

ENERGY STATEMENT

July 2014

For the proposed development at
24 Woodchurch Road, London NW6 3PN

This energy statement explores the options for energy efficiency, clean energy generation and renewable energy for the single family house proposed at the above address. This is done in accordance with Camden policy document 'CPG 3 Sustainability' dated September 2013 and the GLA guidance which first looks at energy demand reduction measures (Be Lean), then at community heating (Be Clean), then finally, on site renewable technologies.

Energy Demand

Demand for heating will be minimised by insulation and orientation.

The main rooms in this building face south, with large glazed walls to pick up solar radiation, and external louvres to prevent overheating. Large windows maximize the availability of daylight and thus minimise the requirement for electric lighting.

Underfloor heating reduces heat demand because rooms with under floor heating feel comfortable at 18 deg C whereas rooms with radiators feel comfortable around 20 deg C. Advanced control systems allow rooms to be heated only when the heat is required.

High levels of insulation and air-tightness are proposed;

Ground floor	U 0.16 (as built)
External wall	U 0.2.0
Party Wall	(0.00 thermal bypass)
Roof	U 0.10
Windows	U 1.5
Doors	U 1.5 (glazed door)
Air Permeability	5.00

We propose better insulation values but a poorer permeability value than shown in CPG3 because our experience is that 3.00 (m³/h.m² at 50 Pa) is very hard to achieve in practice. 5.00 is a good standard of airtightness, and can be achieved by normal good-practice construction.

Natural ventilation is used throughout, 'System 1' with intermittent fans to kitchen and bathrooms. This is the simplest system, with lowest embodied energy, and often found to be the lowest energy solution overall.

Energy monitoring, metering and controls will be used to inform and facilitate changes in user behaviour.

Overall, energy demand will be controlled by the requirements of the Code for Sustainable Homes and the Camden requirement to achieve 50% of the un-weighted credits in the Energy category.

Efficient Energy Supply

Improvements to the building fabric 'U' values and detailing will lower the total energy demand below that of a building which just conforms to Part L of the 2006 Building Regulations. Consideration is given to the decentralised provision of energy as a means of further reducing the carbon dioxide emissions of the development.

Community Heating : London heat maps show that there is no suitable existing or potential energy network within 1km of the proposed development. Community heating has therefore been discounted, however the heating system will be designed in such a way that it can accommodate a feed from any future district heating system.

CHP : the proposal is for a single family house, and there is no viable system of Combined Heat and Power available for single family homes.

Communal heating is not applicable to single family homes such as this.

Ground Source Heat Pumps: The building is part-built. There is no access to the ground for GSHP.

Air Source Heat Pumps **(Selected)**: To achieve the best energy results we propose using a Robur Gas Absorption Heat Pump, rated as 150% efficient. This is innovative technology, and has recently installed on another Chassay Studio project in Camden. Since it uses on-site gas absorption it is more efficient than electric ASHP. This is backed up by a small gas boiler (min SEDBUK 89%) for the coldest periods when the heat pump is less efficient.

Controls are also important; Time & temperature zone control & load compensators to be specified.

Renewable Energy

In the energy saving measures above we have included some technologies considered 'renewable' under the London Plan but which are actually very efficient users of fossil fuels. We have also considered the following sources of renewable energy:

Biomass boilers; These are unsuitable for single family houses, particularly in urban areas, due to the inflexible heat supply and production of smoke.

Wind Generation: The site is small and constrained and clearly unsuitable for wind generation. Issues of low wind speed, noise, vibration & appearance rule this out.

Solar thermal panels would be possible on this site. However, the way they work reduces the efficiency of the heat pump so that it would be compromised. This, and the limited available roof space, means that they are not the optimal solution.

Photovoltaic solar panels **(Selected)**: With high levels of insulation and hyper-efficient hot water production, the main energy demand is electricity. A flat roof provides a good location for PV panels. The Energy Savings Trust shows that a single family house built to Code 4 standards will achieve 20% renewable energy from PV panels with an output of 0.64kWpeak PV. (EST "44% solution").

Conclusion

Photovoltaic panels provide the best means of harvesting energy on site, to provide the percentage required, but the CO2 emissions are further reduced below Code 4 requirements by higher levels of demand management and hyper-efficient new technology.