

## **SUPPLEMENTARY PLANNING GUIDANCE**

The Adopted 2004 Plan for the Environment, Ealing's Unitary Development Plan, provides the policy context for decisions on planning applications and other proposals concerning development and transport in the London Borough of Ealing.

These policies are clarified and amplified where appropriate by Supplementary Planning Guidance (SPG). This Guidance may bring together planning and other considerations (e.g. Building Regulations, Environmental Health, Transport) which need to be taken into account by people proposing development or affected by development. The guidance can be used in determining planning applications, and it has the legal status of a 'material consideration', which the local planning authority is entitled to take into account in making decisions.

Supplementary Planning Guidance (SPG) continues in force as long as the Unitary Development Plan policy that it supplements is in force. Under the Planning and Compulsory Purchase Act 2004, unitary development plans will be progressively replaced by new Development Plan Documents in a Local Development Framework. The local planning authority may choose to produce Supplementary Planning Documents (SPD) to supplement development plan policies in the Local Development Framework.

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**DRAFT SPG 12**

# **Greening your home**

A Householders' guide to sustainable design and  
construction

**Approved for Development Control Purposes**

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# Introduction

## Old homes into future homes

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Whether you have a Georgian or Victorian terrace, a 1930s semi-detached or post-war home, we can all turn them into much healthier and warmer places to live and work.

This guide will help you to put into practice ideas and approaches to renovating your house in an environmentally friendly way. If you are undertaking projects such as building an extension or loft, adding a conservatory or simply redecorating then there are a number of things and issues you need to consider. This leaflet will help and guide you along the way.

Or if you are thinking of buying a new home be it an existing one or a newly built home then we have also listed a number of questions and issues that you may wish to consider when making your choice.

By following the tips and principles laid out in this leaflet you will be able to:

- Save energy and money
- Reduce your waste
- Reduce your water consumption
- Live in a healthier environment
- Choose environmentally sound materials
- Organise the space in your home to better effect and
- Make a small, but significant, contribution to the well-being of future generations.

Overleaf you will find a checklist which shows a simple way of checking what issues and factors need to be considered when undertaking home improvement works.

The London Borough of Enfield's householder guide to sustainable design and construction has been used as the basis and framework for preparing this guide. Work has been undertaken with the LA21 Energy and Built Environment group in tailoring this guide for use in Ealing. Finally it should be noted that whilst this document forms a householders guide it is proposed that a sustainable design and construction guide is prepared for developers and building professionals. Such a guide will broadly follow the framework adopted by Enfield's 'sustainable design and construction guide: for developers and building professionals'. This guide can be viewed at: [www.enfield.gov.uk/green/sustgde.htm](http://www.enfield.gov.uk/green/sustgde.htm)

## Checklist

The environmental impact of a building can be improved in many ways without waiting for a full refurbishment package to be undertaken. Many opportunities arise as we gradually repair, extend and rebuild parts of our homes over time. The checklist below illustrates the opportunities for incorporating many of the issues contained in this guide, such as what materials to use and insulating your home or saving water, over a wide range of improvements that you may want or need to carry out.

It will often be cheaper to combine certain measures such as energy efficiency when you are undertaking repair work. The checklist will prompt questions you will need to ask yourself, your builder or your architect

	Building an extension	Converting your loft	Building a conservatory	Replacing your heating system	Decorating your home	Improving your garden	Refitting kitchens and bathrooms	Replacing your windows
Orientation of buiding	3		3					
Internal wall insulation	3		3	3			3	
Double/triple glazing	3	3	3	3			3	3
Cavity wall insulation	3		3	3				
External wall insulation	3		3	3				
Draught stripping	3		3	3			3	3
Add Insulation	3		3				3	3
Insulate loft		3		3				
Insulate water tank and pipes		3		3				
Insulate doors	3	3		3				
Insulate floors	3			3				
Add porch or vestibule	3							
Low energy lighting	3	3	3			3	3	
Improve temperature controls				3				
Environmentally friendly materials	3	3	3	3	3	3	3	3
Water saving methods				3		3	3	
Planning permission	3	3	3					3
Building control	3	3	3	3				3
Reduce waste	3	3	3	3	3	3	3	3

## Revolution on the home front

With so many home improvement programmes on the television and magazines aimed at DIY'ers, more and more people are renovating, redecorating and even building their own homes. But how many of us realise that we are making a huge impact on the planet? The average householder does not realise that their home consumes vast amounts of energy and resources.

Housing has traditionally blended into the landscape, appearing to be static and unchanging. It does not belch out exhaust fumes or hit the headlines like a row over windfarms. So it isn't immediately apparent that our homes and gardens have an impact on the planet.

However there are people out there in Ealing and other parts of London who are already 'doing their bit' to lessen their impact on the environment. Often it is the small things and doing things in a slightly different way that will have the most impact. Ten years ago ecological architecture and building was a fringe activity, today there is a huge ground swell of commitment not only from the professionals but also the ordinary householder.

The following pages will help and guide you through some of the questions and issues you will need to consider as you go about improving your home in a more environmentally friendly way.

# 1. Building extensions, loft conversions and conservatories

If you are considering building an extension or converting your loft, make sure you use all your existing internal space first. Look to see if there is any unused space within the confines of the existing walls that can be converted. Look also at the different options for storage since this can save space and money and use it more efficiently. If you have carried out all these measures and are still sure that you need to increase your accommodation without moving house then a suitable ecological extension or loft conversion is your next option to consider.

The checklist on page 4 gives you a quick indication of the issues and factors you will need to consider when building an extension or converting a loft or building a conservatory. These are discussed in more detail.

Here are some of the key issues you will need to consider while planning your extension...

## Location and position

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You will need to make sure that the extension does not cut out natural sunlight and daylight to the rest of the house and your neighbours' homes.

If you need to apply for planning permission for your extension this is likely to be one of the key planning issues.

- Position extensions so that they do not cut out natural sunlight and daylight to the rest of the house or your neighbours' homes.
- Where possible use skylights and tall windows on the southerly facing sides to bring more light and the free warmth from the sun into your loft or extension – especially in the winter. It will help to cut your fuel bills.
- Include some shading such as blinds and curtains so that your home does not overheat in midsummer.
- Let light in but stop the heat escaping by using double-glazing or even better low emissivity double glazing. (see section on windows for more information).
- Where possible make any windows on the north facing sides smaller because these do not get the sun and you want to keep out the cold northerly winds. However this may not always be possible especially if your house is located in a conservation area or is listed.
- To assist natural ventilation in warm weather windows should be capable of being opened and there should be secure opening fanlights or trickle vents for night and background ventilation
- The smaller the external surface area of a building the less opportunity there is for heat to escape. Therefore the exposure of a building to the external environment can be reduced by setting the building into the ground, or employing unheated intermediate spaces such as an extension, conservatory, garage or lobby to act as thermal buffers for the main building.

## MAKING USE OF SUNLIGHT

The amount of sunlight received through a window is influenced by several factors.

- **Window size** If suitably oriented, a larger window will obviously admit more sunshine. However, it will also allow more heat to be lost to the outside while increasing the likelihood of summer overheating. Major increases in glazed areas thus give diminishing returns unless the window is highly insulated.

- **Window angle** Sloping a glazed surface towards the Sun will increase the amount of radiation received. This effect is particularly noticeable in summer, and explains why some loft conversions, conservatories and atria suffer overheating.

- **Internal and external filters and shades** Venetian blinds and net curtains will reflect a proportion of the sunshine back to the outside. Useful solar gain in winter is thus diminished. By reducing the need for such screening through careful planning and design - relating especially to privacy and window size - a fuller use of solar light and heat can be encouraged. External shades, such as sliding or pivoting shutters or fixed louvres, can be used to moderate solar gain in summer and during the middle of the day.

- **Weather, latitude and the seasons** In northern latitudes of the U.K. the Sun passes lower in the southern sky than in the south. Solar radiation enters the atmosphere at a more oblique angle, and a greater proportion is absorbed or reflected before it reaches the surface. Regional variations in cloudiness also affect the availability of sunlight. The number of winter daylight hours available declines the further north one goes but the heating season, stretching into May, is longer and offers opportunities for solar heating at a time when the Sun is getting stronger.

- **Type of glazing** The use of double or triple glazing, and glass that has been coated to limit solar gain or heat loss, will reduce the amount of sunshine and daylight passing through a window. However, this is offset by the improved heat insulation which these forms of glazing offer.

- **Roof** A high standard of roof insulation is one of the most cost-effective ways of saving energy. A roof can also be designed to incorporate solar panels or heat collectors, making further use of solar heat.

- **Orientation** A southerly orientation maximises solar gain in winter, and limits summer overheating because of the high angle of the midday Sun.

- **Window design** As a regulator of daylight, sunlight and natural ventilation, the design of a window is of great importance. A window should have varying sizes of opening, to allow ventilation to be varied without compromising security.



## Use of materials

The choices we make in terms of what materials we use in extensions and conversions can have an impact on our long term health and on the health of our planet. Please read the 'what materials to use' section of this guide for more information. Remember to control and regulate the amount of waste produced during the building process.

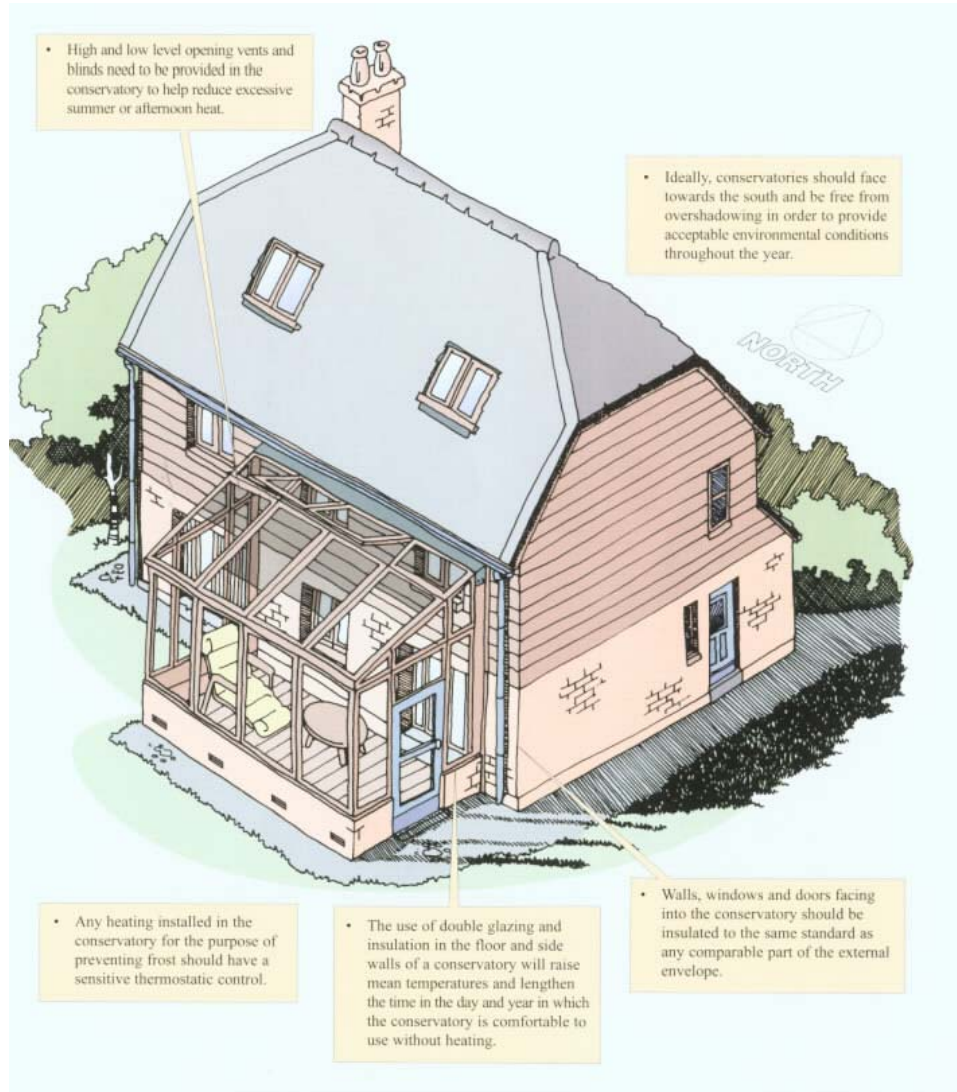
## Making the most of sunlight

We use the sun's energy all the time in our homes as it warms the fabric of our buildings. Building an extension gives you the opportunity to check to see if you can make more use of the energy available freely from the sun in the form of solar heat and daylight.

## Passive Solar Energy

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Passive solar design involves designing buildings so that they make the optimal use of the energy available freely from the sun in the form of solar heat, daylight and wind, so minimising the need to provide heating, lighting, ventilation and cooling by artificial means.



*Illustration reproduced courtesy of Terence O'Rourke plc.  
Taken from the Planning for Passive Solar Design guide.*

## Windows

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Windows are the principal means of gaining energy to warm the home as well as daylight and ventilation in buildings. However, on most buildings they are also an energy liability being a major route of heat loss. Choosing your windows is one of the key decisions you make while planning your extension or conversion. Read the 'windows' section in Chapter 2 about what options you have on this key issue.

The key passive solar design objective for windows in housing is to control the loss of heat while optimising access to available sunshine. This is done by orientating a building's main windows to

the south and using double or triple glazing in air-tight frames to maximise thermal resistance and minimise draughts.

## Insulation

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Use plenty of insulation in walls, roofs and floors. Going beyond the minimum requirements of the building regulations could mean that you won't need to install expensive heating in your extension or loft conversion. (see section on insulation for more details)

## Pay a little attention to conservatories

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A conservatory often represents a means of adding an extra room to a house and of providing a place to sit and enjoy the garden while being protected from the elements. However conservatories can have their pitfalls. If built without thought for orientation, shading, ventilation and insulation, they can provide wide variations in internal temperature, which will render them uncomfortable to use, both in the winter and summer.

Conservatories are best employed as thermal buffers, serving as an intermediate space between the indoor and outdoor environments.

For older houses with un-insulated solid walls, they can sometimes result in a modest reduction in heating costs, but there is otherwise little conclusive evidence that any conservatory can bring substantial energy savings. By incorporating the design features highlighted in the diagram on page 8, you will be able to reduce the likelihood of major energy losses, or occupants suffering from excessive heat or cold.

- Ideally, conservatories should face towards the south (when possible) and be free from overshadowing in order to provide acceptable environmental conditions throughout the year.
- High and low level opening vents and blinds need to be provided to help reduce excessive summer and afternoon heat.
- Walls, windows and doors facing into the conservatory should be insulated to the same standard as any other external part of your home (see insulation section).
- Using double glazing and insulating the floor and any side walls will lengthen the time in the day and year in which it is comfortable to use without heating (see the 'your windows' section).
- Conservatories should not be heated (other than background heat to prevent frost damage). Research has shown that, if heated conventionally as a habitable room, a conservatory can **double** the heating bill of a well insulated new dwelling.
- Again issues such as choosing environmentally friendly materials when building and decorating the conservatory should be considered. (see section on materials in Chapter 2).

If a conservatory is open permanently to the interior of the house, adjacent rooms might also suffer summer overheating and winter heat loss. Therefore a conservatory should be fully insulated from the main building to prevent this.



*Illustrations reproduced courtesy of Terence O'Rourke plc.  
Taken from the Planning for Passive Solar Design guide.*

## Connecting to the correct drainage system

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Many extensions and conversions are used either for kitchens or bathrooms and therefore it is important to remember to connect your appliances to the correct drainage system. There are a number of waterways in the Borough and pollution into these waterways is a recurring problem. Domestic properties with washing machines, dishwashers, sinks and even toilets connected to the wrong drainage system are the main culprits. As nearly all the surface water drains into streams within the Borough, any mis-connections allow pollution to run straight into local water-courses.

When connecting a washing machine, dishwasher, wash hand basin, bath, sink or toilet to the drainage system, make sure that it goes into the foul system. This can be found by lifting a manhole (if present) in your back garden or side-way. By running taps, operating the machine or flushing a toilet, you will be able to see if this appliance discharges to the foul system. If not, an appropriate connection to the foul drainage should be made to ensure that the waste water does not find its way into the Borough's streams and brooks.

If in doubt, try to see where the rain water pipes from the roof go. This will tell you where the surface water discharges and while some systems are 'combined' (i.e. the surface and waste water both go to the foul sewer), most are 'separate', where they go different ways.

## Planning permission

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### Do I need planning permission?

The purpose of the planning system is to protect amenity and environment in the public interest. Anyone wishing to carry out any development will usually need to obtain planning permission from the local Council. Policy guidance and the criteria against which various types of development will be assessed may be obtained from the Planning Service.

However certain types of minor changes to houses (but not flats, maisonettes or conversions) do not require formal planning consent if they meet specific criteria. These rights, called 'permitted development rights' are described below.

- House extensions and additions including conservatories, sun lounges, enclosing existing balconies or verandas, should:
  - Not project beyond any original wall of the house fronting onto a highway, unless it will be more than 20m from the highway. Please note that highway may also include public footpaths.
    - Not exceed height limitations – i.e. no part of an extension should be more than 4m high when located within 2m of the boundary of property; If the extension is more than 2m from the side boundary, its maximum height must not exceed that of the house or bungalow.
    - Not exceed the total volume allowance for your property –For semi-detached or detached

- houses the extension should not increase the volume of the original house by more than 15% or
- 70cu m, whichever is the greater. For a terraced house or a property in a conservation area you must not exceed the volume of the original house by more than 10% or 50cu m. Volume being calculated from external measurements.
- Loft conversions, dormer windows and roof additions (Conservation Areas) should:
  - not be located on a roof slope which fronts onto a road or public footpath;
  - not exceed 40 cubic metres for a terraced house or 50 cubic metres for semi-detached or detached house and does not exceed the total volume limits given above;
  - not exceed the height of the roof.
  - Where roof lights are provided they should be flush with roof slope
  - Where solar panels are provided they should not project significantly beyond the roof slope, nor be too numerous;
- Buildings and other Structures in the garden including garages, sheds, greenhouses, summer houses, swimming pools etc, should:-
  - Be no nearer to a highway than the original house;
  - Not cover more than half of the garden area;
  - Not exceed more than 4m in height at (roof ridge) or not more than 3m (any other roof);
  - Not be more than 10cu m in volume if closer than 5m to the existing house. If located within 5m of the house and greater than 10cu m the volume should count towards the overall volume allowance.
- Porches should
  - have a ground area (measured externally) of no more than 3sq.m
  - be no higher than 3m
  - be positioned more than 2m from boundary with highway or footpath.
- Patios, hard standing subject to:
  - No restrictions on area of hard standing, but any significant works of terracing or embanking may enclose volume and therefore count against the total volume limitation.

Generally internal works and decoration, repair and maintenance do not require planning consent, but may require Listed Building Consent if the property is listed

It should be noted that your permitted development rights may be restricted or limited in some conservation areas or if the house is listed. You will need to check with the planning department whether your property is subject to such restrictions.

If you are in any doubt about whether you need to apply you should consult Planning Services on 0208 8825 6600, or alternatively you can speak to a duty planning officer at our Planning Services Reception between the hours of 8.30am – 4.30pm Mon-Fri. If you want to obtain a formal confirmation as to whether your proposed works are 'permitted development' you can apply for a Lawful Development Certificate. Details of fees and information to be submitted are also available from Planning Services.

You should also note that you may still require building control approval. For further details you can contact Building Control on 020 8825 6802.

## Listed Buildings and Conservation Areas

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There is much that can be done in the historic environment to further the aims of sustainable living. The 'special needs' of older buildings, particularly those which are listed, or located in conservation areas need to be considered to ensure that any works complement best practice for the historic built environment.

The circumstances where alterations would require planning permission because the house is located in a conservation area or an area covered by an Article 4 Direction can be clarified by Ealing's planning service. There are a raft of developments which can generally be carried out within the curtilage of a dwelling house as permitted development, not requiring planning permission. However, some of these permitted development allowances are not applicable to properties located within conservation areas, nor where some permitted development rights have been withdrawn through an Article 4 Direction, nor where the property is a listed building. For example the cladding of any part of the exterior of a dwelling house within a conservation areas is not permitted development.

Works which alter the character of a listed building would require listed building consent. This would include works such as re-facing external walls, replacing windows and installing external boiler flues.

There are a number of topics covered in this guide which are particularly relevant to the historic environment. Firstly, double glazing is rarely an option with a listed building, because the glazing bar profiles needed for double glazing are usually much greater than those on the originals (be it a Georgian or Victorian timber sash or an inter war metal window). English Heritage do a range of leaflets called Framing Opinions, which includes advice on draught proofing traditional windows and documents the merits of natural materials such as timber compared to artificial ones such as PVC-u.

Secondly, insulation. Alterations to wall surfaces are usually damaging to the overall character and appearance of historic buildings. Brick and stonework should not normally be rendered unless the surface was rendered originally. The application of modern impervious materials to external walls can lead to trapped moisture resulting in dampness and decay.

If grants are given e.g. Environmental Health Renovation Grants, it does mean that standard specifications do have to be adjusted to allow for a repair based approach using traditional materials and methods. Finally, for additional information, look at English Heritage's web site, [www.english-heritage.org.uk](http://www.english-heritage.org.uk). The Victorian Society on 020 8994 1019, The Twentieth Century Society on 020 7250 3857 and the Georgian Group on 020 7377 1722 also provide advice.

## 2. Improving and decorating your home

There is much more scope than many of us realise to make better ecological use of the space in our homes and gardens. If we think about it for a moment every bit of space that we have in our homes requires maintenance, heating, lighting, ventilating, painting and furnishing. Therefore when improving and decorating your home you will make a huge impact on the use of resources, the waste you produce, the materials you use and the emissions that may be released from products.

The following pages will guide you through the issues and factors you will need to take into account when carrying out home improvements and decoration. All of the following issues will also need to be considered when undertaking the bigger construction projects such as building an extension, converting a loft or building a conservatory.

# What materials to use

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## The Synthetic Environment

Up to 90% of the internal surface area of a building may be covered with a synthetic petrochemical covering. Studies have shown that the indoor environment can be up to ten times more polluted than the external environment and yet we can spend up to 80% of our lives inside buildings. Some of the simplest ways of reducing your impact on the environment is by using more sustainable products when building and decorating your home, which will reduce this pollution.

Therefore it is essential to choose the materials that you use carefully, so that they are not harmful to our health and also to the health of the planet. So what things should you think about when choosing materials? In many cases it will be a matter of finding a material that provides the best balance between the ten different criteria listed here:

- Clean or non polluting
- Healthy (to humans and domestic animals)
- Renewable
- Abundant
- Natural
- Recyclable
- Energy-efficient
- Locally obtained
- Durable
- Design-efficient

## General tips

- Reduce the quantities of materials that you actually use as far as possible. When undertaking any sort of renovation work, calculate carefully the quantities required so that there is as little waste as possible.
- Obtain and use recycled materials and reclaimed components wherever possible.
- Reuse and recycle materials within your own home to reduce material use and waste such as growing, repairing, reusing etc.
- Find ways of recycling all the materials and components that you don't want. This means reducing the amount of rubbish that is actually thrown away and find outlets for all recyclable materials. Avoid materials that have to be transported long distances, using lots of fuel to get it to you.
- Use local materials from local suppliers and use products made of recycled materials (e.g. lino)

## Paints and finishes

Use water-based paints and varnishes, as these are less harmful to you and the environment, than conventional oil-based paints and varnishes as these give off volatile organic compounds - VOCs (and it is much easier to clean your brushes!). Natural paints also benefit the health of buildings by helping them to 'breathe' – by this we mean that they can assist a buildings fabric to absorb and regulate moisture. This in turn helps human and building health by reducing condensation, moulds and related problems.

Paints and other decorative finishes made from natural raw materials are a direct replacement for today's conventional paints made from petrochemical derivatives. They are simple to use and apply. While precisely formulated for their intended purpose, they also bring a number of environmental and health benefits.

#### Environmental benefits of natural paints and finishes

- The product ingredients, which are as non-toxic as possible, are declared so allergy sufferers and those sensitive to certain chemicals know exactly what they are using, breathing and touching.
- The paint products are, as far as possible, made from renewable natural materials such as linseed oil, balsamic turpentine and various citrus oils and plant and tree resins.
- The other ingredients are in plentiful supply. These can include earth and mineral pigments (such as ochre, umber and sienna) and paint extenders/fillers including types of clays and chalk.
- The processes that ingredients undergo are minimal and ensure their maximum biodegradability.
- The manufacturing processes involve minimal pollution, waste and energy.
- They have a more pleasant smell than conventional paints and finishes.
- Modern natural paint formulations produce products, which are familiar to the user in terms of appearance and application and yet can claim all the above advantages.

Many of these natural paints and finishes are now more widely available. Some of the larger DIY stores sell natural products and many companies sell through the internet or by mail order

## Wood

- Avoid tropical hard woods (including plywood) unless you know they are from a sustainable source (Forestry Stewardship Council certified).
- Use European soft woods – such as pine and birch plywood. Only use timber from sustainably managed forests.
- Check to see if your existing wooden floors can be sanded and used.
- If replacing floorboards try to find old or reclaimed floorboards that can be reused.
- If replacing with new wood, then ensure the wood is from a sustainable source.
- Wood can be used that is unfinished (not painted or varnished) and can then be treated using natural oil and wax finishes. This allows the pores of the timber to stay open, enabling the wood to breathe, which helps stabilise relative humidity in the building.



## The Forest Stewardship Council

The Forest Stewardship Council's Trademark (shown above) is a label on timber and wood products which indicates that the wood comes from a well-managed forest. It guarantees that the forest of origin has been independently inspected and evaluated to comply with an internationally agreed set of strict environmental, social and economic standards. The FSC Trademark enables consumers, architects and specifiers to choose timber with the confidence that they are not contributing to the destruction of the world's forests. By buying from certified sources you are providing an incentive through market forces for good forestry practice.

FSC was formed to provide consumers with reliable information about forest products. Growing public concern about the destruction of the world's forests has provoked more and more people to demand products from well-managed forests. This, in turn, led to a proliferation of forest product certification systems and many dubious or false claims made on forest products. FSC aims to clear up the confusion by providing a truly independent, international and credible labelling scheme on timber and timber products. This will provide the consumer with a guarantee that the product has come from a forest, which has been evaluated and certified as being managed according to agreed social and environmental principles and criteria.

See website for more details and links: [www.fsc-uk.demon.co.uk](http://www.fsc-uk.demon.co.uk)

## Flooring

When looking at flooring options also consider using other timber products such as linoleum, cork, rubber and cellulose insulation from newspapers. Natural products such as grasses, straw and bamboo also make a good alternative to man made fibres, as do linen and coir.

Most woollen and synthetic carpets are dyed with synthetic dyes, made from a wide range of chemicals.

- If you really want a healthy home, make sure that your carpets are not polluting your environment. There are some carpets around that are truly 100% natural and without chemicals – and they are not more expensive than conventional carpets of similar quality. Make sure that you ask your carpet supplier about the exact, full content of the wool or sisal and the backing. You will be surprised by some of the answers.
- Natural carpets made of materials such as wool are also naturally stain resistant as wool contains lanolin, which acts as a stain inhibitor. Stains should be removed as near in time to the spillage occurring, as on conventional carpets.
- Unlike conventional carpets, when the time comes for disposal, natural carpets can be disposed of without damaging the environment.
- For underlay, particularly where reducing sound is a matter for concern, use underlay boards, manufactured from compressed wood fibre, which can provide both a smooth surface and an impressive 36 decibel sound reduction.
- Sisal and coir, are a wonderfully durable and attractive carpeting materials whose natural qualities if coupled with natural backings such as natural latex or jute make a sustainable alternative.
- Natural rubber makes perfect flooring for bathrooms. It is a great shock absorber and very durable. However avoid rubber flooring that has been made with chlorine based ingredients.
- Natural Linoleum is very durable, flexible and acts as a good sound absorber. Linoleum is made from renewable material such as linseed oil, resin from pine trees, wood from deciduous trees and cork, mixed together with inorganic fillers such as clay and chalk. It is naturally antibacterial, anti-static and is resistant to fats and oils. Amazingly linoleum becomes stronger over time and it should last for at least 40 years.
- Bamboo flooring is a relatively new product on the European market. It is very strong and can be laminated into solid boards. Bamboo shoots are harvested every four to five years and cut and milled into long thin strips. If installing bamboo, check the preservatives that have been used by the manufacturer. Low toxicity boric acid is the most suitable for the home.

- Natural cork is a warm, rich looking and durable flooring. It has excellent insulation and noise reduction qualities that not only make it suitable as floor covering but also as an underlay for hardwood, linoleum and laminated floors. Natural cork comes from the bark of the Cork Oaks, grown in the Mediterranean. It is now available in many designs and colours.

## Building materials

- Stone - we should use stone and aggregates sparingly since there are environmental problems associated with their extraction.
- If you have to use rubble or hardcore, avoid using quarried stone, especially limestone. There are many alternatives available including minestone, the stone waste from the mining of coal and metallic ores. Better still, use recycled crushed concrete, broken bricks or material from road resurfacing. Consider using earth as a building material if you have an appropriate use, such as for a structure in your garden. To find out more information about stone products and their source, speak to your supplier or builders merchant and ask where the products have been quarried or obtained.
- Brick production is an energy intensive industry and therefore it is often better to reuse old bricks where-ever possible. To find out more about the source of brick products contact your local supplier or builder's merchant.
- Cement production is also an energy intensive industry and as such cement should be used sparingly.
- Lime Mortars are a viable alternative to using cement as they have been used for centuries. Lime mortars never set as hard as cement and one of the big advantages is that the mortar can be cleaned from the brick making it possible for the bricks to be reused. In contrast cement mortars cannot be removed making the bricks good for nothing more than hardcore.

## Plastic

- The largest use of PVC is in building materials – cables, window frames, doors, walls, panelling, water and wastewater pipes - and in home products - vinyl flooring, vinyl wallpaper, window blinds and shower curtains. Of all the plastics, PVC-u (unplasticised Polyester Vinyl Chloride) plastic or vinyl is the most environmentally damaging. From production to disposal it requires hazardous chemicals in production, releases harmful additives and creates toxic wastes. Avoid using plastic items when paper or wood products can serve the same purpose.

There are many alternatives to PVC – Greenpeace International has produced a database for people interested in all levels of construction trying to track down PVC alternatives –

## Soft furnishings

By using soft furnishings such as curtains and blinds you can further insulate your home. This can be done by using a thicker material or even a quilted material with an insulating filling.

## Other materials

- Avoid aluminium products if a less energy-intensive material will perform the same task acceptably. An example where aluminium should be substituted for a less energy intensive material is in the use of window frames, where wood would be a better environmental option.

- Using recycled glass products increases energy conservation as the manufacture of virgin glass is an energy intensive process.
- Choose durable and reliable metal appliances and equipment to avoid the need for replacement.
- Replace lead pipes for plumbing and take care in removing and disposing of old flaking paint – as it may contain lead.

[www.greenpeace.org/~toxics/](http://www.greenpeace.org/~toxics/)

## Plants

Plants are particularly good at cleaning chemical pollutants out of the air. For example the common spider plant, which removes formaldehyde from the air. Work out where your most polluting sources are likely to be and place plants close to them. Consider ways of watering your plants with greywater (previously used water such as from baths).

Below is a list of plants that can help clean the air in different ways:

- Dwarf banana, *Musa cavendishii*
- Golden pothos, *Epipremnum sp.*
- Peace lilies
- Snakeplant, *Sansevieria*
- Ivy arum, *Scindapus aureus*
- Spider plants, *Chlorophytum comosum*
- Chinese evergreens, *Aglaonema modestum*
- The Peperomia family
- Goosefoot plant, *Nephtytis syngonium*

## Recycling waste materials in Ealing

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Use a reputable builder and ensure that they are registered as a licensed waste carrier and have given you details of where your building waste will be taken. Disreputable builders have been known to fly tip in the borough.

The following recycling centres are located within the borough

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Recycling centres	Materials accepted
Acton Waste and Recycling Centre, Stirling Road	Cans, glass bottles, jars, magazines, paper, textiles, scrap metal, motor oil, fridges, freezers, green garden waste, paint, car batteries, cardboard.
Greenford Waste and Recycling Centre, Greenford Depot, Greenford Road	Cans, glass bottles, jars, magazines, paper, plastics, textiles, scrap metal, motor oil, fridges, freezers, green garden waste, paint, car batteries, cardboard.
Southall Waste and Recycling Centre, Gordon Road	Cans, glass bottles, jars, magazines, paper, textiles, scrap metal, fridges, freezers, motor oil.

In addition to the recycling centres listed above, the Council also provides many recycling banks and other recycling installations throughout the borough. Whilst there are too many to list here information regarding these facilities can be obtained from the Recycling Team on 020 8825 6000 or at [www.ealing.gov.uk/services/recycling/recycling+services/default.asp](http://www.ealing.gov.uk/services/recycling/recycling+services/default.asp)

## Salvage Yards

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Use recycled building materials. There are a number of salvage yards of either architectural pieces or standard building materials in Ealing. It is worth checking your local newspaper or telephone directory under building products or the Architectural Salvage Index (01483 203221). Local demolition sites can also be a source of ready materials.

However it is important to ensure that any salvage that you are buying has been obtained ethically. The Salvo Network is one such network that produces a database of stolen items. [www.salvo.co.uk/index.html](http://www.salvo.co.uk/index.html)

## Asbestos in the Home

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Asbestos has been used in building materials and products for many years, particularly for fire protection. Asbestos is a natural, fibrous material of which there are three types: blue, brown and white. Diseases from asbestos are mainly of an industrial nature where exposure to the fibres has been gross and prolonged. Some asbestos products are soft and are easily damaged allowing fibres to be released into the air, which can be harmful.

In some homes built or refurbished between 1945 and 1989, asbestos may be present in some cement products such as tanks and pipes; insulating boards, lagging, tiles, roofing felts and also some household equipment such as ironing board pads, fire blankets etc.

If you have any asbestos in your home the following advice will be useful:

If a product is undamaged it should be left alone. Do not drill, saw, sand or scrub it with a wire brush. Some asbestos can be sealed depending on the type and amount of damage incurred either with special paints or a flexible polymeric or a bitumastic covering. If asbestos materials are badly damaged or releasing dust, they should be removed by specialist licensed contractors. Small items should be sealed in strong plastic bags and marked 'Asbestos' as should larger unbroken pieces which should be double wrapped in strong polythene.

Do not put asbestos waste into the dustbin. There are special arrangements for the disposal of asbestos waste. Asbestos cement must be disposed of at a site licensed to accept it. Ealing residents can take their own 'household asbestos cement' to:

West Waste Civic Amenity Site, Victoria Road, South Ruislip, Middlesex. Tel: 020 8841 4546.

This site will not accept commercial waste, i.e. generated through business.

The Corporation of London provides a free service for the collection of household asbestos in the London Area. The asbestos must be wrapped in heavy gauge polythene in quantities that can be lifted by one person. For further details on the service telephone 020 7332 3433

If you have any queries or require further information, please contact Environmental Health, Pollution Control on 020 8825 6633. Further details are also available in the 'Asbestos Guide' which can be viewed at [www.ealing.gov.uk/services/pollution+control/asbestos.asp](http://www.ealing.gov.uk/services/pollution+control/asbestos.asp)

## Tools and Equipment

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It can be a costly business when starting to decorate a new or existing home. It is often better to borrow (from friends and family) or hire tools and equipment instead. By hiring equipment you will also reduce your impact on the environment. Your local yellow pages will contain details of tool hire companies

## Further Information

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- The Green Building Digest aims to provide information on environmental issues to specifiers and purchasers of building materials, which allow them to include environmental considerations in their decision-making. Contact: School of Architecture, Queen's University of Belfast, 2 – 4 Lennoxvale, Belfast, BT9 5BY. Northern Ireland.  
Tel/Fax: 01232 335466.  
Email: [t.woolley@qub.ac.uk](mailto:t.woolley@qub.ac.uk)  
Published by Spon.
- Anink, Boonsta & Mak - Handbook of Sustainable Building (1996). A Dutch equivalent to the Green Guide to specification that uses the 'environmental preference' method to describe the options for different building elements. It also has a number of interesting case studies.
- Greenpeace publications: suppliers' guide – alternatives to pvc and also pvc plastic – a looming waste crisis. [www.greenpeace.org.uk](http://www.greenpeace.org.uk)
- Association for Environment Conscious Building [www.aecb.net](http://www.aecb.net) on 01559 370908 for information on non-toxic paints.
- Construction Resources Ltd – Ecological builders' merchant and building centre. Stock alternative paints and finishes and provide independent advice. 16 Great Guildford Street, London SE1 0HS. Open 10am – 6pm Monday – Friday. Late opening Wednesday 'til 8pm. Tel: 020 7450 2211

Fax: 020 7450 2212, Email: [sales@ecoconstruct.com](mailto:sales@ecoconstruct.com)

- Green Building Store – [www.greenbuildingstore.co.uk](http://www.greenbuildingstore.co.uk), Tel: 01484 854898
- For more information on removing chemicals with houseplants see Eco-Friendly House Plants By B.C Wolverton (1996) – Published By Phoenix Illustrated.
- There are many other organisations giving advice and selling green products.

This section on energy measures is primarily based on information from the Energy Saving Trust's documents and website. The EST website can be visited on [www.est.org.uk](http://www.est.org.uk)

## Why save energy?

As well as thinking about what materials to use and their impact on the environment, the emissions produced from the energy we consume are also an important factor to consider.

When power stations burn fossil fuels to generate energy, they pump out damaging greenhouse gases into the atmosphere. These waste gases trap the heat, which causes the greenhouse effect so that global warming is caused as a result. And the resulting rising temperatures, melting ice caps and rising sea levels cause climate change.

One quarter of the UK's carbon dioxide emissions every year originate from the energy we use to heat and light our homes, and we are increasingly running a greater number of household appliances. So we can all do our bit to help.

Therefore by being energy efficient we reduce the energy wasted by homes and appliances during their use. And the result: less energy required from the power station and a subsequent reduction in the amount of damaging emissions they emit.

The following sections on insulation, windows, heating systems, lighting and appliances and saving water all suggest ways of saving money on your bills and reducing your impact on the environment by reducing your energy and water use.

## Insulation

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If you've ever woken up in the winter filled with dread at the thought of leaving your bed to stand shivering in a freezing bathroom, you will know that energy efficiency is not just about saving money – it is about quality of life. Making your home warm and cosy does not have to involve taking out a second mortgage. It is possible to cut your fuel bills without sacrificing style or spending a fortune – and you will be doing your bit to save the planet.

Insulating is the most important of all energy conserving measures, because we can make the greatest impact on our energy expenditure with the use of insulation. The chances are that you are heating the street as well as your home. For the average house we can reduce the amount of heat lost through the fabric of the house by at least half. Beside the environmental benefit, there will be increased comfort and a more even temperature around your home. Also your heating system could be scaled down and radiators can be more freely placed anywhere in the room. Your house may also feel quieter. Also there is the added benefit of saving money on other measures.

By going beyond the minimum requirements of the building regulations for insulation (e.g. by putting in more than 20cm of loft insulation), could mean that you won't need to install expensive heating in your extension or loft conversion.

## Insulation Materials

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Current Building Regulations in England and Wales have U-value requirements for all external elements of buildings – walls, windows, doors, roofs and floors. This is basically measuring the fact that some things are better at retaining heat than others. Minimising heat loss through building fabric, especially in new buildings, must conform to these U-value standards. Replacing existing windows and doors requires a Building Regulation application to the Council unless your installer is able to give a FENSA certificate as a registered member of the Glass and Glazing Federation's self certification scheme.

The type of insulation selected is equally as important in contributing to minimising environmental impact. The ecological problems associated with conventional insulation materials such as foamed glass, glass wool, mineral/rock wool, expanded and extruded polystyrene, Rigid Urethane Foams, Vermiculite and Woodwool Slabs are numerous from their manufacture through to their disposal. However there are natural alternatives available for most situations.

Natural insulation products have many properties that set them apart from conventional materials. Overall, their impact on the environment is much less than that from conventional insulation products. For example: all natural insulation materials are made from renewable plant or animal sources; are produced with low energy use; use only natural additive; are biodegradable and they have an ability to 'breathe' meaning that they can absorb airborne moisture.

Different types of insulating material will be suitable for different applications. The table on page [23](#) using the environmental preference method shows the best environmental alternative for different applications in the home.

There are lots of different ways you can insulate your home – some cost as little as £5. And although heat rises, in the majority of homes the largest percentage of wastage goes through the walls and not the roof. For this reason, wall insulation is often the most cost-efficient way to cut heat loss.

## Floor Insulation

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The most practical way of insulating an existing concrete ground floor is to lay insulation and chipboard on top of the existing slab. This is only cost effective if you are replacing ground floor slabs. With suspended timber ground floors, adding insulation is normally worthwhile only if you have ready access from below (eg a cellar) or if the floorboards are being totally renewed. Cover timber ground floors with insulating board, hardboard or ply to reduce heat loss. Wall to wall carpets with underlay also help to stop heat escaping through the floor.

If you sometimes feel a draught beneath your feet, you may be able to reduce your heating costs by sealing gaps between the floorboards and the skirting.

- A regular tube sealant, like the silicon sealants used around the bath, can be applied to the gap.
- Whether you have access under the floor (via a cellar for example) or need to take your floorboards up, it is worth insulating underneath on the ground floor. Not only will it make the room feel warmer, but you could save up to £25 per year.

- If you have opted for polished floorboards you are bound to be losing heat underfoot. Warmer natural floor coverings are available (see materials section) such as cork or wood block.
- Remember not to block any under floor airbricks in your outside walls. Your joists and floorboards will rot without adequate ventilation.

## Wall Insulation

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Walls lose more heat than any other part of your home – anything up to 35% of all your lost heat. The first step to making a saving is to find out which sort of walls you have. There are two main types of external wall, solid and cavity. Cavity walls are walls that have an inner and outer layer separated by a small air gap.

You can usually tell which sort of wall you have by measuring their thickness at any window or door. Cavity walls are nearer 300mm thick, whereas solid walls are normally only 225mm thick. The brick patterns are also different – compare the cavity wall (top) with the solid wall (bottom).

The brick bond is not, of course, a guaranteed indicator of the wall construction because modern blockwork can be faced in Flemish bond (with snapped headers) too, where it is new work in a historic area.

- Cavity Wall Insulation

This is a straightforward job, which can be done in a day, by a reputable installer. It is always done by a professional installer, who injects insulating material from outside into the cavity by drilling small holes in the wall into the gap between the outer and inner layers of brick wall. It causes little disruption and is surprisingly inexpensive considering the amount it will save you in the long run. It can reduce heat loss through walls by up to 60%. Building Control will need to be contacted to ensure the work has been carried out properly.

- Solid Wall Insulation

Solid wall insulation is a more complicated and costly process than cavity wall insulation. It involves insulating and then weatherproofing the external walls.

Weatherproofing is provided by a layer of render or cladding, onto which a decorative finish is applied. It is particularly cost effective when your outside walls need repairing or re-rendering. Alternatively, you could insulate the inside of your walls. You can do it yourself if you are an experienced DIY'er, and reduce the cost even further, especially if you do it when your walls need repairing or redecorating. It is, however, still a major piece of work and you will have to take off and refit all skirting boards, doors and window surrounds.

Various types of insulating material can be used: foam, mineral wool (rock or glass), or polystyrene beads, recycled paper all of which should incorporate a vapour barrier – look out for the environmentally friendly alternatives. The cost depends on the type of material used and the size of your house. Professional installers will provide a 25 year guarantee from the Cavity Wall Insulation Guarantee Agency (CIGA). This guarantees that any defect in materials or workmanship, in connection with the installation by a member installer, will be rectified without charge to you.

The work should be done by a qualified Energy Efficiency Installer. (Energy Efficiency Installers adhere to the Energy Efficiency Code of Practice – your guarantee of the best advice on the installation of energy efficient measures – details of how to find an Energy Efficiency Installer can be found from the Energy Savings Trust's website – [www.saveenergy.co.uk/index.cfm?page=02120000](http://www.saveenergy.co.uk/index.cfm?page=02120000))

## Insulating your Roof

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Most buildings have some form of loft insulation. The question is do you have enough? Insulation needs to be at least 20cm (8") thick to be effective. If you find you do not have enough simply lay down another layer. The payback period of loft insulation is just two years if you install 25cm (6") in depth yourself. There are natural alternatives to the widely used fibreglass and mineral fibre such as wool and cellulose, which are both effective insulators and are great for DIY enthusiasts as they are more appealing to handle than fibreglass.

Your loft will be either lined which means that your loft space may already be habitable or open or unlined so that you can see the whole structure and the rafters.

### Unlined lofts where rafters are exposed

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Unlined lofts are insulated by insulating the ceilings of the uppermost floor from above. If your loft space is not used except for water storage tanks and services, then you can simply insulate between the joists. However if you have a tank in your loft remember not to insulate underneath it, but to insulate around and above.

Your home may already have some loft insulation but, if the material is thin, it won't be saving you as much as it could. Fitting proper loft insulation is the easiest and most cost-effective way of saving energy. The thicker the material, the greater the saving – so if you have older loft insulation, think about replacing it with new material at least 20 cm (8") thick. This can save around 20% of your heating costs. The main principle to follow here is to cover all pipes or tanks that contain water, as the air temperature above the insulation may go below freezing.

You can get loft insulation from any DIY store or builders' merchant. Make sure that you wear the correct safety clothing (gloves and mask), or ask an Installer to do the work for you.

There are three main types of loft insulating material: blown mineral wool or blown cellulose fibre; mineral wool quilt; and loose fill. Only the latter two types are suitable for DIY installation. Look out for the environmentally friendly alternatives on the market as discussed earlier.

Good ventilation is essential to minimise the risk of condensation and subsequent wood-rot; most homes already have adequate cross ventilation above the insulation, but check yours anyway, just to be on the safe side. Heat loss is greater from certain areas such as joists, so remember to lay the top 10cm of insulation across them. As the insulation will then hide the joists, you will need a boarded passage to enable you to reach tanks in the loft. Don't forget to insulate and draught-proof the hatch too.

	<b>1st preference</b>	<b>2nd preference</b>	<b>3rd preference</b>	<b>not recommended</b>
<b>floor</b>	aluminium membrane	EPS, mineral wool	foam glass, perlite	extruded polystyrene, PUR
<b>loft</b>	cellulose	cork	mineral wool	extruded polystyrene, PUR
<b>cavity wall</b>	perlite beads	mineral wool	EPS	extruded polystyrene
<b>internal wall</b>	cork, cellulose	mineral wool	foamed glass, EPS	extruded polystyrene, PUR
<b>external wall</b>	cork	mineral wool	foamed glass, EPS	extruded polystyrene, PUR
<b>pitched roof</b>	cork, cellulose, sheeps' wool	mineral wool	EPS	extruded polystyrene, PUR
<b>flat roof</b>	cork	EPS, mineral wool, foamed glass	perlite	extruded polystyrene, PUR

Note: EPS is expanded polystyrene, PUR is polyurethane. Source: Sustainable Energy Action.

## Lived in or lined lofts

If your attic space is habitable, whether it is heated or not, it is advisable to improve its insulation. This will entail insulating the roof rafters. There are a number of different ways of doing this, depending on the construction. Insulation can be fitted - below the rafters, between the rafters, above the rafters or some combination of the previous.

loft insulation	adding 20cm to existing 5cm of loft insulation	25cm loft insulation where none at present
cost of fitting (installer)	£210 – £230	£225 – £250
cost of fitting (DIY)	from £140	from £170
annual saving	£20 – £30	£80 – £100
costs recovered (installer)	7 – 11 years	around 2 years

Source: Energy Savings Trust, [www.saveenergy.co.uk/index.cfm?page=01051123](http://www.saveenergy.co.uk/index.cfm?page=01051123)

## Draught Proofing

Draughts enter your home in gaps around doors, windows and floors, accounting for up to 20% of lost heat. Wherever you can feel cold air coming in, warm air is going out. Also check the places where pipework enters your home. You could be losing heat here too so seal up any gaps.

- To cure ill fitting doors buy a roll of draught excluding tape from your DIY store and stick it onto the frame or door, making sure that you can still close it.
- Screwing a draught excluding brush onto the bottom of external doors and the letterbox also helps.
- Stripped wooden floors can be draughty in winter, so invest in large rugs.

Most draught proofing materials are cheap and widely available from any DIY store. The quality of the material will affect its performance and durability, so try to choose products which meet the standard BS 7386.

There are several specialised types of material, including foams, brushes, sealants, strips, plastic film and shaped sections of plastic and rubber so read the packaging and choose carefully. You can get further information from the Draught Proofing Advisory Association.

In addition to draught excluders there are many ways that windows can be insulated at night or when a particular room is not being used in winter.

- Curtains – there are many ways that curtains can be made more effective. You can use thicker material, or even quilted material with an insulating filling. You can add a reflective covering to reflect heat back into the room and you can make sure that escaping draughts from between the window and curtain are reduced. Curtains should not drape over radiators or hang in front of them as this funnels heat out through the window. Close curtains at dusk to stop heat loss.
- Blinds can be made to fit the window
- Shutters can be designed to be both insulating and tight fitting
- Using filler or mastic to fill in any gaps around skirting boards, wooden floors, ceiling roses or where pipes and cables come into your home. Newspapers are a cheap alternative.
- Block off any chimney you don't use. But remember to get the chimney swept before blocking it up and to leave space for ventilation. If you use the chimney only rarely you may be able to fit a throat restricter. A throat restricter is a shutter fitted on your chimney which enables you to open your chimney whenever you light a fire.

If sealing your home through draught proofing and insulation it is important that adequate ventilation such as trickle ventilation is installed to help prevent condensation. Trickle vents are inserts that can be opened or closed from inside and are fitted into window frames.

You may also wish to install extractor fans in your kitchen and bathroom to remove moisture from the air. Some extractor fans can be fitted with timers so that they will automatically switch off after a set length of time. A humidistat can save even more energy because it turns an extractor fan on only when there is too much moisture in the air.

## Hot Water Tanks and Pipes

By insulating your hot water tank and pipes, you will retain hot water for longer, and save money on heating it. Insulate pipes if you can – especially between the boiler and the hot water cylinder.

- If your tank has less than 7.5cm (3") of insulation you will save energy if you fit another jacket over the existing one, or replace it.
- Insulate pipes in the loft to stop them freezing and bursting in cold weather. This is an easy DIY job, but if you have loft insulation fitted by an installer, they should lag your pipes for you at the same time.

	fitting a jacket to your hot water tank	insulating hot water pipes
cost of fitting (DIY)	from £10	from £10
annual saving on fuel bills	£10 – £15	up to £5
costs recovered	up to 1 year	2 years

Source: Energy Savings Trust, [www.est.org.uk](http://www.est.org.uk)

	monetary savings from insulation*
loft insulation	savings of £35 per year
wall insulation	savings of £75 per year
hot water tank	savings of £20
hot water pipes	savings of £5
draught proofing	savings of £15 – £25 per year

\*Annual savings for an average property (an uninsulated 3 bedroom, semi-detached house). Source: Energy Savings Trust, [www.saveenergy.co.uk](http://www.saveenergy.co.uk)

## Alternative Insulating Materials

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Cellulose Fibres (Warmcel) is made from processed waste paper, made into a fluff that can be placed by hand or sprayed. It is treated with a fire retardant (borax).

Compressed Straw Slab - Straw is compacted with heat and pressure only, i.e. without adhesives, and bound together at the edges with paper. These are used as partitions /lining or as thermal roof decking. Straw slabs must be kept dry and have a poor thermal conductivity of 0.101 W/m<sup>2</sup>k.

Cork is the bark of an evergreen oak tree grown in Portugal, Spain and North Africa. It can be harvested as a regular crop every 9-12 years without killing the tree. Insulation cork board is made by cooking cork granules at high temperature and pressure. The granules bond themselves together with their own resins. The resultant thermal conductivity is 0.040 W/m<sup>2</sup>K.

Wool has a K-value of 0.037. It is renewable and just beginning to be used in buildings such as the Middlewood Study Centre in Lancashire. Raw unscoured sheep fleeces are simply folded into the wall with quassia chips to deter moths.

Flax can be used in walls, roofs, floors and ceilings for both domestic and commercial buildings. The fibres are bound together with potato starch making the product completely natural. Borax is added for fire protection and insect resistance.

Homatherm is a very practical insulation material in board form, made from recycled newspaper and recycled jute sacking. The material is treated with borax to resist decomposition and to make the insulation fire-resistant.

## Further information on Insulation and Materials

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- The Energy Savings Trust – [www.est.org.uk](http://www.est.org.uk)
- For information on environmentally friendly insulation materials contact:  
Construction Resources Ltd – Ecological builders' merchant and building centre.  
16 Great Guildford Street, London SE1 0HS. Open 10am – 6pm, Monday to Friday Late opening Wednesday 'til 8pm.  
Tel: 020 7450 2211 Fax: 020 7450 2212 Email: [sales@ecoconstruct.com](mailto:sales@ecoconstruct.com)
- Draught Proofing Advisory Association (DPAA), PO Box 12, Surrey, Haslemere, GU27 3AH.  
Tel: 01428 654011 Fax: 01428 651401 Email: [theceed@compuserve.com](mailto:theceed@compuserve.com)  
[www.nationline.co.uk/ceed](http://www.nationline.co.uk/ceed)

## Your Windows

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If your home has single glazing or poor window frames, you are bound to be wasting money on your heating bills. Almost a quarter of heat lost from a home can be through poorly insulated window frames and single glazing.

Double glazing or especially triple glazing cuts heat loss with the help of trapped air in the gap between the two or three panes of glass. The air does not mix with the air in the room or outside, creating an insulating barrier.

A good time to consider double glazing is when your existing windows need replacing, as it will be more cost effective to fit the replacement frames with double-glazed panes.

The decision on which windows to double glaze will vary from home to home, but generally speaking you will see most benefit if you give priority to the rooms you heat most, such as the living room, or to particularly draughty rooms.

There are several benefits of double and triple glazing besides saving energy:

- The amount of condensation on the panes will be reduced or eliminated.
- Noise from outside will also be reduced.
- There will also be a significant decrease in down draughts from the windows, which will allow radiators to be positioned more freely.
- Your fuel bills will decrease as a result of saving energy.

## **Improving the insulating properties of the frame**

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The insulating properties of the frame itself are important and can help to increase the overall insulating effectiveness and prevent condensation arising from thermal bridging. Frames can be made out of wood, PVC-u (a type of plastic) and aluminium.

- Solid metal frames such as aluminium conduct heat quickly and should be avoided unless they contain a thermal break.
- Plastic or PVC-u (unplasticised polyester vinyl chloride) has the advantage of low maintenance in the short run, but its long term durability is beginning to be questioned. PVC-u windows are impossible to repair and even slight damage requires the whole unit to be replaced and are difficult to dispose of (see material section for more information on alternatives to PVC).
- Timber if from a certifiable source provides the best all round ecological solution if the timber is well seasoned in the first place and is kept protected. (see section on materials)
- Quality varies too, so check with your local Energy Efficiency Advice Centre or Installer.

## **PVC-u or Timber?**

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One of the crucial decisions to make when installing double or triple glazing is deciding whether to buy PVC-u or timber framed units.

The production and disposal of PVC-u windows leads to the release of highly poisonous chemicals, which threaten the environment and human health. PVC-u production releases no less than six of the fifteen most hazardous chemicals listed by European governments for priority elimination. When PVC-u windows come to be disposed of, many of these chemicals are again released into the environment, either through chemical reactions caused when PVC-u is incinerated or through depositing old PVC-u frames in landfill sites.

The good news is that there are alternatives to PVC for virtually every application and timber is one of the best alternatives around for window frames.

The suitability of timber versus PVC-u can be judged on a number of factors: Maintenance, Life Expectancy, Cost and Aesthetic Quality.

Developments in timber window design and finishing products mean that modern, high performance timber windows need minimal maintenance and potentially have a significantly longer life than PVC-u. PVC-u windows do degrade, they are not maintenance-free and worst of all they cannot be repaired when necessary. The National Building Federation's 'Standards and Quality in

Development' gives PVC-u window frames a life expectancy of 20 to 25 years, and vacuum-treated softwood frames 25 to 35 years. According to the Green Building Digest, 'well designed and well maintained timber windows can and do last the lifetime of the building in which they are installed.'

Price comparisons are extremely difficult to make because of the enormous variations in quality of both timber and PVC-u frames. Discounts and incentives complicate the picture further. However the widely held assumption that PVC-u provides the cheapest option is often wrong, both in terms of initial capital costs and total costs over the lifetime of the window.

The National Housing Federation finds softwood considerably cheaper both in terms of initial capital costs and life cycle costs over a period of 30 years. Figures from its June 1998 report, 'Standards in Quality and Development', put the cost of buying, fitting and maintaining a softwood window frame at between £149.90 and £199.94 over 30 years\*. In contrast, a PVC-u frame will cost between £257.91 and £274.30.

In April 1998, Carlisle City Council did a cost comparison between PVC-u and high performance, softwood double-glazed units. It found that PVC-u windows were 25% more expensive initially, with negligible difference in costs over a 30-year period. The cost for timber was based on Carlisle's five-year maintenance cycle of water-based staining and the figure for PVC-u included an allowance for some maintenance. Similarly the Peabody Trust, a major Housing Association in London, no longer specifies PVC-u windows for its properties.

Planning controls often restrict the use of PVC-u windows in conservation areas and in buildings of historical interest. PVC-u cannot match the detailing of traditional windows. In contrast, timber has a variable and natural beauty and enormous flexibility for design options.

Timber is a sustainable resource. As long as the timber is sourced from properly managed forests and care is taken in the choice of preservatives, paints and stains, timber windows are by far the best environmental choice.

\*Prices are for solvent-treated timber. Water-based Borate treatment is less harmful to the environment but costs slightly more.

Source: Based on a report produced by Greenpeace called Look out! Your choice of window frames could seriously affect the health of our planet. PVC-u damages the environment. But there are economic, low maintenance alternatives.

Before installing windows of a different design to the originals, check whether planning restrictions apply to your house or property due to its age or location, as your property may be located in a conservation area or be a listed building.

It is also important to consider a means of escape in case of fire when installing double glazing.

Since April 2002 double glazing needs to be installed by an approved installer or inspected by Building Control.

## **Improving the insulating properties of the gap between the panes**

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The insulating layer between the panes of glass in double glazing can be improved by either producing a vacuum between the two layers of glass or substituting the air for a light gas such as argon or krypton. Producing a vacuum is an ideal way of cutting out the conduction between the two layers of glass. In practice this is difficult to attain and is only possible in factory-sealed units. Factory sealed units containing argon or krypton are becoming much more common.

- The crucial factor in reducing heat loss is the width of the air space between the panes of glass. 12mm is normal and after 20mm there is little additional energy saving although noise will be further reduced.

Low-E (low emissivity) glass has a special coating on the inner side of the pane, which reflects heat back into the room. This can significantly reduce heat loss, giving you an effect similar to triple glazing for less cost. Optimum efficiency can be achieved by having inert gas in the gap in conjunction with Low-E glass.

Secondary glazing uses framed glass panels, which are attached on top of existing window frames. It is a cheaper alternative to replacement double glazing but is nevertheless very effective in reducing energy loss. DIY kits are available with aluminium or plastic frames. They are fitted with draught-proofing strips and are available in either hinged or sliding panes. These can be easily opened and closed.

## The state of the existing window and aesthetic quality

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Your windows may be in a poor state of repair, being partly rotten (if wooden) or corroded (if metal). The decision whether to replace completely or repair may be a difficult one, but ultimately the expenditure and savings in terms of energy, money, time and materials need to be balanced.

What will often be the deciding factor will be the aesthetic quality of the existing windows compared with that of the replacements.

A sympathetic restoration or replacement can often be a selling feature when you come to sell your home. How often have you heard the term “contains many original features” in the estate agents’ write up?

The scope for external alterations will clearly be limited where a building is of recognised architectural or historic interest. The listed status of the building will constrain the type of windows that can be changed or altered.

monetary savings from glazing\*

double glazing

savings of £25 – £30 per year

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\*annual savings for an average property (an uninsulated 3 bedroom, semi-detached house).

Source: Energy Savings Trust, [www.saveenergy.co.uk](http://www.saveenergy.co.uk)

Low-E emissivity (Low-E) glass is a special type of glass with a transparent material fused onto its surface. This material acts as a thermal mirror. Low-E glass keeps more warmth inside during winter and keeps more heat outside during the summer. It also screens out the sun’s ultraviolet rays which helps reduce fading of carpets and drapes.

Argon and krypton are harmless gases that are sealed between the panes of glass to further improve the window’s insulating value.

In colder climates, Low-E/Argon or Low-E/Krypton helps minimise heat loss. In warmer climates, it reflects radiant heat and helps reduce UV damage to furniture, fabric or flooring. Low-E/Argon or Low-E/Krypton glazing can help lower energy bills and keep indoor temperatures pleasant year-round.

## Further Information

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- Greenpeace (1998) – Look out! Your choice of window frames could seriously affect the health of our planet. PVC-u damages the environment. But there are economic, low maintenance alternatives...
- English Heritage – Framing Opinions Leaflet 5 – Window Comparisons. [www.english-heritage.org.uk](http://www.english-heritage.org.uk)

Your windows may be in a poor state of repair, being partly rotten (if wooden) or corroded (if metal). The decision whether to replace completely or repair may be a difficult one.

## Your heating system

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Heating our homes, including the heating of hot water, accounts for the vast majority of energy that is used domestically and represents one of the greatest wastes of energy that we at present indulge in. Replacing a 15 year-old boiler could save you over 20% on your fuel bills, around 32% if you are installing a condensing boiler, and up to 40% if you also install the right heating controls. Many of us have outdated, oversized and inefficient systems that are not making the best use of energy delivered to them. Therefore if you are considering replacing your heating system there are a number of crucial steps and issues that you should consider before making your choice.

- First make sure you have insulated your home – especially your loft and any cavity walls before putting in a new heating system. A well-insulated home will need a smaller heating system. Why spend more money than you need on fuel bills.
- Our heating appliances are not the only sources of heat within our homes. Other sources of heat are lights, cookers, refrigerators, hot water and appliances. If your home is well insulated all this heat can be conserved and these additional sources then begin to provide a larger contribution to heating your home.
- Two other important sources of heat are light and heat from the sun but also the heat generated from our bodies (see later section on solar energy).
- Boilers that are over 12 years old are likely to be losing 35p of every £1 spent on fuel, leaving less than two thirds in useful heat. Therefore it may be more economic to replace your old boiler.

## Boilers

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If you have an existing system to be upgraded or have decided to opt for a whole new system, you will have to give careful consideration as to the type of boiler. Making the right choice will make a big difference in terms of the environmental impact and money saved.

Boilers traditionally fall into the 'If it ain't broke don't fix it' category – which is great until they go 'bang', usually in winter and more often than not at an inconvenient time like during the Christmas holidays. Don't forget, if your boiler is 15 years old or more, replacing it with a new condensing boiler with appropriate heat output for your property size will save you around a third on your heating bills straight away, and even more if you upgrade to modern controls. If your existing boiler is 15 years old or more or needs major repair then replace it altogether to avoid waste and expensive emergency call outs. Similarly, if you are refitting the kitchen or bathroom why not minimise cost and disruption by fitting a new boiler?

Today's boilers not only look better than their predecessors, but they use less fuel to produce the same amount of heat. Replacing a 15 year-old boiler could save you over 20% on your fuel bills,

around 32% if you are installing a condensing boiler, and up to 40% if you also install the right heating controls.

There are four main types of modern boilers using gas, LPG (Liquefied Petroleum Gas) or oil.

## Condensing Boilers

Spend a bit more on an efficient boiler, such as a condensing boiler as you will recoup your money with lower fuel bills (also check availability of grants).

By typically converting 88% of fuel into heat compared to 72% for a new conventional boiler, the condensing boiler is the most efficient of them all, wasting the least energy. Condensing boilers can be wall mounted or floor standing. The boiler exhaust or 'flue' should be sited away from neighbouring property and away from doors and windows because the condensing water vapour makes a 'plume' from the flue, similar to your breath on a cold day. If this isn't practical you may be able to install a vertical flue through the roof, or simply reposition the boiler. Building Regulations apply to both boilers and flues.

Condensing boilers are established products, and can be fitted to most new and old heating systems. They are easy to install and can be bought for oil and gas-fuelled homes. Condensing boilers are normally no bigger than conventional boilers.

The table below shows the effect of variation in boiler efficiency on annual running costs for typical domestic properties in the UK with central heating and a gas boiler. Although the costs in the table are typical for the type of property, there will always be wide variations in individual cases due to climate, exposure, occupancy patterns, heating controls, insulation, and other factors.

typical annual fuel costs

	seasonal efficiency	flat	bungalow	terraced	semi-detached	detached
old boiler (heavy weight)	55%	£247	£324	£337	£381	£541
old boiler (light weight)	65%	£209	£274	£285	£323	£458
new boiler (non-condensing)	75%	£181	£237	£247	£280	£397
new boiler (condensing)	88%	£155	£202	£211	£239	£338

Source: [www.energy-efficiency.gov.uk/index.cfm?nav\\_code=0028&showtitle=yes](http://www.energy-efficiency.gov.uk/index.cfm?nav_code=0028&showtitle=yes)

## Boiler Ratings

As with other appliances, boilers are given an average seasonal efficiency rating from A to G. Before choosing a boiler, check its average seasonal efficiency - manufacturers should include this in the manual. Average seasonal efficiency tells you how efficiently your boiler performs over the year. There is a special rating scheme, called SEDBUK (Seasonal Efficiency of Domestic Boilers in the UK). Be sure to look for boilers that are Energy Efficiency Recommended and to compare the efficiency of different boilers (old and new) via the SEDBUK Boiler Efficiency Database. Alternatively, ask your Energy Efficiency Installer for advice.

The best available A-rated boilers have efficiencies of over 90%. New gas boilers are likely to have to be at least 78% efficient. All quoted efficiencies are average seasonal efficiencies. You will also require a minimum controls specification. Ask your Energy Efficiency Installer which products you will need to comply with building regulations.

Whether you upgrade your heating system or not, remember that regular annual servicing will prolong the useful and efficient life of your boiler and can prevent any disasters.

## Choosing between an instant and a storage water heating system

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The best heating system for your home will depend on the characteristics of the building and your lifestyle. A number of factors such as the size of the dwelling, the number of people using the system, how frequently the system is used and how uneven the usage is.

### Instantaneous water system

- The house is small
- The Number of people using the system is small
- System is used unevenly
- There is little requirement for multiple use i.e. when 2 or 3 people want to use hot water at the same time
- There is no space for a water tank
- Instant systems are essentially systems that heat the water as it passes through producing hot water on demand. The heating is switched on or ignited when water begins to flow through the unit.
- These systems are usually powered through a combination or combi-boiler.
- There is no need for a storage cylinder and only the water that is required is heated.

### Stored water system

- The opposites of the instantaneous system are true
- There exists an efficient boiler that can also be used to heat a storage cylinder
- There are plans to install a solar panel or a heat recovery system with a heat pump
- The stored water system depends on keeping water hot in a tank or cylinder.
- They allow multiple usage at the same time and can be used for heat recovery technology.

## Making efficient use of heat and hot water systems

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- Install heating controls that allow you to control the temperature in different parts of your home. These could include an electronic timer control for the boiler, room thermostats for your main living area and thermostatic valves on all your radiators.
- Insulate the pipes and the water tank. Water jackets are available from most DIY stores and can pay for themselves in a few months during cold periods. Properly lagged water pipes also have extra protection against freezing temperatures – a time when pipes may burst. If a tank has less than 75mm of insulation you will save energy if you fit another jacket over the existing one.
- Reducing the temperature at which the hot water is stored by using a water tank thermostat and setting at the lowest temperature that will give you the hot water that you need.
- Saving on the actual amount of water used by having spray fittings on taps and an adjustable showerhead.
- Insulate the bathroom to reduce heat loss when bathing.
- Recycling the waste hot water through a heat pump to extract the heat before it is lost down the drain.
- Turn off your storage heater if you are going on holiday.
- Make sure your hot water cylinder (if you have one) is not set too high. It doesn't need to be any higher than 60 degrees but mustn't fall below 50 degrees.
- Put silver foil behind radiators on external walls.

monetary savings from heating & hot water systems\*

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heating controls      savings of £60 – £80 per year

most efficient boilers savings of £100 – £120 per year

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\*annual savings for a 3 bed, semi-detached house. Source: [www.est.org.uk](http://www.est.org.uk)

#### Further information

Remember if installing new works, building regulations involvement is necessary.

Remember all gas heating systems, should be installed by a Corgi registered professional installer or inspected by Building Control. CORGI is the Council for Registered Gas Installers. It is an independent body appointed by the Health & Safety Executive to register gas installer businesses and maintain safety standards throughout the industry. CORGI maintains a computerised database listing all Registered Gas Installers on mainland Britain and Northern Ireland. Tel: 01256 708133 [www.corgi-gas.com](http://www.corgi-gas.com)

Your local Energy Efficiency Advice Centre can provide you with detailed information on efficient heating systems and accredited installers. Energy Efficiency Hotline 0800 512 012.

If you are thinking of replacing your heating, hot water or energy system why not consider solar energy as an environmentally sound alternative.

## Solar Energy Systems for your Home

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### Solar Energy

The sun is the source of nearly all energy on earth. We are using this direct energy all the time in our homes as it warms the fabric of the building as it enters through the windows and becomes trapped. This use of solar energy is called passive solar energy as no mechanism is used to enhance or collect it. For example solar energy received through windows or conservatories that are south facing.

Active solar energy uses special collectors, of which there are two main types: fluid collectors which heat a fluid circulated within them usually called solar water heating and photovoltaic cells which convert light energy to electrical energy.

If you are thinking of replacing your heating, hot water or energy system why not consider solar energy as an environmentally sound alternative.

### Solar Water Heating

If you have a southerly-facing roof it may be worth considering solar water heating. A solar system can preheat water entering your conventional system and cut your fuel bills. They are particularly appropriate in large family homes that use large quantities of hot water. A carefully designed system can mean you will only need a small conventional boiler. Even in Ealing, a solar panel could provide over half your hot water requirements.

- A 3 – 5m<sup>2</sup> area will be needed for an average household
- Solar heating systems can supply 50% of hot water use
- Typical savings are £50 – £100 per year

- Current costs for installation are £3000 per system; however this is likely to decrease over time and only costs £1500 if installed by DIY (see information on solar clubs).

## Solar Clubs

Organised by Environ and the Centre for Sustainable Energy, Solar Clubs exist to help people fit solar thermal hot water systems for themselves. Combined with the range of discounts the clubs have been able to negotiate the costs, which are cut dramatically to around £1500 for a typical DIY installation. As these systems can provide over half of the hot water used by an average household, the equipment can pay for itself in only a few years, leaving free hot water for as long as the sun continues to shine.

Solar Club is a non-profit making venture and you only need pay for the elements of the service you need. The costs break down as follows:

- Information evening – Free
- Site visit – £45+VAT
- Training – £80+VAT
- Installation check – £55+VAT

You can pay as you go along, or pay the full membership fee of £170+VAT in one go. The cost of the panels themselves will vary according to the type you choose, but as a guideline they are around £1000 – £1500 and will supply 50% – 70% of your hot water needs.

For more information on the London Solar Club

Tel: 020 7582 9191 or visit:

[www.sustainable-energy.org.uk/renewable](http://www.sustainable-energy.org.uk/renewable)

## Photovoltaics – Electricity from Solar Energy

The word photovoltaic is a marriage of the words photo, which means ‘relating to light’, and voltaic, which means ‘relating to electricity’. Photovoltaic technology generates electricity from light. Solar photovoltaics (PV) need only daylight to work, and will generate electricity whatever the weather. If you install a solar PV tiled roof, you could prevent over 34 tonnes of greenhouse gas emissions during its lifetime<sup>1</sup>.

If every suitable roof in the UK was fitted with solar photovoltaics (PV), we could exceed the nation’s current electricity demand. Therefore by investing in solar power you will be leading the world into this era of clean energy. A solar home could be your energy solution to the wider environmental problem of climate change. Silent and maintenance free, a solar roof not only protects your home from the elements as it forms part of the roof, it also produces clean electricity helping to protect generations to come.

This technology at present seems expensive to the average person and at present installing a PV roof will not save you money as the pay back period is long. However as more and more people start to install PV the unit price will decrease. Power companies are now also starting to buy back any excess or off peak electricity generated by PV roofs, so potentially your roof could be helping to power the country. (see grants section for more information)

# The Solar Potential of Your Home

**Location:** Your roof must not be shaded by objects like trees or buildings.

**Orientation:** Solar PV works on all roofs, but is most effective on those facing south, south-east and south-west. In the UK, a north-facing PV roof will generate about 60% of the output of a similar south-facing one.

**Inclination:** PV products are suitable for pitched, flat and curved roofs, although the optimal roof angle is 30° – 40° for the UK.

**Available area:** The more surface area available, the greater the power potential. For a grid-connected system the minimum required area is approximately 10m<sup>2</sup>.

**Planning permission:** PV roofs do not usually require planning permission unless the building is listed or in a conservation area. However you should always call the local planning department to check on local policy.

- A photovoltaic device converts light into direct current electricity.
- Tiles or panels and DC to AC voltage inverters will be needed.
- The typical installation takes between three and five days, with minimal fuss.
- This process includes connecting the solar roof product to an inverter, to the electrical circuits in your house and to the import and export meters.
- To complete the installation, the solar system must then be connected to the local utility network.
- A grid connection will be needed and your electricity supplier may also buy back excess power generated by the PV cells.
- Current costs are approximately £7000 per installed kW. A typical house uses about 1 – 2 kW.
- Saving depends on matching load.
- £80 – £100 per year saving.

## Benefits

The key benefits of a solar roof are:

- Your own clean power source that helps reduce global warming.
- Reduces your electricity bills, since daylight is free.
- Increases the value of your property.
- Extremely low maintenance, with a long functional lifetime of 30 years or more.
- High reliability.
- Silent in operation and visually unobtrusive.
- The solar meter tends to increase your awareness of electricity use and encourage more energy efficient behaviour.

This house in Richmond, was sold at over £10,000 extra compared to similar houses in the area as it had a PV roof.

size of installation		approx cost of PV	approx electricity units per year (kWh)
kW	Sqm		
1	10	£7000 – £8000	760
1.5	15	£10,500 – £12,000	1140
2	20	£14,000 – £16,000	1520
2.5	25	£17,000 – £20,000	1900

Source: Solar Century Ltd. [www.solarcentury.co.uk/content.jsp?sectno=4&subno=9](http://www.solarcentury.co.uk/content.jsp?sectno=4&subno=9)

## Further information on energy and heating systems:

- Solar Century is one of a number of companies specialising in installing PV systems.  
[www.solarcentury.co.uk](http://www.solarcentury.co.uk)
- Sustainable Energy Action  
[www.sustainable-energy.org.uk](http://www.sustainable-energy.org.uk)
- Creative Environmental Networks  
[www.cen.org.uk](http://www.cen.org.uk)
- Energy Saving Trust  
[www.est.org.uk/solar](http://www.est.org.uk/solar)

## Lighting and Appliances

### Light bulbs

Although they may look simple things, today's bulbs contain complex, ever-evolving technology. Energy efficient ones are particularly clever. They are able to produce light using a fraction of the electricity usually needed – energy bills can be cut by up to £10 a year per bulb. They also help the environment by demanding less energy from the power stations that pump damaging greenhouse gases into the atmosphere. One quarter of the UK's carbon dioxide emissions every year originate from the energy we use to heat and light our homes.

- In most homes, lighting accounts for around 10 – 15 per cent of the electricity bill. So it is worth your while switching off when you leave the room. We can cut wastage and bills by turning off any lights – even fluorescent strip bulbs. Timers and automatic sensors should be fitted where possible, to save money and cut down on light pollution.
- Adjust your curtains or blinds to let in as much light as possible during the day.
- Take a look around your home and decide where the best places are for energy saving light bulbs. Where do you have your lights on most often and for the longest period? If you have outdoor security lights that are on for several hours at a time, these could be good candidates. Other high-usage areas could be hallways, landings and children's bedrooms. Note: Energy saving bulbs don't work with electronic sensors, dimmers and timers. So always check your manufacturer's instructions first.
- Energy saving lightbulbs come in a variety of shapes and sizes – as well as bayonet and screw fittings.

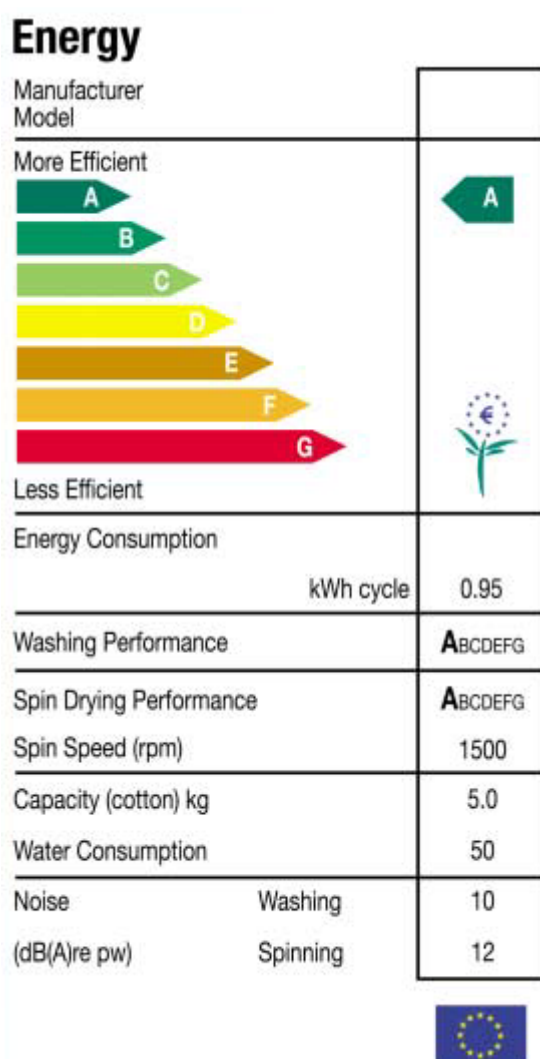
- Energy efficient versions of light fittings can also be bought. In some cases – such as outdoor lamps – these can contribute to substantial savings on bills as they only allow the use of lower wattage bulbs.
- Because they use just a quarter of the energy of traditional lightbulbs to create an equivalent amount of light, energy-saving bulbs come in much lower wattages.
- But be warned. There are cheaper ‘economy’ bulbs out there that say they are energy efficient but may not do as good a job for you. To make sure you choose a good quality energy efficient bulb or light fitting, look for the Energy Efficiency Recommended logo when you come to buy.

ordinary bulbs	energy saving bulb equivalent
25W	6W
40W	8 – 11W
60W	13 – 18W
100W	20 – 25W

European Energy Labels help you choose more efficient products and save money. Shops, mail-order catalogues and manufacturers must display the labels on all new domestic fridges, freezers and fridge-freezers, washing machines, electric tumble dryers, combined washer-dryers, dishwashers and light-bulbs. Labels for different products contain different pieces of information.

Most appliances are rated on a scale of A–G, with A being the most efficient and G being the least.

*Diagram of European Energy Label*



This shows how much energy is being used under standard conditions. Laundry and dishwashing labels also have performance ratings from A–G. Water consumption and other figures are displayed here. The lower the number displayed in the last section means you can use this to choose quieter models.

#### lighting

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cost of energy saving bulb	£5 (approx)
cost of regular bulb	50p (approx)
energy saving bulb savings (over regular bulbs)	£10 per year, £68 over a typical lifetime (including cost of bulb)
costs recovered within	6 months

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*Note: All information is based upon: Replacing a 100W bulb with a 20W energy saving one. Using it for 1700 hours per year. A 12,000 hour lifetime, an electricity cost of 7p/kWh.*

## Appliances

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Unfortunately not all appliances use the same energy to do the same job. And so if you are running old appliances in the kitchen, which will not be as efficient as their modern replacements, you will probably be paying over the odds when it comes to energy bills.

Energy efficient models use less power and cost less to run. Because they need less energy, they are responsible for fewer greenhouse gas emissions back at the power station. Although some of these energy efficient appliances cost a little more than their less efficient alternatives, they will all save you money on your energy bills and are better value in the long run.

Look out for the Energy Efficiency Recommended logo and the EU Energy Label. Both will point you in the right direction when you are shopping for the most energy efficient appliance on the market.

## Further Information

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- Energy Efficiency Advice Centre

You can get free, impartial advice on all aspects of energy use in your home by contacting your local Energy Efficiency Advice Centre (EEAC) on 0800 512 012.

EEACs can point you towards the energy wasters in your home, give tips and advice on how to cut this wastage, refer you to an Energy Efficiency Installer and tell you about grants and offers available in your area if you want to take action.

- DIY Home Energy Check

If you want to save maximum energy at minimum cost simply complete a DIY Home Energy Check questionnaire, which you can obtain during office hours from your local Energy Efficiency Advice Centre. If you like, they can talk you through the questionnaire or even complete it for you. Once completed, you will get a free evaluation of the energy efficiency of your home with a guide to which products will gain the maximum savings when installed.

# Saving Water

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Water is essential for natural life and for human use. Both are inextricably interdependent.

Water is continually being purified and recycled by natural ecological processes and life is endlessly sustained and regenerated by water.

Although the supply of water in the UK appears to be plentiful there are problems that affect us all. There is increasing contamination of groundwater, rivers, lakes and oceans and secondly there is the over use of water domestically, industrially and agriculturally which is leading to altered patterns of flow and the lowering of water tables.

We all use water in our homes and gardens and with the increased use of metering we are beginning to appreciate the unit cost of water and can see benefits in reducing our consumption. Each person uses, on average, about 50 litres of water a day for WC flushing. This represents 35% of all household use.

There are many ways that we can reduce our water consumption and ensure that any waste water that we have is sent to the right drain to be disposed of properly.

- Washing machines typically account for about 14% of the water we use at home, while the kitchen sink and dishwasher account for another 7.7%. New washing machines are much more water efficient and use about half the water of the average 10 year old machine. Similarly dishwashers are becoming more water efficient. Check out the EU labels when buying these appliances. (see lighting and appliances section for more information).
- In the UK it is possible to have a beautiful and productive garden without using any mains water. On average, 10 litres daily are used for watering the garden. On hot dry summer evenings consumption goes up dramatically – to as much as 50% of the total domestic water supply. Rainwater collection systems could help decrease the amount of mains water used.

Rainwater collection can vary from installing a simple water butt on a house to the use of large storage tanks in a commercial building, through to large systems that collect rainwater from roofs and hard surfaces over a whole new building development. (see gardening section for more details).

## Greywater and Other Water Efficiency Measures

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Every day a person uses, on average, 150 litres of water. Of this, 50 litres is for the WC, representing one third of all household consumption. By using recycled greywater – waste water discharged from washroom basins, baths and showers (but not WCs) – for flushing, we could save up to a third of water used in the home.

The increase in the number of systems on the market is likely to gradually reduce the cost of installing a greywater recycling system. The running costs are small, being limited to costs for pumping and occasional replacement of disinfectant treatments. Countries outside the UK have already realised the benefits of recycling greywater. For example, in Tokyo, this is mandatory for buildings over 30,000m<sup>2</sup> or with a potential water reuse of more than 100m<sup>3</sup> per day. Other Japanese cities also require smaller buildings to recycle greywater. The small systems currently available are for use in a single dwelling.

WC cistern dams reduce the amount of water required to fill a toilet after each flush. This is done either by reducing the total volume of a cistern by placing a solid object in it or by placing a

container in a cistern, which retains some of the water, preventing a full volume flush. Both can be achieved either by 'DIY' e.g. filling a recycled plastic bottle or by purchasing manufactured products. During the droughts of the 1970s the public were encouraged to put a brick in the cistern to cut down on water consumption. WC cistern dams are generally low cost, and for the most part easy to fit.

There are a number of water savers on the market, such as the hippo or hog, which are plastic bags that fill up and retain water. There is a greater potential for savings in older toilet cisterns as they have traditionally been larger in size. As new toilet cisterns are smaller it may not be possible to save as much water. The amount of water displaced needs to be taken into account as it may effect the performance of the toilet flush.

By installing a waterless toilet all of this 50 litres can be saved. There are two basic types of waterless toilet that are used mainly in rural dwellings not connected to a mains sewer; composting toilets and incinerating toilet. They have been successfully installed in new and retrofit situations in a number of dwellings in the UK. Other European countries have been using this type of system for some years, and have many more models available, but still primarily for use in dwellings.

### Examples of WC cistern dams with costs, savings & payback

product	description	Manufacturer/ supplier	water savings	unit cost	operating cost	gross potential saving (pppy)	max net payback time*
<b>Restrictaflush</b> =	Metalised bag filled with sand, gravel or water.	Dart Valley Services Ltd. Tel: 01803 529 021	1.5 litres per flush	£1.95 (reduced for bulk purchase)	NIL	£2.17-5.33	0.4-0.9 person years
<b>The Cistern Dam</b>	Flexible cistern partition	Flow Control. Tel: 0151 638 8811	about 4 litres per flush	£5.00 (reduced for bulk purchase)	NIL	£5.19-12.73	0.4-1.0 person years
<b>ECO-Dam</b>	Flexible cistern partition	Eco-Logic (UK) EMPS Ltd. Tel: 0121 603 1331	Up to 4 litres per flush	£8.75 (reduced for bulk purchase)	NIL	£6.51-15.97	0.5-1.3 person years
<b>Hippo the Water Saver</b>	Heavy gauge polythene bag	Hippo the Water Saver. Tel: 01989 563 907	Maximum 3.5 litres per flush	£0.57 (reduced for bulk purchase)	NIL	£2.78-6.83	0.1-0.2 person years

\*represents a maximum payback time as it assumes one person buying one unit. Actual payback is based on occupancy. = Since replaced by the WC tank reduction bag. Details of costs and water savings are provided by manufacturers and have not been verified by BSRIA or the Environment Agency.

- Approximately 8% of household water use is in the washbasin. Spray taps on hand-basins typically save up to 80% of the water and energy used with standard pillar taps. Sensor and push taps can save water where taps may be left on and they also avoid the need to touch the tap once hands are washed. A recent invention the 'Tapmagic' insert, can be fitted to most taps. At low flows the device delivers a spray pattern suitable for washing hands or rinsing toothbrushes. As the flow is increased, the device opens to allow full unrestricted flow.
- A dripping tap could waste as much as 90 litres a week.
- A quick shower uses a third of the water of a bath, but power showers can use more water than a bath in less than 5 minutes. 'Water-saver' shower heads are now available, which work by introducing air and will require mains pressure to work effectively.

Additional hints and tips for ways to save water are available on the Thames Water website: [www.thameswater.co.uk](http://www.thameswater.co.uk) and water saving devices (Hippo's and Save a Flush) for toilet cisterns are available free of charge to Thames Water's customers. For details of how to order these please visit Thames Water's website.

## 3. Improving your garden

The natural environment is one of our most important assets here in Ealing. We are particularly fortunate in having large areas of attractive countryside, a set of parks the equal of any other London Borough, many leafy tree-lined streets and a large number of well maintained allotment sites.

Our back gardens, too, make a contribution to the environment, which is just as important. Gardens are the places where many of us get actively involved with working with the natural environment rather than just treating it as something to look at and admire. Sometimes our efforts at maintaining and improving our gardens are misguided. We end up using too many chemicals, wasting too much water and using materials like peat, the extraction of which can endanger rare habitats.

But it does not have to be like that. This guide contains some simple ideas that you could easily use in your own garden that will help to make sure that your garden is safer and more pleasant to work, play and relax in and improves the environment as a whole. You may think that your garden is too small for it to make any difference. But caring for the environment and improving the quality of life in Ealing starts outside your back door in your garden... and when it comes to caring for the environment every garden counts.

### Water use in the garden

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- Why not install a water butt to collect water from your roof to water your garden. It will save you money if your water is metered and save drinking water.
- Choose plants for drought tolerance and compatibility with your soil and intended position. The following plants thrive in hot and dry conditions:  
African Lily, Buddleia (butterfly bush), Californian Lilac, Californian Poppy, Catmint, Daisy Bush, Evening Primrose, Foxtail Lily, French Honeysuckle, Lavender, Peruvian Lily, Pink, Red Hot Poker, Rock Rose, Rosemary, Straw Daisy, Thyme & Tulip.

Try not to use sprinklers. If you must water your garden remember infrequent watering is better than regular sprinkling as it encourages the roots to search for water.

### Organic Gardening

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- Install a compost bin and recycle your garden and organic kitchen waste – and even your neighbours' garden waste if they don't want it. Throwing it away or burning it is simply a waste of a useful resource. If you don't have enough garden compost to fill a compost bin, then you can use a worm bin to make small quantities of good compost.
- Plant native British species of plants, shrubs and trees, as these will support the greatest diversity of insects and other wildlife. Create some quiet wild patches in your garden to encourage wildlife, such as log piles for insects; and fruit, seeds and nuts for birds. Attract birds into your garden by putting out bird food and a saucer full of water on a bird table. A garden pond attracts frogs, toads, dragonflies and sometimes even more exotic wildlife like newts.
- Peat is a finite resource. Many wildlife habitats are now threatened by peat extraction. There are now many alternatives to peat. Some of these, like garden compost and leaf mould, you can make yourself. Others, like mushroom compost, are widely available, often cost less than peat and are more valuable.

- The best way to control pests in the garden isn't by using pesticides - it is by encouraging their natural enemies. For example, birds, frogs and hedgehogs eat slugs and snails, and ladybirds and hoverfly eat greenfly or their eggs. This guide includes a number of suggestions for attracting them into your garden where they will do your work for you.
- Try growing some fruit and vegetables. You might be surprised at how much you can grow in a small space. If you don't use pesticides they will be guaranteed to be much healthier too. If you do grow vegetables plant some flowers amongst them. Plants like marigolds and poached egg plants attract ladybirds and hoverfly which eat greenfly and other pests.
- From June onwards let your grass grow a bit longer. It will stay greener for longer without needing to be watered. Leave some of your tidying up until the spring. Birds can eat the seeds of some flowers over winter and ladybirds like to shelter in dead flower stalks.
- Mulch your garden plants with grass clippings. This keeps down weeds, improves your soil and saves water by preventing the ground from drying out so fast.
- Grow disease-resistant varieties of roses and other plants. They are widely available now and will mean you don't have to use so many chemical sprays.
- Consider planting a tree if you don't already have one. Trees filter air pollution, shelter birds and act as air conditioners, keeping areas shaded and cool.
- If there are a lot of trees near your garden then use the leaves in autumn to make your own leaf mould.
- Slug pellets kill more than just slugs. They can kill the hedgehogs, which eat the slugs and can even kill household pets as well as birds.

## **Solid structures in the garden**

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- When building structures in the garden such as barrels, patios/paving, sheds, decking always consider the type of materials that you will be using and choose the most environmentally sound option (see materials section for more details).
- Decking is becoming a very popular feature in our gardens and it is important to choose wood that is from a sustainable source.
- Paving made of stone and other materials is also a common feature in today's gardens. It is important to consider the source of the stone that you will be using (see materials section) and it will often be possible to use recycling paving blocks that are available from salvage yards.
- When building to the edge of your house it is important to remember not to cover up the damp proofing course and to keep air-bricks uncovered.
- Why not use natural paints and varnishes on fences and brickwork as they are less polluting and less likely to harm wildlife and animals.
- In terms of drainage it is important not to have too much hard surfacing in the garden. You could consider porous materials or paving with holes for drainage.
- Lighting in gardens is detrimental and disruptive to wildlife, especially birds and moths. It should therefore be used as sparingly as possible. Energy efficient devices, such as solar powered lights and water fountains, are now widely available'. For further advice see also 'Exterior Floodlighting in urban areas: the implications for Nature Conservation', prepared by J Hewlett for the GLA (June 2000).

Remember buildings and other structures in the garden including garages, sheds, greenhouses, summer houses, swimming pools, patios etc. may be subject to planning permission (see earlier planning permission section and speak to the planning department for further information).

## Front Gardens and Off Street Parking

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An increasing trend has appeared in recent years of people paving over front gardens to allow for off street parking for their cars. Disability access often means that this is the only option for some people. However there are a number of measures that can be adopted to ensure this is done, taking into account environmental considerations.

- Planting areas should be laid out round the parking space. Some types of shrub are particularly suitable for front gardens: Laurustinus (*Viburnum tinus*), Forsythia, Lavender, Fishbone Cotoneaster and Honeysuckle. Some trees that are suitable are Golden Robina, Mountain Ash and Common Almond.
- Position the parking space as far as possible from the house to prevent loss of light.
- Keep pedestrian access separate from vehicle access.
- Lay hard surface on a gradient to allow for surface water onto soft landscape areas.
- A cut-off drainage channel should be incorporated into the design to stop surface water from discharging across the public footway.

Further details can also be found in the Council's advice leaflet 'Design Guide for Front Gardens'. Various sources of further information are available. These include: Ealing LA21 Pollution and Public Health Group's report on 'Hard Surfacing of Front Gardens' (May 2004) (available to view at [www.la21.org](http://www.la21.org)), LA21 leaflet 'Keeping Your Garden alive', and SPG 2 'Water, Drainage and Flooding'. An application form for vehicle crossovers is available from Parkman Contractors on 020 8825 5233. Please also note that planning permission may be required for vehicle crossovers.

## Organic waste

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Green waste such as grass cuttings, twigs & hedge trimmings, plant & weeds, flowers, leaves and organic kitchen waste (i.e. vegetable scraps). Call Straight Recycling on 0845 1396090 to order a Council home compostter unit. For larger loads, take your green waste to any of Ealing's three recycling centres. The Council also operates a green waste collection scheme. For details contact the green box hotline number (020 8825 6000) or see [www.ealing.gov.uk/services/recycling/geen\\_box.asp](http://www.ealing.gov.uk/services/recycling/geen_box.asp).

## 4. What to ask when buying a new home

When buying a new home there are a number of issues that you should consider in terms of the best environmental options:

- Is the property the right size for your needs and the number of people who will be living there? A large house occupied by one person will be less energy efficient.
- Is the property built on a green field or brown field site? Brown field sites are sites that have been previously developed and is or were occupied by a permanent structure. Green field sites are sites that have not previously been built on.
- Is the property on a floodplain and therefore liable to flooding? Check the Environment Agency Website:  
[www.environment-agency.gov.uk/subjects/flood/](http://www.environment-agency.gov.uk/subjects/flood/)
- Is the property built on previously contaminated land? Speak to your local authority to find this out. However, not all contaminated land may be on the register.
- Locations of every landfill site in the country have been added to The Environment Agency's 'What's in your backyard?' website. To access the maps follow the links to 'What's in your backyard?' from  
[www.environment-agency.gov.uk/yourenv](http://www.environment-agency.gov.uk/yourenv)
- What is the energy efficiency of your new home? Since 1995 new homes have been required by law to have an energy rating, so if you are buying new, remember to ask. Alternatively call 0800 512 012 for details of SAP assessors in your area.
- Will your new home be located near to public transport links or will you be very dependent on the car? If it is located near to good public transport links it may be possible to give up use of the car and make a financial and environmental saving.

### **SAP (Standard Assessment Procedure)**

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SAP ratings allow comparisons of energy efficiency to be made and can show the likely effect of improvements to a dwelling in terms of energy use. Using energy ratings, designers, developers, housebuilders, and home owners can take energy efficiency factors into consideration when building new dwellings or refurbishing existing ones. Energy ratings can be used at the design stage to improve energy efficiency and reduce future fuel bills and carbon dioxide production.

SAP is the UK Government's standard methodology for home energy rating. It provides a reliable means of calculating the energy efficiency performance of dwellings. The SAP scale runs from 1 (the least energy efficient) to 100 (extremely energy efficient), with a score of 80 or more considered to represent a very energy efficient dwelling.

Local authorities, housing associations, and other landlords also use SAP ratings to estimate the energy efficiency performance of their housing.

## 5. Grants

- **Grants from the Home Energy Efficiency Scheme** The Home Energy Efficiency Scheme (HEES) is funded by the government and is run by Eaga (Energy Action Grants Agency) Ltd. You will qualify for grants if you own or rent your home and are on state benefits such as income support. Grants may be available for central heating, insulation and other measures. For full details of grants and grant qualifications contact Eaga Ltd – 0800 0720150.
- **Energy Saving Light Bulbs**  
Your local Energy Advice centre will give you advice on where to buy energy efficient light bulbs or where you may be able to get free light bulbs. Energy Efficiency Advice Centre (EEAC) 0800 512 012.
- **Gas Condensing Boilers**  
You may qualify for a grant to install a gas condensing boiler. Contact your local energy advice centre for more information. Energy Efficiency Advice Centre (EEAC) on 0800 512 012.
- **LPG Car Conversion – Power Shift Programme** All applicants seeking grant funding for Cleaner Fuel Vehicles must choose vehicles that appear on the Power Shift Register (putting the relevant Id code on their application form). Power Shift can offer grants worth from 30% to 75% of the additional cost of buying a clean fuel vehicle or converting an existing vehicle. Grants are available to help with the purchase of approved vehicles running on liquefied petroleum gas (LPG), natural gas and electricity (including hybrids). PowerShift grants can range in value from a few hundred pounds for a clean fuel car to many thousands of pounds for a refuse vehicle or bus. For further information see [www.est-powershift.org.uk/ps\\_grants\\_standards.cfm](http://www.est-powershift.org.uk/ps_grants_standards.cfm)
- **Energy Efficiency Commitment (formerly EESOPs)** This scheme operates through the 14 fuel supply companies, and provides a range of measures typically including insulation, heating controls, low energy lights, jug kettles etc. The measures are open to all and are available to both customers and non-customers of the fuel company depending upon the scheme. Contact: London Electricity and British Gas.
- **Bulk Discount Scheme** The idea here is to offer packages of measures at a reduced price and installed by contractors that have the seal of approval of the local authority. This London wide scheme has negotiated special discounts for energy saving works, to pass the savings directly onto residents. The scheme offers discounts on such measures as loft insulation, cavity wall insulation, heating controls and installing a condensing boiler. Contact: 0208 683 6600 [www.cen.org.uk](http://www.cen.org.uk)

### Grants available from London Borough of Ealing

#### Energy Grant

This grant is available for those people/households which do not qualify for the national 'Warm Front' scheme. This grant will provide money to pay for loft insulation, cavity wall insulation, and the provision of insulation for water storage tanks/cylinders. The grant has a maximum limit of £750.

#### Grants for the 'Houseproud' scheme (Discretionary)

The 'Houseproud Scheme' operated by the Home Improvement Trust enables homeworkers to release equity from the value of their homes in order to fund eligible works. Assistance is available

for homeowners over the age of 60, and households with a disabled person of any age. Works which may attract grant aid can include: replacement windows and doors, roof renewal, central heating and energy efficiency works.

### **Repairs Grants (Discretionary)**

Repair Grants may be approved for vulnerable applicants in receipt of income where the works would remedy defects which affect health and safety. This grant has a maximum limit of £5000 and can be used for structural works (including roof and windows) and internal works including plastering rendering, condensation treatments and heating measures.

Further details regarding the grants available from the local authority can be obtained from Ealing Council Home Improvement Agency on 020 8825 9273

*The list of grants detailed above are correct at the time of going to press, but it is possible that overtime these grants will be replaced, and new initiatives/grants introduced. The reader is therefore advised to check the internet and other sources for an up to date position on the grants available.*

## 6. How to find green builders and architects

If you are looking for a green builder, architect or engineer the following organisations and associations provide registers and advice:

### 1. The Association for Environment Conscious Building

(AECB) is a membership organisation of green builders and architects and have produced 'The Green Building Book' which includes the full membership for the UK.

AECB, PO Box 32, Llandysul, SA44 5ZA. Tel: 01559 370908 Email: [admin@aecb.net](mailto:admin@aecb.net)  
[www.aecb.net](http://www.aecb.net)

### 2. The Green Register of Construction Professionals

The Green Register is the first of its kind and is a listing of architects, engineers and tradespeople who have demonstrated a commitment to sustainable building practices.

42 Braganza Street, London, SE17 3RJ.

Tel: 0207 582 9191 Fax: 0207 582 4888

Email: [info@greenregister.org](mailto:info@greenregister.org) [www.greenregister.org](http://www.greenregister.org)

### 3. The Royal Institute of British Architects (RIBA) Client Services

Holds a database of architectural practices' expertise and that includes Energy/Environmental Expertise, Ecological Architecture, and Sustainable Design. They can identify practices with these skills who also have an interest/experience in domestic architecture, and/or can provide listed building advice, as well as advice on a large range of other services. The lists are tailor-made to client requirements. It is a free service and they can reply by e-mail, fax or post on the same day if needed.

RIBA Client Services, 66 Portland Place, London, W1B 1AD. Tel: 020 7307 3700 Fax: 020 7436 9112

Email: [cs@inst.riba.org](mailto:cs@inst.riba.org)

[www.ribafind.org.uk](http://www.ribafind.org.uk)

'The London Borough of Ealing does not warrant and does not represent the accuracy of any of the information or the suitability for any purposes whatever of any of the goods and services referred to in this guide with the effect that to the fullest extent allowable by law it accepts no liability whatever for any loss, damage, injury cost or expense however incurred by any person using any such information goods or services. The reader must rely on his/her own enquiries in determining the accuracy of any information and the suitability or otherwise of such goods and services'

'The organisations referred to throughout the guide are only some of those that may provide the product or service mentioned. Others may be found by searching the internet, the yellow pages, trade directories and business telephone directories. It is advisable to obtain a number of quotes before choosing any product or service'.

**Supplementary Guidance, as the title suggests, is to guide development. It is not meant to be definitive, and much of the guidance represents minima which are to be improved on if possible in the interests of good design.**

**If you would like further advice on this guide, please contact:**

**THE PLANNING POLICY AND DEVELOPMENT ADVICE SECTION  
EALING COUNCIL  
PERCEVAL HOUSE  
14-16 UXBRIDGE ROAD  
LONDON W5 2HL**

**Telephone 020 8825 5428**

**FAX: 020 8579 5453**

**Email: [Planpol@ealing.gov.uk](mailto:Planpol@ealing.gov.uk)**

**Website: [www.ealing.gov.uk/planpol](http://www.ealing.gov.uk/planpol)**