

Sir Stuart Lipton

40 Queen's Grove

Environmental Statement

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Job number 75547-79

Environmental Statement

This document summarises the environmental measures being considered for a new house, 40 Queen's Grove, St. Johns Wood. The new house is replacing an existing house and will be a significant improvement environmentally, with about 50% reductions in total carbon dioxide emissions and almost 80% reductions in building regulations carbon dioxide emissions, i.e. from heating, ventilation and lighting energy use.

The design is not complete yet, but these are the features that we are intending to use and the savings we expect to achieve.

Energy

The energy strategy will seek to:

- reduce energy use,
- be energy efficient,
- supply energy more efficiently using a ground source heating and cooling system,
- use renewable energy for generating hot water with solar thermal panels.

Building fabric

The house building fabric will be better than that required to meet Building Regulations. This will be achieved with:

- good insulation, almost 3 times better than standard
- triple glazing with a mid pane blind on the front windows above ground,
- high performance double glazing for all other windows,
- a balanced amount of glazing, about 30% of floor area,
- good air tightness.

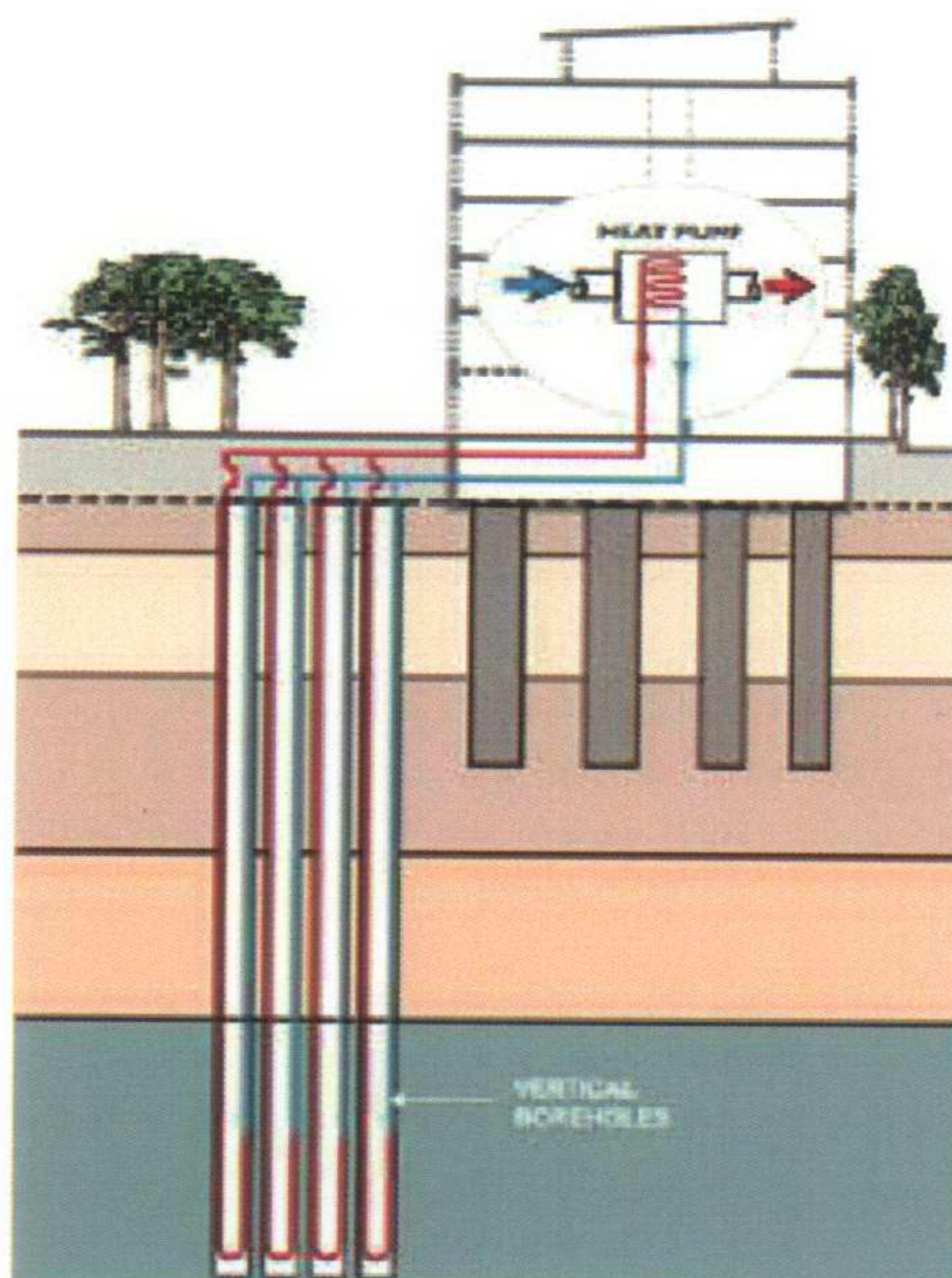
The house will have the infrastructure for the future use of renewable energy, with connections for photovoltaic panels for solar electricity generation in the future.

Comfort cooling and ground source system

The main rooms of the house on the ground floor and basement will have comfort cooling with fan coil units. These cooled rooms include the dining room, the living room, the garden rooms, the kitchen, the sitting room, the gym, and the master bedroom. The cooling will be provided by ground source heat pumps (GSHP). The whole house will normally be naturally ventilated with opening windows and trickle vents.

The dining room and the living room will also have mechanical ventilation with heat recovery (MVHR), which will be used when the home owners are entertaining. This will save up to about 90% of the space heating for these rooms when in operation, but it will use more fan power. On balance, natural ventilation with intermittent extract fans has lower carbon dioxide emissions than MVHR.

The ground source heat pump system will save about 50% of the building regulations carbon emissions, as it has much better efficiencies for heating than conventional systems. The building regulations do not include cooling energy currently.



Ground source heat pump heating and cooling system

The remainder of the large rooms in the house will have individually controllable fan coil units connected to three small air-cooled chillers on the roof, next to the lift overrun. These rooms include the remaining bedrooms, the dressing rooms, the master bathroom, the playroom, the study, and the reading room. This will mean that cooling can be provided on demand, but it will have no electricity consumption for the remainder of the time when the rooms are unoccupied. The house will also include the required extract fans for the kitchens, bathrooms and utility rooms.

Shading

The south-west facing glazed sliding door to the garden on the ground floor will have external louvres, to reduce the heat gain and hence the cooling energy needed. The south-east windows facing the street on the first and second floors will have adjustable roller blinds between the outer single glazing and inner double glazing layers.

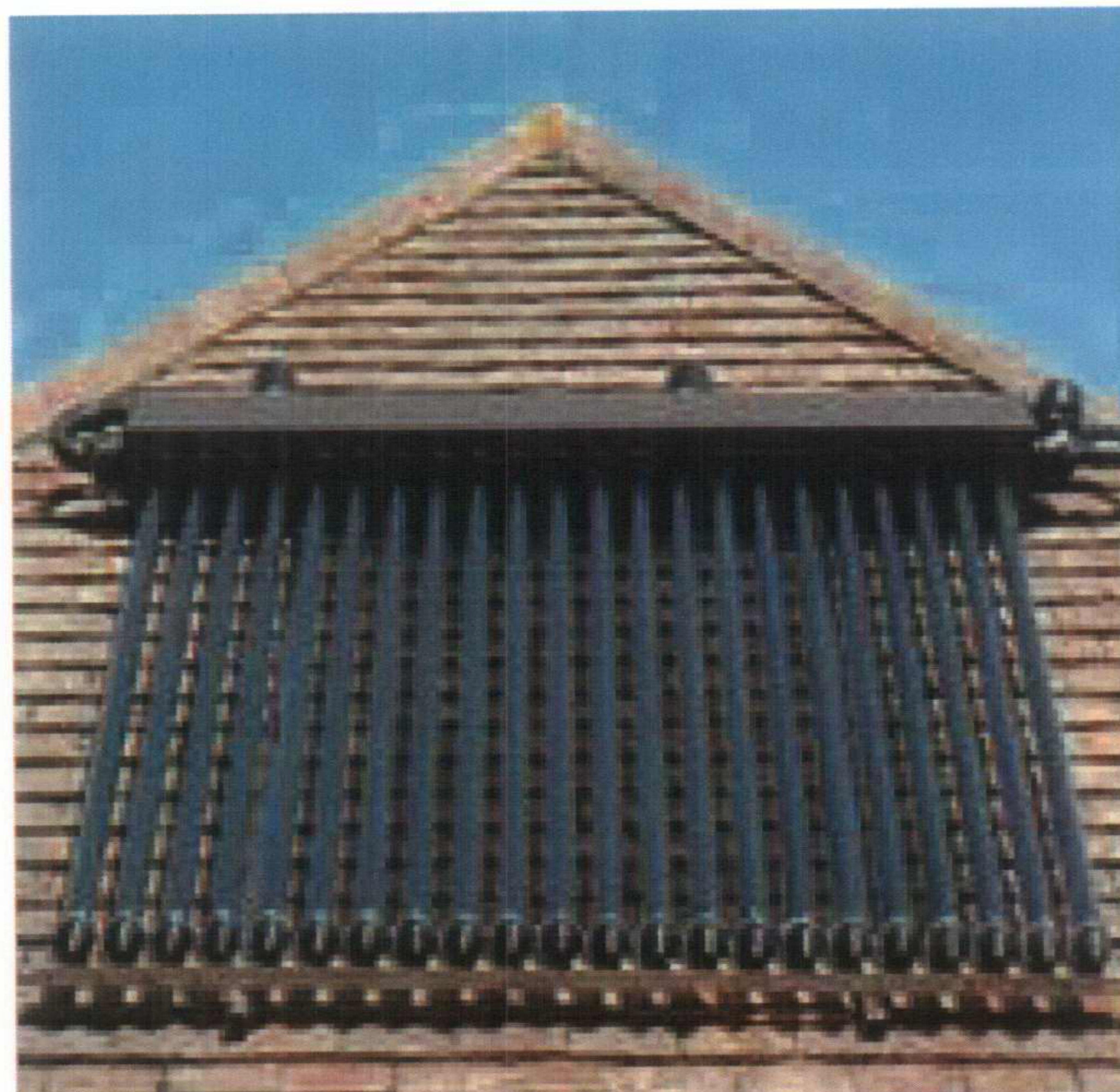
Lighting

The lighting strategy will:

- optimise the use of daylight, with larger windows facing north-west and
- feature a top-lit internal stair and linear skylights for the deep plan spaces
- use some energy efficient lighting.

Renewable energy

Solar thermal panels will be located on the roof to provide domestic hot water. This will save about two-thirds of the hot water energy use over year.



Solar thermal panels

Summary of savings

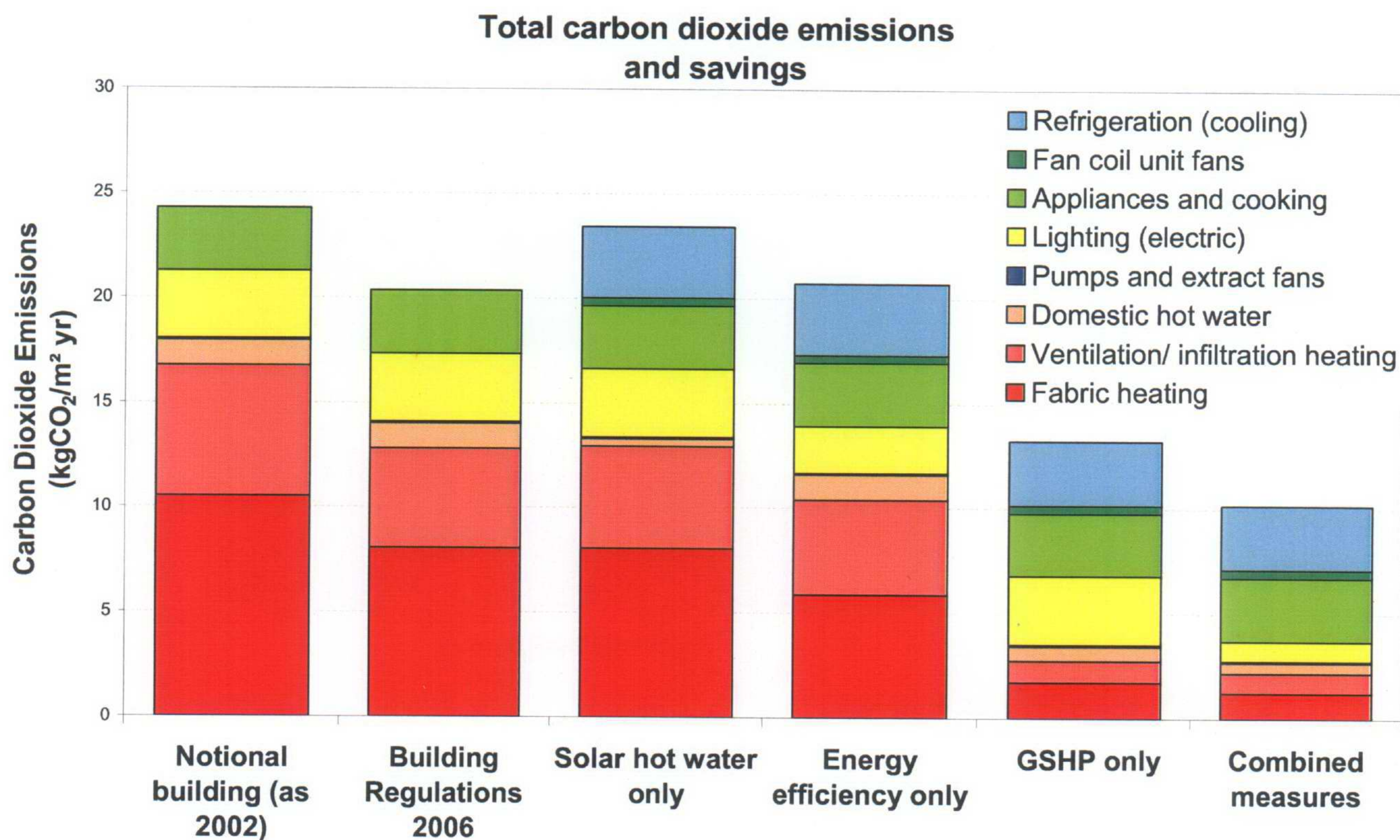
This table shows the carbon dioxide emission savings through energy efficiency, low carbon and renewable technologies for energy that is regulated by building regulations, i.e. heating, hot water, ventilation and lighting.

	Energy efficiency only	Solar hot water	Ground source heat pump	Combined measures
Target CO ₂ Emission Rate (TER), kg CO ₂ / m ² yr	17.5	17.5	17.5	17.5
Actual Dwelling CO ₂ Emission Rate (DER) , kg CO ₂ / m ² yr	13.9	13.8	9.4	7.8
Saving from DER, kg CO ₂ / m ² yr	5.4	0.2	9.9	11.5
Saving from DER (percent reduction in CO ₂ emissions)	28%	1%	51%	60%

Building regulations energy savings

The building regulations do not regulate appliances, cooking or cooling energy. We have taken baseline energy consumption for appliances and cooking from the formula in the Code for Sustainable Homes, based on the house floor area and having four occupants. We have assumed the baseline cooling coefficient of performance as the same as for building regulations for non-dwellings.

The total estimated carbon dioxide emissions are shown in the graph below.



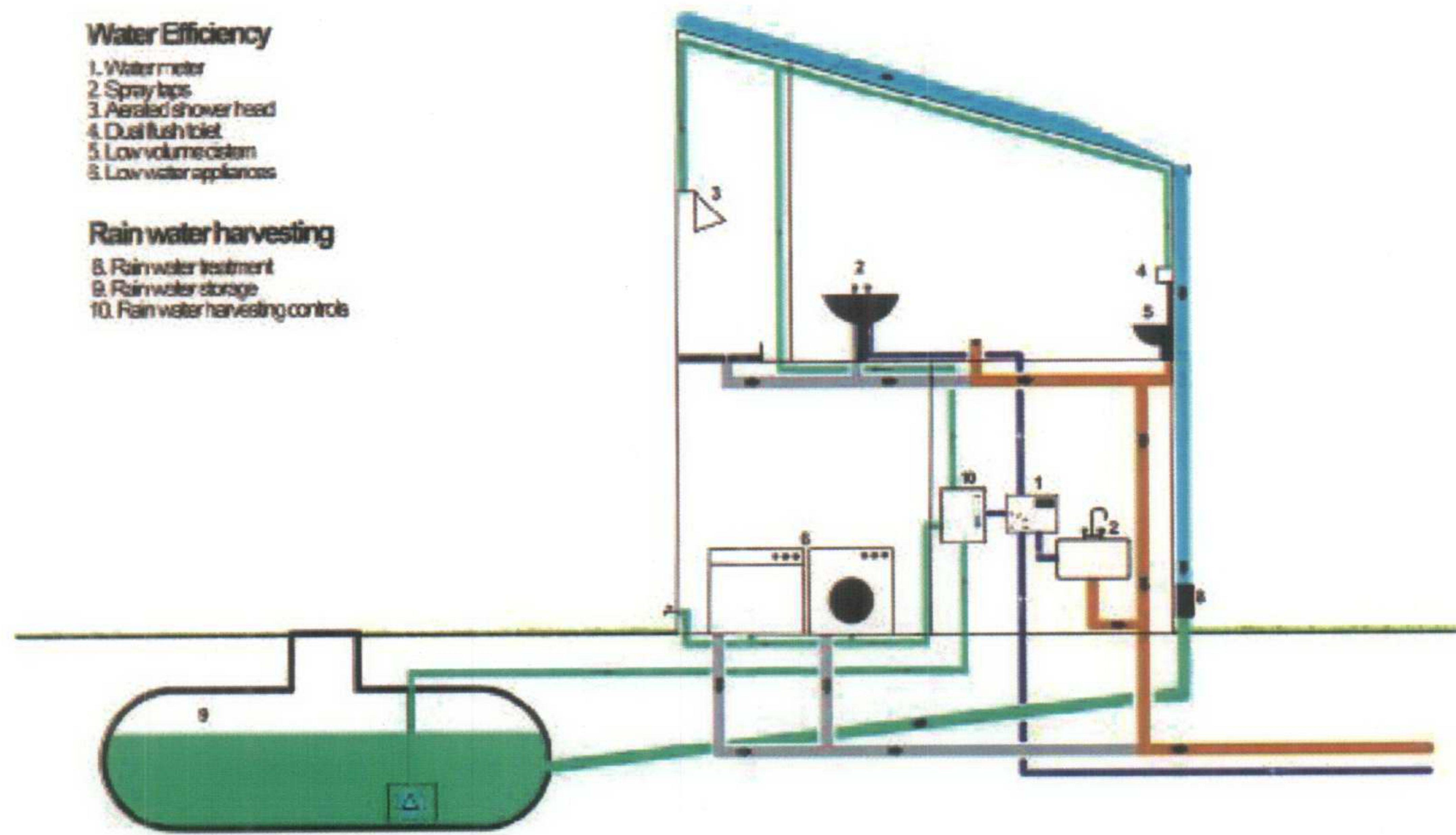
Energy meter

There will be a smart meter for measuring and displaying energy use.

Water

The water strategy will seek to:

- reduce water use,
- use water efficient fittings,
- capture rainwater for garden irrigation and for supplying the washing machine,
- re-use greywater from showers and baths for flushing toilets
- reduce water run-off and increase biodiversity with a green roof,
- use permeable surfaces as part of a Sustainable Urban Drainage System (SUDS).



Stand-alone greywater system for the main bathrooms

Waste and materials

The water strategy will seek to:

- reduce use of materials,
- reuse,
- recycle,
- use recycled materials.

There will be bins with multiple compartments for segregating waste, both in the kitchens and externally, e.g. for

- food for composting,
- dry waste such as paper, plastics and tins and
- all other waste.

Some materials will be sourced from recycled or re-used products, for example, concrete can be made with up to 77% recycled content. Timber will be sourced from sustainably managed forests.



Segregated external bins



Segregated kitchen bins