

## PORTLAND ROAD - ENERGY MODEL

Each house is 'super-insulated' to minimise heat loss. The external envelope (walls and roofs) achieve U-values up to 3 times those required by building regulations. The external walls are constructed as a sandwich of breathable sustainable materials – wood pulp board, shredded newspaper and mineral fibre. The airtight timber window frames and double glazed units achieve high standards of thermal insulation also

Heating for the house is drawn from three 65m deep 'geo-thermal boreholes' drilled into the ground below. The circulating boreholes draw up thermal energy via a 'ground source heat pump', the thermal energy obtained is sufficient to provide all the space heating and hot water requirements for the house. Underfloor heating is used throughout

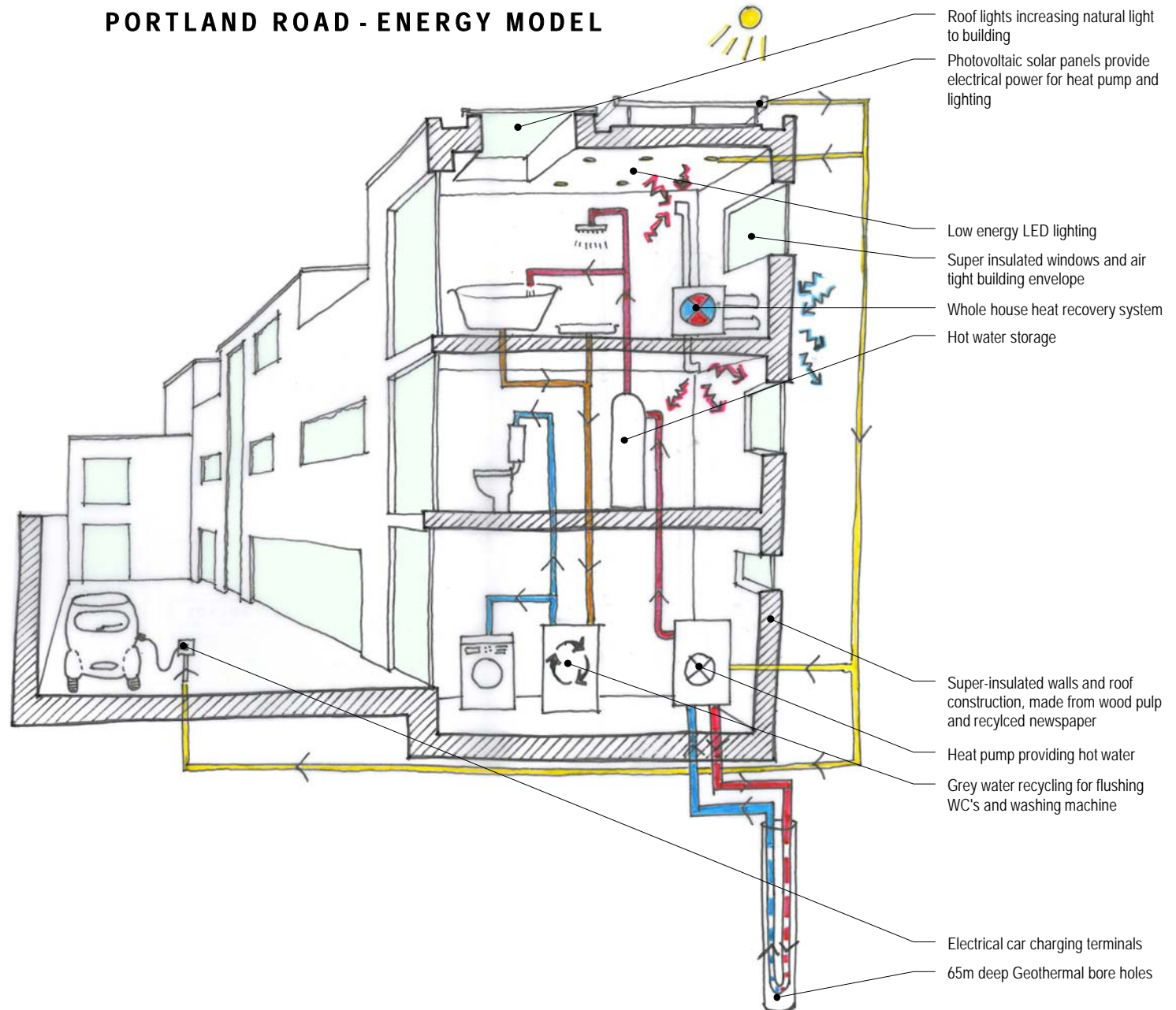
The heat pump is driven by electricity generated from 'photovoltaic cells' on the roof. The result is a self-sustaining carbon neutral central heating system. Surplus electrical power can be used for car charging or other small power requirements

All waste water from baths, showers and sinks (grey water) is re-cycled on-site via an Aquacycle filtration tank system. The filtered water is reused to flush WC's and provide water to washing machines

The house is designed as an 'air tight' system, ventilation is provided via a central heat recovery system. The system removes moist hot air extract from bathrooms and kitchens, and passes it indirectly over fresh cold incoming air. This pre-heated air is delivered to the living spaces with minimal overall heat loss

Sustainable materials have been used throughout the house whenever possible. Such examples are: timber infill framework, self coloured lime render (breathable and low maintenance), recycled rubber roofing membrane, breathable eco-paint to interior

The majority of light fittings are low energy LED lamps, reducing electricity bills. Electrical car charging terminals are provided to the courtyard



Roof lights increasing natural light to building

Photovoltaic solar panels provide electrical power for heat pump and lighting

Low energy LED lighting

Super insulated windows and air tight building envelope

Whole house heat recovery system

Hot water storage

Super-insulated walls and roof construction, made from wood pulp and recycled newspaper

Heat pump providing hot water

Grey water recycling for flushing WC's and washing machine

Electrical car charging terminals

65m deep Geothermal bore holes