

# WHAT ARE THE NEIGHBOURS DOING?

Below you can read the accounts of what some Highgate households have done to make their homes more comfortable and use less energy. These homes range from Victorian to classic Edwardian, and include early and late 20th century terrace properties.

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## 1. Highgate Village townhouse

“We bought this 1980s townhouse in 2006, and at first made mostly cosmetic changes. In 2012 an additional storey was added (built almost to PassivHaus standards: timber-framed and with natural insulation, triple glazing and sun shading, and with a solar installation). We’re so pleased with the energy measures – it’s such a comfortable house. But we REALLY WISH that we’d taken the chance to do more when we first moved in. We could so easily have insulated our coldest room, if only we’d thought about it before installing wardrobes, carpets etc.”

### ROOF, WALLS AND FLOORS

- ❖ In 2012 a highly insulated new storey was added on top of the original flat roof, and remaining roof insulation was upgraded.
- ❖ The rest of the building has cavity walls – partially filled when the house was constructed. We’ve looked at adding internal insulation (too much upheaval at this stage) or external, to improve the insulation. We’re waiting now for a few years as we’ve been told that it should become possible to add extra cavity insulation in due course (at present the industry advises against adding extra insulation to partial-filled cavity walls).
- ❖ Floors – we thought the (solid) ground floor was cold, but in fact it’s pretty well insulated. Turned out that the ‘cold floor’ was actually the result of draughts under doors, especially the front door. Putting a better seal under the front door made a huge difference!

### WINDOWS AND DOORS

- ❖ The house was built with double-glazed windows and double-glazed full-height patio doors. The small windows were draughty and seals had gone, so we replaced them with triple-glazed units (it’s a conservation area, so even though we are in a new house we had to match frame width, etc). These new windows have made a huge difference. They tilt/open inwards so are great for ventilation.
- ❖ All the windows in the new room (top floor) are triple glazed too.
- ❖ We have not replaced the larger window units originally installed in the house, due to the environmental downsides of replacing units that are still serviceable. We use thermally lined full length curtains over all the large windows, which help during hours of darkness.
- ❖ We sealed up our draughty hall windows last time we painted as we’d never opened them.

- ❖ The front door is a normal panelled door – it's one of our weakest points in terms of heat loss. We have thermally lined curtains across the windows and door of the hallway for winter nights, which makes it look cosier as well as keeping in the warmth.

## HEATING

- ❖ We had an efficient condensing gas boiler installed about 3 years ago, and added a 'weather compensator' in 2012. These are little used in the UK but are a super-smart kind of control – an outdoor sensor measures the outside temperature and the weather compensation device 'tells' the boiler what temperature to operate at to get the indoor temperature we've selected. It's supposed to save 15% of gas and ensure even heat. Certainly the temperature has been lovely and even since we had it, and the boiler just works away at a low temperature (about 35-45C most of the winter) without straining.
- ❖ All the radiators have thermostatic radiator valves too, though they don't play much of a role since the brilliant weather compensator was fitted. All the radiators have foil heat-reflecting panels – these are far more effective than we'd thought they would be.
- ❖ One hard-to-ventilate room has a single room heat recovery ventilator (to avoid draughts and stuffiness). It runs at just 3 watts, silently, taking out stale air and bringing in fresh (heated by the outgoing air). This has worked brilliantly for keeping the room at a high temperature for an elderly person, without draughts.

## DRAUGHTPROOFING

- ❖ We discovered a draught from the bottom corners of poorly installed patio doors and filled using expanding foam. When our new kitchen was installed we made sure the builder filled all the holes taking pipes etc through the external wall. Installed a one-way kitchen extractor vent with flaps to prevent cold air coming inwards. Front door draught-proofed as mentioned. And a bit of tape over the keyhole to the door between the hallway and (integrated) garage has worked wonders.

## RENEWABLE ENERGY

- ❖ The flat roof has a 2.16 kWp solar PV system to generate **electricity** (quite small – up to 4 kWp is typical for a house). We have nine 240 W modules (HIT modules from Panasonic (formerly Sanyo) and an SMA inverter to allow the performance to be monitored. We get the lower rate of feed-in-tariff but it's providing a 7% return. It's quite a thrill, watching the dials as the sunshine generates electricity. On dull days in winter we only get about a tenth of what we use, but on a sunny April day we can produce 13 or 14 kWh, far more than our daily consumption.
- ❖ We also produce our own **hot water**, with a 30 evacuated tube solar hot water system with 300 litre tank. This works very well, even in winter – when the sun pre-heats the cold incoming water so the gas only has to boost it the final few degrees.

## LIGHTING

- ❖ Almost all of the lights in regular use are now either LEDs or CFLs. .
- ❖ Two Solatubes provide daylight to internal bathrooms – they 'catch' sunlight at roof level and it travels down a highly reflective tube that ends in a neat ceiling light. The amount of light that comes through is tremendous, and they give rooms that would otherwise rely entirely on electric light the sense of having a skylight. Great success.



- ❖ We have used reflective paint from the Dulux (Light and Space) range on the ceilings to improve the use of daylight in each room, and in the hallway/stairs. It does seem to make a considerable difference. (Otherwise we tend to go for natural paints.)

## OTHER

- ❖ We have mostly low energy household appliances, some rainwater capture, and a bat box. Three-way waste/recycling/compost bin integrated in a pullout kitchen cupboard. Use an energy monitor to check electricity consumption.

## 2. Victorian three-storey, end of terrace house

“We bought the property in 1984 and had to undertake major repairs to the roof, floors and walls. More recently subsidence problems caused by an old soak-away drain and a leaky roof led to a total refit with an eco theme. Research indicates that this house could have been built as early as the 1860s. It has a side entrance to a yard at the back that seems to have been a dairy. Research also explains certain rebuilt areas and structural problems, as there is evidence of bomb damage.”

### ROOF, WALLS AND FLOORS

- ❖ We replaced the valley roof with a pitched roof, enabling the installation of PV panels and creating a large and well insulated attic space. The attic roof and floor were insulated with Rockwool, and the walls with 30mm Celotex (PIR foam) behind the plasterboard.
- ❖ All the (solid) walls and the floor of the house are now insulated. The walls were insulated largely internally, with some external insulation. Internal insulation used was aerogel – this is relatively thin so offers good performance with minimal loss of space. It was used installed internally on the front, back and exposed side of the building, except on chimney breasts which already offer good insulation. Externally Sto-therm render insulation, installed on the wall under the arch (the hall is too narrow to install internally) plus on the rebuilt bathroom extension. Cavity wall insulation was used in the new kitchen wall, and underfloor insulation added to the side-entrance arch.
- ❖ The floors are now insulated where possible. The solid kitchen floor is insulated with Celotex. Rubber tube squeezed between floorboards preventing draughts (and clothes moths!)

### WINDOWS AND DOORS

- ❖ The draughty sash windows have been repaired – this work is guaranteed for 10 years. Carrying out the work at the same time as wall insulation enabled the boxes to be extended to the new wall depth. We may add secondary glazing once we have seen how these perform through winter.

### HEATING

- ❖ We replaced the old boiler with a new combi condensing boiler – this should save 30% of our gas consumption. The existing wood-burning stove will now only be required on very cold days.

### RENEWABLE ENERGY

- ❖ We installed solar PV to produce **electricity**. This 4.3 kWp system produced 2,003 kWh in 7 months from March 2012. (Wood-burning stove already mentioned.)



## 21st century homes

character ● comfort ● low carbon

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## LIGHTING

- ❖ LED lights installed in place of ceiling lights, with some infrequently used retaining halogen.

## OTHER

- ❖ We have constructed a cold larder to cut down on refrigeration - with external vent and Eco quilt insulation in walls and door
- ❖ An aerating shower head provides a proper shower feel with less water
- ❖ We've added bat and swift boxes for wildlife

The result is a warm house (the office was sometimes a cold 15°C) and a higher EPC rating of C. (Adding secondary glazing to the sash windows, would take the house to a B rating, the highest level achievable in a retrofitted house.)

### 3. An Edwardian terraced family property built at turn of the century

“We purchased the house in 2011 after it had been empty for a while, and had not been touched for a number of years. It was graded Band G on the EPC, with potential to improve to Band C. An energy survey revealed a range of measures and how effective they would be – these ranged from roof insulation, which could cut our heating costs by 38%, through installing a modern boiler (26% reduction), wall insulation (20% reduction), installing double-glazed windows (14%), to insulating the floor and blocking the chimneys (3% each). We then decided on which measures to take at this stage.”

## ROOF, WALLS AND FLOORS

- ❖ The attic was insulation with 300 mm instead of 270 mm of insulation – U value of 0.142. The walls were insulated internally, which reduces the U value from 2.3 to 0.4, and the alcoves insulated. Insulation was added under the floor with U value of 0.022.

## WINDOWS AND DOORS

- ❖ No changes as yet – secondary glazing is being considered for the future.

## HEATING

- ❖ The boiler was replaced with a new Viessmann condensing boiler with an external weather compensation system, supplying 13 (foil backed) radiators and a Megaflow hot water cylinder. Two wood burning stoves were installed.

## RENEWABLE ENERGY

- ❖ To generate electricity we installed a solar PV system with ten 185W panels. This Generated 1460 kWh from Sept 2011 to June 2012. (Wood-burning stoves already mentioned.)

## LIGHTING

- ❖ LED lights installed.



## 4. Highgate Village house

“The house started life as commercial property in the early part of the 20th Century and was probably converted (and extended) into domestic property in the 1930s. It is a detached house on three floors, facing south-south-east. A previous owner modernised it in the late 1990s, installing internal wall insulation and fairly thin double glazing (as was common at the time). We’ve done more ...”

### ROOF, WALLS AND FLOOR

- ❖ As mentioned, the (solid) walls were treated with internal wall insulation in the late 1990s. We renewed the flat roof and installed 275 mm of natural insulation materials
- ❖ We have planning permission for additional wall insulation (external) should we wish to install on the flank walls (this wall is already rendered so its appearance would not change).

### WINDOWS AND DOORS

- ❖ We replaced the windows to the roof terrace with much improved double glazing
- ❖ Inserted draught stripping in several windows, and installed sun screening at SSE-facing windows reduces summer overheating
- ❖ We installed a clear Perspex ‘ceiling’ in the conservatory to reduce heat loss, and the conservatory doors and garden doors and windows have been replaced with triple glazed panels

### HEATING

- ❖ We changed the boiler to a condensing boiler (with a tank)

### DRAUGHTPROOFING

- ❖ We inserted a chimney balloon in the fireplace to reduce draughts and the escape of heat

### RENEWABLE ENERGY

- ❖ We have installed 13 photovoltaic panels on the roof. A monitor tells us with a coloured visual display whether we’re generating electricity and selling into the grid (green) or whether we drawing on the national grid (red)
- ❖ We also installed two solar thermal panels on the roof. These provided about 95% of our hot water between March and October 2012. We also have a bit of kit which ensures that we use hot water for the washing machine from the solar-heated cylinder rather than using electricity to heat up from cold – called Alpha Mix.

### LIGHTING

- ❖ We use energy efficient bulbs in most places, but are stuck with some halogen bulbs, which will be replaced with LED bulbs in due course

### OTHER

- ❖ We replaced the white goods with more energy efficient equipment. We have a ceiling airer for drying clothes and no tumble dryer. In the garden we have two water butts and a compost bin



## 5. An Edwardian 'Linked' house

"The house was built in about 1909. We moved in May 2000, and following an Eco-audit, we have substantially reduced energy costs, though there is still more to do. The house is now much warmer in rooms where we want warmth. We use almost two-thirds less gas than before, and have reduced our electricity consumption with the help of the electricity monitor. The 'resting' usage of the house (fridge, freezer, timers etc. which are always 'On') is just 84 watts."

### ROOF, WALLS AND FLOORS

- ❖ We insulated the roof spaces and the cellar ceiling (to insulate the ground floor from below) using with sustainable insulation (Homatherm and Thermafleecce). This reduces heat loss but also the amount of incoming dust from the road. When we renovated the bathroom we raised the ceiling and stuffed it with sheep's wool insulation. We used lime plaster (tadelakt) on the bathroom walls to eliminate condensation created by hot water meeting cold external walls.

### WINDOWS AND DOORS

- ❖ Secondary glazed windows conserve heat and soundproof rooms on the ground floor and first floor and conserve the exterior appearance. We replaced sash windows in the study, kitchen and bathroom, installing double-glazed low-emission argon filled units. We glazed in the porch, creating an intermediate space, allowing the front door to be opened without losing a lot of heat from the house.

### HEATING

- ❖ Wood-burning stove approved for use in smokeless zones replaced the inefficient coal-effect gas fire, together with an Eco-fan to circulate the hot air around the room and house. We put reflecting foil radiator panels behind the radiators.

### DRAUGHTPROOFING

- ❖ Chimney balloons prevent draughts via chimneys (much more effectively than old pillows!) We have blocked up redundant air bricks (for ventilating now-unused chimneys), and use keyhole covers – essential to prevent draughts.

### RENEWABLE ENERGY

(Wood-burning stove, as mentioned.)

### LIGHTING

- ❖ LED lighting, though initially expensive, reduces costs over time. The bulbs last for much longer than incandescent equivalents (meaning no wobbling on chairs or ladders to replace lights!)

### OTHER

- ❖ We use an overhead ailer for drying clothes inside (we have no tumble dryer). Low flush lavatory reduces water consumption. We use a pressure cooker, a cost-effective and delicious way of cooking. Electricity monitor enables us to control power use.

