ENERGY SAVING SHOW HOME

INSULATION

A large proportion of heat in homes is lost through the roof, external walls and the floor. Insulation is one of the best ways to save energy, help to keep bills down, and reduce carbon emissions. Insulation works by creating a layer that reduces heat loss.

At this home we installed internal wall insulation and underfloor insulation. Combined these will reduce heat demand by 40%.

£7,000	612kg	£193
COST	CARBON SAVED	ANNUAL SAVINGS

Wall Insulation

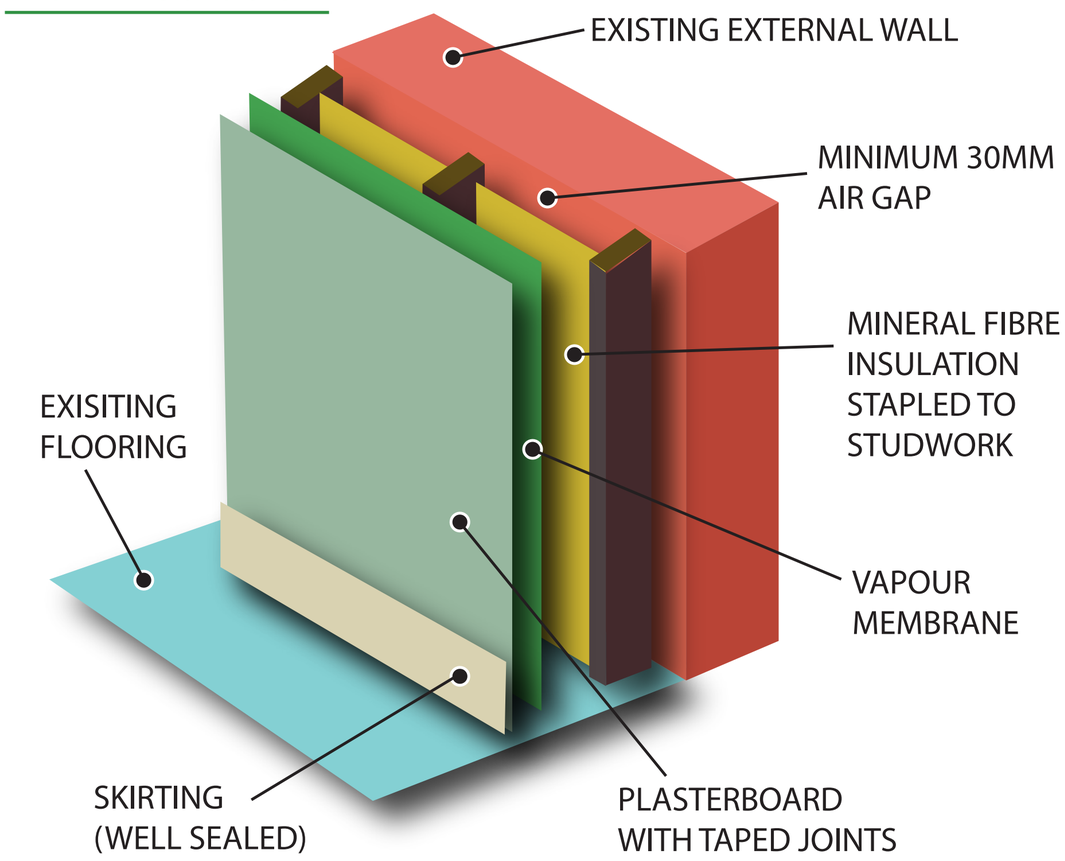
This home was built before 1900 and has solid walls. To insulate the walls, we chose internal wall insulation as it would not affect the external appearance of the property or terrace. This is a particularly relevant consideration for homes in conservation areas.

Insulation was fixed to the walls in the front room and the bedroom. We used the stud method, with 100 mm insulated studs fixed to the walls and 100 mm thick insulation fitted between them. This was then covered with a moisture proof plasterboard and decorated.

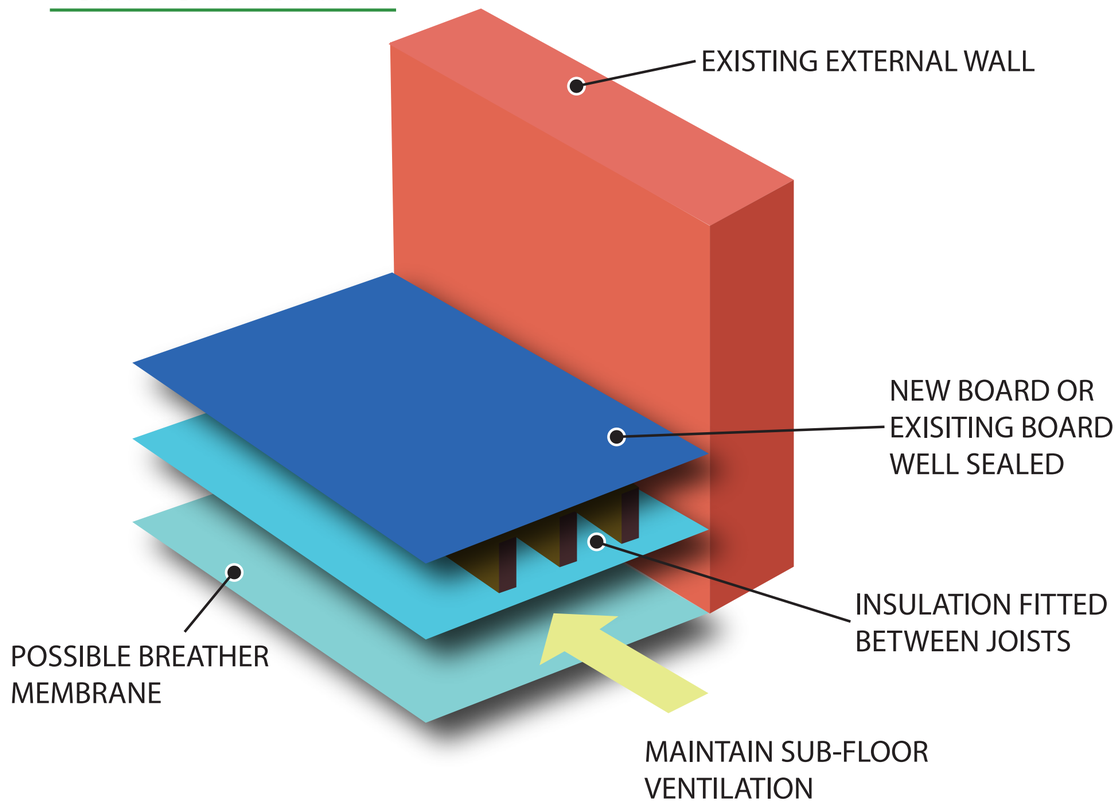
Floor Insulation

We insulated under the floors to help reduce heat loss through the floor. This was possible because the home has a 'suspended floor' with a space below the floorboards that we filled with 100mm of insulation.

Wall Insulation



Floor Insulation



Things to consider:

- ☑ **Planning** – Internal wall, underfloor and loft insulation is 'permitted development'. However, planning permission is required for some forms of insulation in listed buildings.
- ☑ **Building control** – Check whether Building Regulations approval is required, and ensure your insulation meets the required standards.
- ☑ **Specialist advice** – Seek specialist advice and installation to prevent moisture and ventilation problems. Breathable insulation should be used.

ENERGY SAVING TIPS

Switch off stand by: save around £55 a year by remembering to switch off at the plug.

Turn off lights: turn lights off when you leave a room to save around £20 a year on your annual energy bills. Replace all the lights in your home with LED bulbs to save even more.

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ENERGY SAVING SHOW HOME

WINDOWS & DOORS

Making windows and external doors energy efficient, including draught proofing, helps cut down on heat loss and reduces energy use.

In this home we used a combination of replacing windows and doors, where feasible, and installing secondary glazing. We also put in smart air bricks to help with ventilation. Combined these will reduce heating demand by 15%.

£5,000	232kg	£74
COST	CARBON SAVED	ANNUAL SAVINGS

Replacement windows and doors

In the kitchen and bathroom we were able to replace the windows with new double-glazed units. We also replaced the back door with a new insulated and well-fitted one.

Secondary glazing

While this home is not in a conservation area, the majority of Westminster homes are, meaning you may required planning permission to replace your windows.

As an alternative, we fitted secondary glazing to the living room and the bedroom which is a simple and affordable way to save energy in the home. It also has the added benefits of improved soundproofing and enhanced security.

The secondary glazing is made from slim aluminium frames that have been made to match the original windows, including shape and colour. They are designed to allow easy access to the original windows for ventilation and cleaning and are fitted with 4mm eco glazing.

Smart air bricks

We have also added smart air bricks at the front and back of the home. Air bricks allow a flow of fresh air underneath the floor. The smart air bricks use sensors to open and close depending on the weather conditions – optimising the efficiency of the home. They open automatically to reduce underfloor humidity and close automatically to reduce unnecessary heat loss.

Things to consider:

☑ **Planning** – Check whether you require planning permission. This will depend on the type of dwelling, whether your home is a listed building or in a conservation area, and how you plan to improve your windows.

☑ **Building control** – Check whether Building Regulations approval is required, and ensure your windows meet the required standard.

☑ **Materials** – Replacement windows should usually be the same materials as the original windows. For many Westminster building types, timber will be the most appropriate material.

ENERGY SAVING TIPS

Draught-proof windows & doors: Draught proofing of windows, doors and blocking cracks in floors and skirting boards can save you around £45 a year.

Careful with your laundry: Save approx. £28 a year by using a lower temperature setting and reducing your usage by one run per week. Dry clothes on racks instead of using a tumble dryer to save another £60 a year.

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ENERGY SAVING SHOW HOME

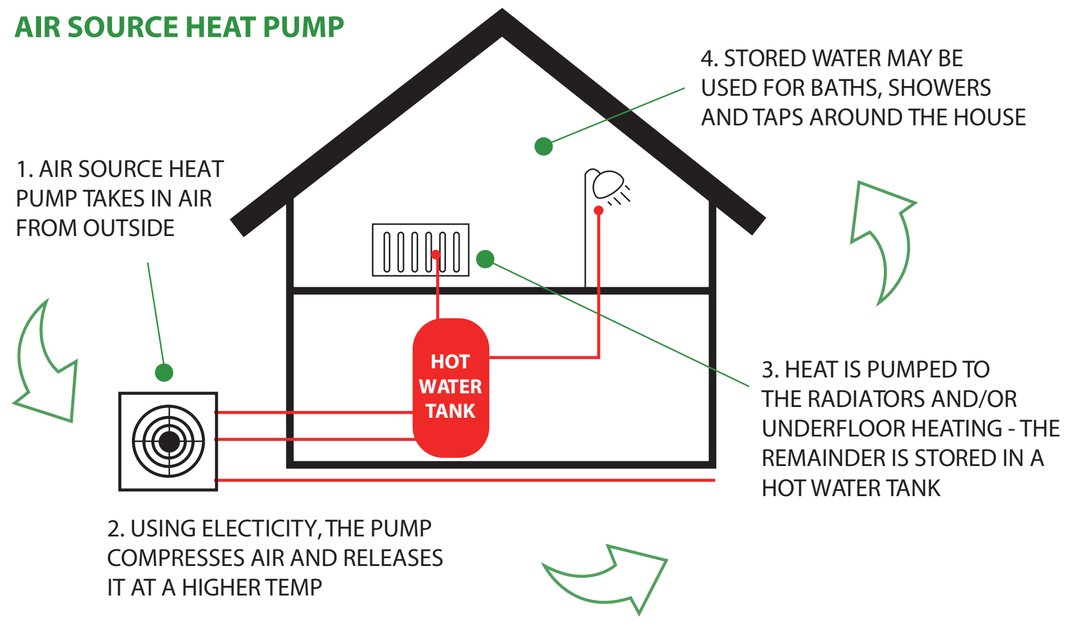
HEATING

Insulating this home and improving the windows reduced heat loss and lowered heating demand by over half. This meant when we came to replace the heating system we were able to choose a smaller system than would otherwise be required – lowering upfront and ongoing costs.

The existing gas boiler was replaced with an air source heat pump. We also fitted a hot water cylinder, new radiators and heat controls. A waste water heat recovery system was installed under the bath to capture some of the heat the otherwise would go down the drain.

The new heating system will reduce carbon emissions by 851kg a year. If connected to the electricity grid, this saving will grow every year as the grid moves towards 100% zero emission electricity by 2035.

£12,000	851kg	Neutral
COST	CARBON SAVED	ANNUAL SAVINGS



Air source heat pump

The heat pump is located outside at the back of the home.

The pump works by taking heat from the outside air and compressing it to a higher temperature. The heat is transferred to water which is used for heating and hot water in the home. It works like a fridge or freezer but in reverse.

It runs on electricity and is much more efficient than gas – producing three times as much heat energy than it consumes in electricity.

Waste water heat recovery

We fitted a small device below the bath called a waste water heat recovery unit.

The unit works by recovering the heat that would usually be lost down the drain when showering. The waste warm water is used to pre-heat fresh cold water coming into the home, cutting down on the energy used to heat water.

Things to consider:

☑ **Take a whole house approach** – reduce your energy demand by insulating and improving your windows before considering a new heat source. This will reduce the size of the heating system required, saving you upfront and ongoing costs.

☑ **Planning** – Check whether planning permission is required. In many instances air source heat pumps are classed as a 'permitted development' provided they meet certain rules and standards.

☑ **Location** – Heat pumps need to be placed outdoors, on the ground, a flat roof, or fitted to a wall. Consider a site that minimises the effect on the appearance of the building and its effect on the amenity of the area.

☑ **Financial support** – Choose a supplier that's part of the Boiler Upgrade Scheme to receive £5,000 off the cost.

ENERGY SAVING TIPS

Spend less time in the shower: Keeping your shower to just 4 minutes could save £70 a year.

Be savvy in the kitchen: Avoid overfilling the kettle to save £11 a year. Only run your dishwasher when it is full - reducing your dishwasher use by one run per week could save you £14 a year.

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ENERGY SAVING SHOW HOME

SOLAR PANELS

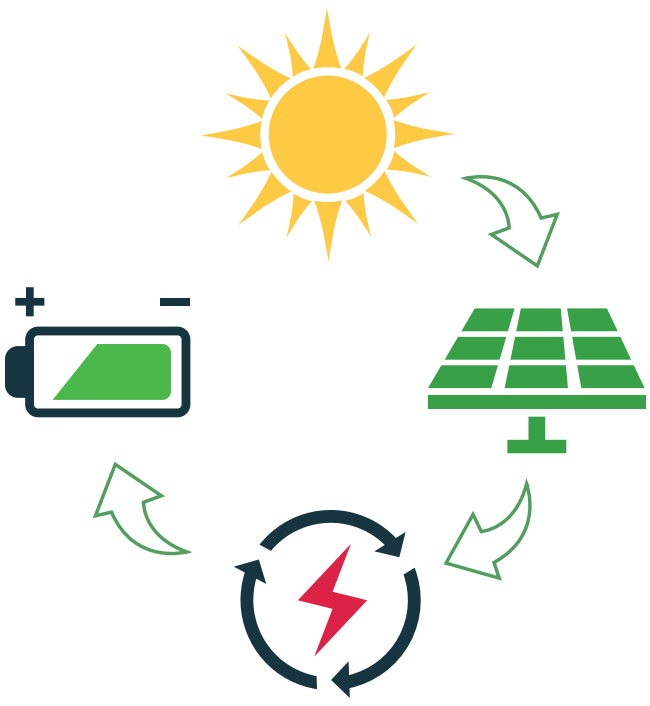
Solar panels can be used to generate electricity in the home. The panels work by capturing the sun's energy and converting it to electricity.

£8,000	769kg	£934
COST	CARBON SAVED	ANNUAL SAVINGS

At this home, there are 10 solar panels installed on the roof. Together they will generate approximately 3300 kWh of electricity per year – enough to power the air source heat pump as well as the other electrics (lighting and appliances) in the home.

To make the most use of the electricity generated by the panels a battery has been fitted at the property.
The battery can store excess electricity to be used later, generating more savings. The battery is in a small storage cupboard at the front of the home.

Combined with insulation, new windows, the heat pump – and battery storage – we expect the solar panels to reduce the home's requirements for electricity from the grid to zero.



Frequently asked questions

Q: What are the benefits of solar panels?

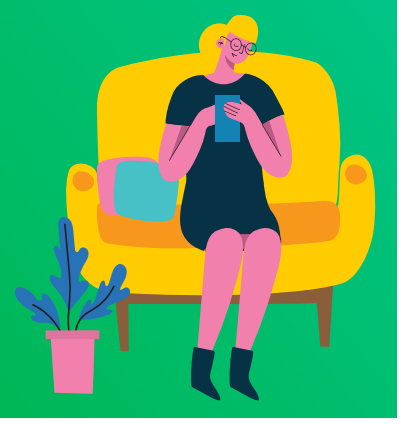
A: Solar panels are a good way to generate sustainable energy – saving on energy bills and cutting carbon emissions.

Q: How much money will I save with solar panels?

A: It is difficult to say exactly how much money you will save as it depends on your home and the price of your bills. The Energy Savings Trust estimates that in London a typical household that is home all day can save around £400 per year.

Q: Do panels solar panels work on cloudy days?

A: Yes, solar panels can work on cloudy days. However, the stronger the sunshine the more electricity generated.



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