



Code for Sustainable Homes Report
"Veil House"
Rochester Road/6 Wilmot Place
London
May 2011

Sustainability Strategy:

DP-22 promoting sustainable design and construction.

Current attitudes towards sustainability and reduction of carbon emissions, coupled with our own ethos and approach to design, mean that we are very keen for the house to employ sustainable technologies and building materials. We propose that the house will meet Code 3 for Sustainable Homes by doing the following:

1. Improved thermal and acoustic efficiency, with high insulation levels.
2. Correct orientation.
3. Improving air tightness with the use of robust detailing and membranes.
4. The installation of a high efficiency A* condensing boiler.
5. Reduction of thermal bridging with the use of robust detailing.
6. The use of solar thermal panels for hot water.
7. The use of dual flush toilets.
8. The use of reduced flow shower fittings and a standard sized bath.
9. The use of high grade sustainable materials from the BRE green guide.
10. The use of waste management and recycling facilities.
11. The provision of drying space in the house with an airing cupboard.
12. The use of low voltage light fittings.
13. The provision of cycle storage.
14. The provision of a home office.
15. Reducing the amount of water that runs off the site into storm drains.
16. Enhanced security of the home.
17. The use of a green roof.

1. Thermal efficiency:

The house will be constructed with a timber frame above ground level, this allows us to incorporate a high level of thermal insulation in the roof and walls. We will aim for 200mm thick insulation within the roof.

2. Orientation:

We have situated the proposed house so that it maximises the daylight entering the spaces at different times of the day and year. The main glazing is on the North facade to avoid solar gain.

3. Improved air tightness:

As a practice we have experience with creating an air tight envelope through the use of membranes and detailing. We have recently achieved 1.5 ac per hour in a Victorian terraced house in Hampstead.

4. Installation of a high efficiency boiler.

We propose the use of an A* rated condensing boiler located in the plant room/W.C.

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5. Reduction of thermal bridging:

Through the use of robust detailing and thermal breaks with insulation thermal bridging between internal and external spaces will be reduced.

6. The use of solar thermal panels:

We propose to install an integrated solar thermal panel and hot water system. This will enable the hot water and under floor heating systems to be supplied by the solar thermal panels. The use of thermal mass in the lower ground floor will aid with the thermal performance of the house.

7. The use of dual flush toilets:

We propose to use dual flush toilets in both the bathroom and the W.C to reduce the water consumption of the house.

8. The use of reduced flow shower fittings and a standard sized bath tub:

By using low flow fittings and a standard sized bath tub in the bathroom, we will be able to reduce the water consumption of the house.

9. The use of high grade materials:

We propose to use London stock brick for the North elevation, white render with a high recycled content. The timber structure, doors and window frames will all be FSC rated from sustainable sources.

10. The use of waste management facilities:

The house will have a designated recycling bin store for bottles, paper and composting. This is located adjacent to the entrance.

11. The provision of drying space:

The boiler is located in a plant space within the W.C. Slatted shelving above will provide drying space for clothes to avoid the need for a dryer.

12. Lighting:

We propose to maximise natural light with roof lights and carefully positioned windows. In addition the white planes of the lower ground floor courtyard will bounce light into the bedrooms. Light fittings will be low voltage.

13. Cycle storage provision:

Cycles could be stored either inside the house or in the lower ground floor light well.

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14. Home office provision:

A facility for home office has been allowed for in the living room joinery. In addition one of the bedrooms could be used as a home office too.

15. Reducing the amount of water run off:

By using a green roof and adequate guttering the water run off will be reduced.

16. The enhanced security of the home:

By using metal railings along the front of the courtyard and double glazed toughened glazing the house aims to be secure. Solid locks and alarms will add to the security. In addition access to the house is via a bridge link which affords the owner a view of any one approaching the house.

17. The use of a green roof:

The new roof of the house will have an intensive green roof, effectively lifting the ground below onto the roof. The advantages of this are:

The control of precipitation and rain water is improved. We can increase the energy conservation, through an increase in thermal insulation values. The air quality is improved due to the conversion of carbon dioxide by photosynthesis. The green roof also aids with noise reduction, the vegetation dampens any noise pollution. In addition by using a green roof we can create a sustainable solution to traditional roofs.

Code Level 3:

For code level 3 the home will have to be 25% more energy efficient than one built to the 2006 Building Regulations standards. This will be achieved by:

1. Improve thermal efficiency of the walls, windows and roof.

The frame will be a timber frame, which will allow for 150mm of insulation in the walls and 200mm in the roof. The target U value for the walls will be 0.20W/m²K and 0.12W/m²K for the roof. All glazing will be double glazed with sealed frames to achieve a minimum U value of 1.50W/m²K.

2. Reducing air permeability to the minimum consistent with health requirements.

The frame, upper floor of the building will have an air tight membrane and robust detailing around all openings. We will aim for under the 10m³ per hour @ 50Pa building regulations. The spaces will have back ground ventilation and opening windows for fresh air.

3. Installing a high efficient boiler.

We will install a grade A* condensing boiler from Worcester Bosch.

4. Reduce thermal bridging.

We will design the fabric of the building so that cold bridges are removed. The timber frame with membrane and cladding will assist with this. All structure will be separate from the interior.

5. Low carbon technologies.

We propose to install an integrated solar thermal panel and hot water system. This will enable the hot water and under floor heating systems to be supplied by the solar thermal panels. The use of thermal mass in the lower ground floor will aid with the thermal performance of the house.

The home will be designed to use no more than about 105 litres of water per person per day. This will be achieved by the following:

- i 6/4 dual flush W.C.
- ii 6-9 litres per minute shower.
- iii A smaller bath tub which uses less water.
- iv 18ltr max volume dishwasher.
- v 60ltr max volume washing machine.

Other requirements that we will meet are:

1. Efficient surface water management. The green roof helps attenuate water drainage and the courtyard will have porous areas for draining.

2. Materials: The timber frame will achieve at least a grade D on the BRE scale. The brick cladding will also achieve at least a grade D. All paints will be water based and the window, door frame will be constructed from FSC rated timber.

3. Waste management: During construction the waste will be managed efficiently. All hard standing will be recycled where possible as hard-core. During the use of the building, the waste will be recycled and bin stores will be integrated into the scheme.

Code Level 3:

To obtain the 46.7 points left for Code 3 after carrying the opposite points, we will also do the following:

1. There will be provision for a drying space in the cupboard under the stairs, this removes the need for drying machines.

2. All lighting will be energy efficient using energy efficient bulbs or LED's where possible.

3. A cycle storage area is to be provided on the entrance opposite the bins.

4. The ground floor rooms could be converted into an office and all IT will be future proofed to allow for this.

5. The amount of water that runs off the site will be reduced by using the green roof.

6. We propose to use very sustainable materials, the timber frame will be constructed from FSC rated timber. The insulation will be from a sustainable source. The internal timber finishes will be FSC rated. All timber window and door frames will be FSC rated.

7. There will be recycling facilities in the kitchen units, but also larger recycling collection in the external bin storage area.

8. The home will have enhanced security. The home has two front doors, one an external gate leading onto a courtyard and the other a timber front door. The house is set back from the pavement with a courtyard at lower ground floor. All windows and doors will have good locks and all glazing at head height will be toughened.

9. The sound insulation of the home will be very high as the ground floor will be concrete. The internal walls between the bedrooms will be masonry which will also act as good sound insulation. The frame will have 150mm acoustic and thermal insulation.