

21 Didsbury Park – UKGBC Information

Percentage increase on Building Regulations

A traditional home (if defined as a house built to simply comply with Part L1A) will ordinarily just aim to meet Building Regulation standard and is unlikely to ever have a percentage increase of greater than 3-5%.

21 Didsbury Park is achieving a 22.4% reduction solely through efficient design measures (high level of insulation for low u-values, MVHR, efficient heating system, accredited construction details [ACDs] including thermal lintels, triply glazing). This percentage reduction is further increase from the specifying of a 3kW solar PV array (per house) which brings the total carbon reduction to 44.7%.

Energy Demand Reduction

	Energy demand (kWh/year)	% reduction
Baseline energy demand	53060.2	-
Be Lean energy demand (efficient design measures)	38751.1	27.0%
Be Green energy demand (after renewables)	33569.4	13.4%
Total reduction	19490.8	37.0%

Solar PV vs Solar Thermal

	Solar PV (Photovoltaics)	Solar Thermal (Glazed, flat plate assumed)
Amount (equivalents)	6kWp total (3kWp per house)	Approx. 39.36sqm total (19.68sqm per house)
Energy demand reduction (kWh/year)	5181.7	3446.3
Carbon emission reduction (kgCO ₂ /year)	2689.3	751.7
Percentage reduction in carbon emissions (over residual emissions)	28.7%	8.0%

The above is based off both the solar PV and solar thermal being orientated South @ 30 degrees.

Also the solar thermal calculation uses SAP assumptions for the follow details:

Zero-loss Collector Efficiency (η_0) = 0.75

Heat Loss Coefficient of Collector = 6 W/m²K

2nd Order Heat Loss Coefficient of Collector = 0 W/m²K²

Energy Cost Saving

The proposed annual fuel costs of 21 Didsbury Park outlined within the EPC cost worksheet in SAP are £739.31.

In comparison the same dwelling (geometry wise) designed to achieve Building Regulation standard exactly (DER/TER both = 12.57) would have a proposed annual energy cost of £1354.07.

This represents an estimated annual energy cost saving of £614.76.

Low Air-tightness & MVHR vs Trickle Vent & Naturally Ventilated

	Trickle vents & naturally ventilated	Low air permeability & MVHR
Air permeability (m3/hm2)	5	3
Ventilation system	Natural ventilation	Vent-Axia Sentinel Kinetic High Flow
Primary energy demand (kWh/year)	48471.4	38751.1
Energy demand reduction (%)	8.6%	13.4%
Carbon emissions (kgCO2/year)	9980.1	9364.8
Carbon emission reduction (%)	17.3%	22.4%

As can be seen from the table above, the chosen scenario that targets low air-tightness levels and the use of mechanical ventilation results in a reduced primary energy demand of 9720.3kWh/year and residual carbon emissions of 615.3kgCO2/year; which effectively equates to a 5% improvement in both.

For this particular project, the MVRH system was opted for due to its superior ability in maintaining a healthy indoor environment all year round through continuously supplying fresh air. Thereby providing far more benefits to the internal health and wellbeing of the houses and prospective occupants.

Gas vs Electricity

	Gas	Electricity
Proposed final energy demand (kWh/year)	33569.4	30518.4
Proposed final carbon emissions (kgCO2/year)	6675.5	13954.4
% improvement over Building Regulations	44.7%	23%
EPC costs (£) (based off 2016 fuel costings)	739.31	2274.56
EPC rating	A (92)	B (82)
Required additional PV to achieve A rating	N/A	8kWp per house
Total PV system	6kWp (3kWp per house)	22kWp (11kWp per house)

Based off an electric boiler and 300L cylinder with the same declared loss factor as one currently specified (1.69 kWh/24Hr).