designed system highlighted the importance of solex heat exchanger units in the rooftop plantrooms, this provided safety and ease of system maintenance through minimal disruption. Condition monitoring interfaces and data loggers were provided in the plantroom for efficient control and optimisation of the system, with sub monitoring units which were provided in the apartments enabling tenants to appreciate the savings generated through renewable energy.

NLG Associates design system was checked and approved by an independent assessor to deliver the estimated CO2 emissions reduction and energy savings, prior to planning condition sign off. Post installation system performance data, logged through condition monitoring devices demonstrated the entire system functioning at 95% efficiency. St. George's Wharf solar thermal installation was a finalist in the Renewable Energy Association (REA) 2010 awards for its outstanding performance.