

# Planning greener heritage projects

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## Planning greener heritage projects

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### Welcome

The Heritage Lottery Fund (HLF) was set up in 1994 to distribute money raised by the National Lottery to heritage projects throughout the UK. In our first 12 years we awarded over £4 billion in grants to over 26,000 projects, from multi-million-pound investments in well-known sites and buildings to small grants making a big difference to community groups.

The Heritage Lottery Fund's strategic aims are to:

- conserve the UK's diverse heritage for present and future generations to experience and enjoy;
- help more people, and a wider range of people, to take an active part in and make decisions about their heritage; and
- help people to learn about their own and other people's heritage.

We produce a range of guidance notes to accompany our funding programmes and application materials. These are designed to illustrate the type of projects we can support and help you to prepare the information we need from you to assess your application. We also aim to help you plan your project effectively and achieve good-quality outcomes, for heritage and people.

We assess all applications to our **Heritage Grants** programme (grants over £50,000) in two rounds. This is so you can apply at an early stage of planning your project and get an idea of whether you have a good chance of getting a grant before you send us your proposals in greater detail. At the first round you can also apply for a development grant. If you are successful, this will contribute to the cost of planning and developing your project up to your second-round application.

### You need to read this guidance on Planning Greener Heritage Projects if:

- you are applying under our Heritage Grants programme, for any size of grant, particularly if your project involves building construction;
- you must also read the guidance and help notes in the Heritage Grants application materials.

You should also find this guidance useful if you are applying under our other programmes:

- **Townscape Heritage Initiative** (grants £500,000–£2 million)
- **Repair Grants for Places of Worship** (grants £10,000–£250,000 (£100,000 in Wales and Northern Ireland))
- **Landscape Partnerships** (grants £250,000–£2 million)
- **Parks for People** (grants £250,000–£5 million)

For a complete list of our guidance notes visit our website [www.hlf.org.uk](http://www.hlf.org.uk).

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### 1 Introduction

#### 1.1 Our policy

HLF is committed to furthering the objectives of sustainable development through the projects we fund. This means that, as far as possible, we will take account of all long-term benefits and costs – environmental, social and economic – when making decisions about projects<sup>1</sup>. In line with this policy, we ask all applicants to tell us about the social, economic and environmental outcomes that you think your project will have.

On environmental impacts, **there are no minimum standards** that projects must meet in order to be granted funding. But in the following pages we outline **which environmental impacts we think are likely to be important on projects of differing sizes and type – and what we think it should be possible to achieve on each.**

We don't want to impose minimum standards, because the projects we fund are too varied and diverse. Instead, a better approach is to work with applicants on a project-by-project basis. But we need a starting point. This is why we have produced this guidance, to lay out what we think it ought to be possible to achieve ('what we expect'). Depending on which impacts apply to your project, you should:

- tell us how you plan to meet (or even exceed) these expectations;
- or**
- you can make the case for why you think it is not appropriate or possible to do so.

You will provide this information as your answer to question 4e of the Heritage Grants application form. In the first round you only need to outline which of the impacts you think apply to your project. At the second round you will need to provide more detail, including what measures you plan to put in place and what environmental impacts you think your project will have. Our assessment of the likely environmental impacts of your project will be a factor in the final value-for-money decision that we make about whether or not to offer you a grant.

If any measures that you propose require statutory agency consents, **you must apply for those consents before you submit your second-round application.**

We recognise that **more sustainable solutions sometimes (but not always) involve higher upfront costs. We are prepared to fund these extra costs where we consider them to offer value for money.**

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<sup>1</sup> We agreed this policy statement in February 2005. By 'sustainable development' we mean the definition laid out in the UK government's Sustainable Development Strategy 'Securing the Future, Cm 6467 March 2005', that people should be able to enjoy a better quality of life without compromising the same for future generations. That goal is to be pursued "in an integrated way through a sustainable economy and a strong, healthy and just society, and in ways that protect and enhance the physical and natural environment, and use resources and energy as efficiently as possible".

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Over time we will strengthen our environmental expectations, as both expertise and technology improve.

### 1.2 Does the guidance apply to your project?

**We think that at least some parts of this guidance are likely to be relevant to your project, whatever its size and type.**

Clearly the guidance will be of most relevance to applicants whose project involves building construction – either the refurbishment of existing historic buildings, the addition of new structures to existing buildings, or the construction of completely new buildings. On any building project the architects' specifications will determine the impact of a building, and **some of this guidance is technical. We would recommend you share it with your architect as early as possible in the design stage.**

For projects involving no building construction at all, some sections of the guidance are still likely to be relevant – for example, biodiversity and soil in the case of countryside, wildlife, landscape and parks projects, and transport impacts for any project that encourages more visitors to heritage sites. Even on activity projects we would encourage applicants to think about re-use and recycled materials, whilst projects involving temporary exhibitions ought to consider the types of materials used and what happens to them once the exhibition is over – re-used, recycled or into landfill?

It might also be a good idea to think about featuring any environmental actions that you take within your interpretation work or learning activities, so helping to increase understanding of both the issues and potential solutions. And in many projects we think there is great potential to draw on the knowledge we have about past ways of life that may prove a guide to a more sustainable future. Old buildings, settlements, agricultural and industrial remains often preserve patterns of resource conservation, stewardship, re-use, recycling and local self-sufficiency. Heritage interpretation can bring out such messages without falsely implying that old ways were always or necessarily better. See our guidance on *Planning activities in heritage projects* and *Thinking about interpretation* for ideas on how you might go about this.

**We understand there may be some projects for which this guidance will not apply, and applicants should simply tell us where they believe this is the case.** Examples here could be oral history projects, acquisitions, and archives/collections projects, such as digitisation, that do not involve work to the building fabric which houses the material or collection.

We have provided indicative financial thresholds for many of the environmental impacts. For example, the threshold for renewable energy is £200,000. **In each case these financial thresholds relate to the value of the capital or conservation works within the project for which the grant is being requested.** If the cost of these works is less than the threshold, we would not expect that environmental impact to apply to your project (though you may still choose to address it).

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### 1.3 New-build and refurbishment

Another distinction we have used in the guidance is between new-build and building refurbishment. HLF does fund new buildings – though far more of our grants are for the refurbishment of existing, historic buildings. **We firmly believe that good practice in historic environment conservation is also good practice in energy conservation, and that – as a nation – we should be conserving historic buildings for both their cultural value and because it makes environmental sense.** Indeed, there is much for architects of future buildings to learn from the energy efficiency of many historic buildings which were, after all, built at a time when energy costs were relatively much higher<sup>2</sup>. Replacing an existing building with a new one involves a considerable cost of ‘embodied energy’<sup>3</sup> in materials, transport and construction with research suggesting that embodied energy equates to between eight and 15 years of the energy required to heat and light a building (‘operational’ energy)<sup>4</sup>. As energy efficiency standards improve, less energy is required to heat and light a building and so the embodied energy of materials used in new construction will become even more important.

**Our priority will always be for the continued use of the existing building stock – coupled with measures to improve energy efficiency.** We will not fund the replacement of a historic building with a new building, though hybrid schemes which combine the use of existing buildings with elements of new build are welcome. We do fund new-build visitor centres, and visitor facilities – but only as part of a wider project that meets our aims. We also fund new buildings on gap sites through our Townscape Heritage Initiative.

### 1.4 Whole life costing

We want our and your decisions to be based on ‘whole life costs’. This means that decisions should be based not just on initial capital cost, but also on the costs of renovation, maintenance and day-to-day operation over the expected lifetime of an asset.

Higher upfront costs often lead to lower long-term operating costs, so when you are working out costs and benefits you need to look over the long term. When looking at new-build options and at energy efficiency measures on projects with capital costs of more than £200,000, we would suggest that using a period of at least 60 years in your decision making is not unreasonable.

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<sup>2</sup> Wallsgrove, J. 2007. Age Energy Research. A study of the energy usage of buildings relative to their age. HMCS Estates. Ministry of Justice

<sup>3</sup> ‘Embodied’ energy is the term used to describe the amount of energy required to make a building material or product. Materials which have been subjected to little processing are therefore low in embodied energy; materials such as concrete and bricks, which require a great deal of energy to manufacture them are higher in embodied energy. Similarly building materials transported long distances will have higher embodied energy.

<sup>4</sup> Weight D. & Rawlinson S. Sustainability: Embodied Carbon in Building Magazine 2007 (issue 41)

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Ideally, part of whole life costing (perhaps more properly termed, in this case, 'whole life value') should also be to look at impacts that are not fully reflected in financial costs, or which are difficult to measure in financial terms – particularly carbon impacts. This means considering social and environmental costs associated with the design, construction, operation, decommissioning and (sometimes) the re-use of a building or the building materials at the end of its useful life.

Calculating the precise carbon impact of building materials is complex, but there are generic figures available for most commonly-used building materials (see 'More help'). This will give information that is detailed enough to be able to assess the broad financial implications of choosing different materials and/or construction techniques against their carbon impact: the cost consultant for your project should be able to establish a comparison of the different options.

### 1.5 Relationship to other HLF guidance

In this document we have concentrated on a key set of important environmental impacts where we think it's possible for us to make a real and important difference by influencing the decisions you make in planning your project. But as important are the decisions about management and maintenance taken after the completion of a project. Many of the points covered in this guidance, to do with local sourcing, energy conservation or waste minimisation for example, could be turned into longer-term management plans. See our guidance on *Management and maintenance planning* for more. This maintenance document is also the place where we have included some guidance on **climate change adaptation** i.e. how climate change might affect your heritage and what that might mean for maintenance.

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### 2 The guidance

The guidance includes sections on each of the following:

- energy efficiency;
- renewable energy;
- water;
- building materials;
- construction waste;
- soil, including peat;
- timber;
- biodiversity; and
- visitor transport.

Each section gives the details of what we expect from the projects we fund, with a distinction between new-build and refurbishment where this is relevant.

There is a summary table at the end of the chapter along with links and references to further sources of information.

**All financial thresholds relate to the value of the capital or conservation works within the project for which the grant is being requested.**

#### 2.1 Energy efficiency

Energy consumed during the operation of buildings represents around a quarter of the UK's carbon dioxide emissions. Designing, constructing and operating energy efficient buildings is the most important way that we can bring these carbon emissions down – followed by the use of renewable energy. We want the new-build projects we fund to be as energy efficient as possible; and for refurbishment projects, the opportunity taken to make energy efficiency savings wherever possible. In existing buildings, significant improvements to energy efficiency can often be made at little or no extra cost, by specifying energy-efficient lighting and other fittings, and by improving insulation levels.

What we expect

##### New-build projects

For all new-build projects involving capital or conservation costs of **more than £200,000** applicants should consider the option of **designing and constructing a building which is able to take full advantage of solar gain and is so well insulated that it does not need a heating system, and which uses natural ventilation instead of an air conditioning system.** If this design approach is not

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feasible it should still be possible to go well beyond current Building Regulations standards on energy efficiency.

On all new-build schemes, of whatever size, **we strongly encourage the achievement of energy efficiency levels beyond Building Regulation standards. This means that buildings should perform above the minimum standard in Part L of the Building Regulations for CO<sub>2</sub> emissions, and its equivalent in Scotland that is set out in Section 6 of Schedule 5 to Regulation 9 of the Building (Scotland) Regulations 2004.**

We recognise there is a particular challenge for buildings housing important archives, where passive systems of environmental control that can comply with British Standards on the storage and exhibition of archival documents are still being developed. In these cases back-up air conditioning in a building with high thermal mass (i.e. one that absorbs heat and releases it slowly) is likely to be a sensible compromise. Other parts of this guidance may still apply to projects involving archive buildings – for example on green electricity suppliers and renewable energy.

### Refurbishment projects

Proper consideration must be given to the special characteristics of a historic building when considering energy efficiency measures. Indeed buildings that are listed, in conservation areas or are included in the schedule of monuments are exempt from meeting the requirements of the building regulations on energy efficiency, including the minimum standard for CO<sub>2</sub> emissions, where compliance would unacceptably alter their character or appearance. However, it is also important that opportunities for energy saving are not ruled out for the sole reason that a building is of historic or architectural interest. Energy efficiency should always be improved where the work does not prejudice the cultural significance of the historic building, or increase the risk of long-term deterioration to the fabric or fittings.

Recognising this need for balance, **our expectation is that all refurbishment projects should be able to demonstrate that energy efficiency to at least the standards sought in the Building Regulations has been considered.** If you do not think it is possible to meet or exceed the Building Regulation levels we will need (at the second round) some explanation of why this is. This could be based on the advice of the local planning authority's conservation officer.

Possible ways of improving energy efficiency will vary enormously depending on your building, and we don't want to prescribe how to do this work. We have included some ideas of where to go for good advice in the 'More help' section of this guidance. But these are some basic principles:

- It is particularly important in the case of historic buildings to consider the performance of the whole building in terms of its energy efficiency: although an original single-glazed window may have an efficiency rating considerably poorer than modern standards, thick masonry external walls are likely to give the building much better thermal performance overall than the Building Regulations require.

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- Historic buildings have generally been built with permeable materials and need to 'breathe', so improving insulation and air-tightness will always be a matter of degree: cutting down on draughts and fitting breathable insulation materials in historic buildings may well be appropriate – sealing the building up will most definitely not be. Over-insulating an old building may simply turn a cold, damp building into a warm, damp one, potentially increasing condensation, timber decay, mould growth and human health problems such as asthma.
- Simple measures can be very effective in terms of both cost and benefit: draughts of cold air through gaps in the frames of old windows or around doors can cause considerable loss of heat, so draught proofing and weather stripping can help dramatically in improving energy efficiency by improving air-tightness. The partial blocking of chimneys may also be beneficial (for example by using chimney 'balloons'), although the adequate ventilation of gas appliances must be ensured. This level of work can have as much effect on heat loss as potentially more harmful alterations to a building, such as changing a historic single-glazed window for a double-glazed one (and will be considerably cheaper.) However, it is important to properly consider where heat is being lost; although windows and doors are common problem areas there may be unexpected places where heat is lost. It might be worth considering a heat-loss test on your building (see 'More help' section).
- Well-designed secondary glazing in keeping with the building can offer improved performance, if the existing windows and their setting into the external walls allow sufficient space for it to sit.
- It is often difficult to insulate external walls or floors of historic buildings without causing unacceptable damage. If existing fabric has to be removed – for example, to repair weatherboarding – it may be possible to add insulation in a way that is sensitive to the needs of the historic building fabric.
- It is usually feasible to insulate above the top floor ceiling in traditional pitched roof spaces where these are 'cold' roofs ventilated externally, provided the external ventilation is retained. It may be more technically difficult – but still feasible – to insulate at rafter level where there are rooms in the roof-space. In such cases, using insulation materials that breathe and avoid the build up of moisture is essential.
- Historic flat roofs probably present the greatest technical difficulty in improving thermal performance, and it may not be wise to try to do so; 'improvements' carried out in the past have resulted in moisture being drawn in to the structure, causing decay in the timbers or corrosion of metals.
- It's easy to forget that changing how a building is used – the temperature of the rooms, and how long they are heated for – can have a big impact on energy use. Generally, steady background heating is better than sharp fluctuations that risk causing condensation and mould in old buildings. Efficient boiler controls certainly make a difference here – as can curtains!

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### Both new-build and refurbishment projects

Whether your project is a refurbishment or a new-build scheme, **insulation materials should be made from natural materials**, or at least from materials with low embodied energy and that have low emissions of potentially polluting substances (see 'Building materials' section). There may be good opportunities for using re-used or recycled materials.

We would always expect **energy-efficient fittings and equipment to be installed**, and these should be specified as a matter of course in all projects of whatever value.

In the case of projects involving capital or conservation costs of **more than £200,000** it may well be cost-effective and feasible to **install a system to recover heat from waste water**. In conventional systems, most of the energy used to heat water takes place when raising the temperature of the water in the mains to tepid, even though this is only a third of the total temperature rise that is needed. Waste water systems avoid this expensive cost by using the heat recovered from waste water to pre-heat stored water before it is raised to its final temperature by the main energy source. The system works well for supplying both hot tap water and for water used in heating systems. Systems are now readily available and can result in considerable operational cost savings.

## 2.2 Renewable energy

'Renewable' energy covers a wide range of technologies. Energy can be generated either on-site or off-site. Potential on-site technologies for heritage projects include:

- Small-scale hydro-electricity – uses water power to generate electricity
- Biomass boilers – use wood or other organic matter as fuel
- Solar panels – use the sun's energy to heat water
- Photo-voltaics – generate electricity using light
- Ground source heat pumps – transfers heat energy from the earth or another environmental source
- Wind power – using on-site wind turbines

Though energy efficiency savings should take priority, we will fund on-site renewable energy as part of a capital project. In the cases of water or wind power this might even mean reverting to a traditional means of energy generation.

It is often assumed that adopting renewable energy technologies for local generation means that a new building will always cost more. In fact this is not necessarily the case. If a building is designed from the outset to maximise passive light and heat gains, the capital budget can remain comparatively unaffected whilst revenue savings may be substantial.

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### What we expect

#### **Both new-build and refurbishment projects**

Smaller projects – up to £200,000 in capital costs – may not easily be able to incorporate renewable energy options. Certainly it will be essential to consider carefully the contribution that renewable energy systems will actually make to both the financial costs of running the building and carbon dioxide emissions. It is quite likely that smaller projects will be able to reduce their environmental impact far more by increasing insulation and draught-proofing rather than through introducing renewable energy systems. The easiest way for these projects to use renewable energy is to purchase ‘green’ energy, and there are energy providers that only supply from renewable sources.

For **projects involving capital or conservation costs of more than £200,000 – both new build and refurbishment** – renewable energy technologies are financially more viable and will have a greater environmental benefit. For these projects appropriate **renewable energy technologies should be explored at the design stage**, and we will consider funding schemes which include renewable energy technologies even if this makes the initial capital costs of the project more expensive<sup>5</sup>. The potential impact of renewable energy on historic buildings, ancient monuments, conservation areas, and wider landscapes will need to be taken into account, though we would expect these issues to be adequately addressed by choosing the right technology.

Renewable technologies will become cheaper over time, and – for most technologies – they can be fitted at any time. However, one important exception is photovoltaics. This is because the additional cost and disruption of retro-fitting the electrical circuits required can often outweigh the cost-savings in their use. However, installing the appropriate wiring during a new-build or refurbishment project involves negligible additional cost. For this reason, even if current installation is not feasible, **we expect projects involving capital or conservation costs of more than £200,000 to consider the installation of electrical circuits that would enable the later addition of photovoltaic technologies.**

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<sup>5</sup>For more complex cases we may need to see a cost/benefit analysis of the renewable option. If so, this should be based on costs and benefits over at least a 30 year time horizon. When comparing a renewables option with a fossil-fuel based option, the cost of the fossil-fuel option should include capital cost + operating costs + a cost that reflects the environmental impact of carbon not reflected in market prices. This last cost can be based on the ‘carbon price’ on trading markets such as the European carbon market.

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When considering which types of renewable energy systems might be appropriate, some general points to consider are:

- Consider the context of the project. For example, there is little point installing a biomass boiler where there is inadequate storage space for the fuel – this will result in a need for more frequent deliveries by lorry, which would create additional emissions as well as being inconvenient. Similarly, small-scale wind generation may be less effective in urban environments than in rural areas because of overshadowing by buildings, which reduces wind levels. The performance of solar panels and photovoltaics may also be affected by overshadowing buildings or trees.
- The position of solar panels or photo-voltaics needs to be given careful consideration to make sure they are not visually intrusive whilst still being in a good position for efficient operation. It is already possible to incorporate solar systems into new build and historic buildings without detriment to aesthetics or historic fabric. Developments in ‘thin film’ photovoltaic technology, which uses very small amounts of specialised materials, may well offer further opportunities in the future. The positioning of technologies away from the buildings that they serve may make solar panels or photo-voltaics an option even for the most sensitive sites.
- Heat pumps can be very cost effective. A heat pump is simply a device which moves heat energy from one place to another. The pump removes heat from one area (the source) and discharges it elsewhere (the sink). The source may be water, soil or rock, or even simply fresh air, depending on the type of heat pump used. For heating, the building is the sink – the heat from the source is generally used to heat water which then heats the building. Heat pumps can even be used for both winter heating and summer cooling, by reversing which is the sink and which the source. Installation costs can be reduced if heat pumps are considered at the right point in the project design – for example, adapting the nature of pile foundations slightly may mean that the heat pump installation can be carried out as part of the piling works. Proprietary foundations systems are now available which allow this to happen. Similarly, hard landscaping works can be carried out in a way that allows horizontal coils to be installed at the same time. There are implications here for the timing of building works, so it is essential that the project programme has been developed to allow for this. An air source heat pump needs no ground-works (except for any associated heat distribution pipes/ducts) so it is a much simpler and cheaper option than ground source. The only drawback can be noise and vibration from the fan unit. Any possible impact on archaeology needs to be thought about if you want to install a heat pump.
- In contrast to heat pumps, geothermal systems use heat from rocks deep underground to heat buildings (or hot water) directly. Installation costs are generally higher in the UK than for heat pumps, as it is usually necessary to drill much deeper into the ground to reach the source of the heat. As a result it’s unlikely that geothermal energy will be a suitable for any project we fund.

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### 2.3 Water

Water resources, and the wildlife that depends on water, are increasingly under stress from climate change extremes, so it is good practice to ensure that projects use water efficiently and minimise the discharge of waste water. Saving drinking water also saves energy and carbon, since it takes a lot of energy to clean water and put it back into the system. Surface water would have been managed through open ponds and ditches in the past and reed beds would have provided a waste treatment resource. Such sustainable urban drainage systems (SUDS) are being used increasingly today.

The first aim of any project should be to reduce the demand for water. Within buildings, significant benefits can be achieved by specifying low water-consumption fittings, with minimal extra cost. On projects that involve parks and gardens, there needs to be careful planning of irrigation systems and water features; adaptation to climate change must also be considered in the selection of appropriate plant species.

What we expect

#### **Both new-build and refurbishment projects**

**Install flow-reducing valves to pipe-work below taps that are not used for high volumes of water.** Flow-reducing valves can be easily and cheaply fitted to pipe-work below taps.

**Install aerated taps for hand washing.** These introduce air into the water stream. They can be installed by replacing the standard tap insert – meaning easy installation with no need to change the tap itself – at very low cost. They can reduce water consumption by up to 80%, according to the Environment Agency. Other ideas you may want to consider include flow regulators, low-flow shower heads, waterless urinals and low-volume flush WCs using 2–4 litre or 4.5 litre cisterns.

**Sustainable urban drainage systems (SUDS)** offer a range of benefits and **should be considered on all projects.** This will reduce the rate at which water runs off hard surfaces, thus reducing the potential for flooding during extreme rainfall; they can also provide additional habitats and contribute to the visual appearance of a project. There is a wide range of options, from the very simple case of using porous paving to creating temporary water storage areas called ‘swales’ which allow water to soak slowly into the ground rather than flowing into hard drains. You will need to consider the range of options and local ground conditions before deciding which is appropriate. Impact on archaeology is another important consideration.

**Rainwater harvesting** can work for projects of any size if the water is to be used for garden purposes. It is worth considering simple storage and purification measures to avoid nuisance as a result of stagnant water or biting insects. Filter the rainwater before it enters the storage tank, to ensure that biodegradable material is kept to a minimum, and use tightly fitting lids so that biting insects such as midges or mosquitoes cannot get into the tanks to lay their eggs. It is also

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worth considering a layer of charcoal at the base to keep the water reasonably pure. This is particularly applicable for smaller storage tanks, but sometimes also for commercial systems in larger tanks where the rainwater may be stored for some time.

**The lower rainfall and hotter conditions expected in future years due to climate change should be considered when choosing plant species for projects.** Many plant species are available which cope well in dry conditions, and their use should be considered.

**Sprinklers** should only be used for very specific purposes such as soaking unplanted areas of ground before planting takes place, since watering an exposed soil surface leads to greater evaporation of moisture. If irrigation systems are to be installed they should apply water at the base of plant stems, below the leaf canopy; drip or trickle systems are more efficient (see 'More help' section).

### **New-build projects over £1 million**

It is possible to collect rainwater and use it for flushing WCs and in washing machines. However, for these uses a complex system needs to be installed, with the requirement that it must not be possible for the water to enter the drinking water system. The same situation applies to 'grey water' – that is, water that has been used for comparatively light purposes and is collected, for example, from hand basins. Although this cuts down on water use, it requires a completely separate pipe system. Grey water must even be treated before it is re-used for flushing WCs. This means grey water recycling is particularly expensive to install when retrofitting as part of refurbishment works, although it is now more commonly installed in new developments. Overall, it is much more cost-effective to adopt water-saving options than to introduce either grey water recycling or rainwater harvesting for domestic use. Given that, we would only expect **grey water systems** to be considered on **new-build projects where your capital costs are more than £1m.**

## **2.4 Building materials**

The production, use and disposal of building materials have a major environmental impact. In 1995 for example, 10% of UK CO<sub>2</sub> emissions were related to the manufacture and transport of building materials. The quantity of building materials<sup>6</sup> consumed each year is equivalent to six tonnes for every person in the country – and this figure is likely to continue to rise because of the scale of investment in our built environment<sup>7</sup>.

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<sup>6</sup> Building Research Establishment (BRE) & the Environment Agency's 'Sustainable Materials' factsheet, produced as part of its SITEWise II campaign.

<sup>7</sup> English Heritage, 2002 State of the Historic Environment.

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### What we expect

#### **Both new-build and refurbishment projects**

The issues involved in selecting building materials will be specific to your project and it is not possible to dictate what it is always right to use. In addition to being the right materials for your heritage, the things you will want to consider encompass the 'whole life' environmental impact of materials. This includes embodied energy, waste involved in production, other environmental impacts during manufacture, the environmental impacts of the material whilst in use, and whether the material can subsequently be re-used or recycled.

The only effective way to take all of these into account is through a full 'Life Cycle' Analysis. However, it's a very complex process to carry out this out on all the building materials you intend to use. For that reason, we've set out some basic guidance that, if followed, is likely to minimise the environmental impacts of your project whilst at the same time respecting its heritage value. For the most part these guidance points complement each other. The conflicts which you may come across are covered further below.

**Use traditional building materials.** They are usually the most appropriate type of material for use in heritage projects because of their physical and aesthetic compatibility with the historic building. Also, using traditionally-produced new materials supports the maintenance of industries and businesses that are important for conservation.

**Use materials that are low in embodied energy.** Products that would be chosen on this criterion include timber, lime mortar (lower embodied energy than cement), slate, stone, and a variety of unfired earth materials such as cob and rammed earth.

**Source locally** to reduce the impact of transporting materials for long distances. Local products will on the whole tend to be lower in embodied energy and are likely to be the right choice on heritage grounds – for example lime mortar and slate.

**Use paints, varnishes and other finishes that are natural-oil or water-based.** That is, they should not be petro-chemical or solvent-based products, which tend to have a far greater environmental impact and may also cause irritation to asthma and allergy sufferers. Natural oils and paints also allow buildings to 'breathe'. These paints and varnishes are likely to contain ingredients such as wood resins, plant oils (linseed oil, for example) and earth pigments. You might also like to consider flooring products such as natural lino, sisal, coir or timber, which can also help reduce such health impacts by contributing to better indoor air quality.

If you are carrying out a refurbishment project, **re-use materials from your existing building.** Re-using materials avoids all the environmental impacts of new manufacture and is a basic principle of efficient resource use. However, we would generally discourage buying in re-used historic materials from elsewhere because it is rarely possible to conclusively establish exactly where the materials

## Planning greener heritage projects

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have come from. There is a very real risk that sourcing second-hand heritage building materials will damage important historic buildings.

**Incorporate materials with high recycled content.** This not only reduces the amount of new material, energy and pollution in production, it also reduces the need for landfills, and possible pollution from incineration. Many materials and components are now available that have recycled content. These include concrete that uses fly ash aggregate (PFA), carpets made from recycled plastic bottles, insulation made from recycled paper and paints that contain post-consumer returns. The Government's Sustainable Procurement Task Force found that 10% of the materials value of any construction project could easily derive from recycled content at no extra cost<sup>8</sup>. If you need to use non-renewable metals such as copper, lead, zinc, tin, steel and aluminium, you should be able to source products with a high recycled content. **We expect capital projects of all sizes – both refurbishment and new build – to aim for the 10% target for recycled materials.**

### Potential conflicts

**Embodied energy and energy efficiency.** Using building materials with high thermal mass (materials that retain heat and release it slowly over time) is a good way of achieving energy efficiency and clay block, cob, rammed earth and air-dried brick are all materials with both high thermal mass and low embodied energy. However, these materials are not always the most suitable for the local environment, in which case architects may want to use materials like bricks or concrete that achieve energy efficiency but do not perform as well on embodied energy. This is fine – but only if the building is expected to have a relatively long life (over 30 years), and is designed in such a way that the materials can easily be re-used. This implies the use of lime-based cements for brick and block-work, to enable easy dismantling and brick re-use. Using high embodied energy materials which cannot be re-used in a scheme which has a short life is not an efficient use of resources.

**Heritage conservation and the use of natural oil and water-based paints and finishes.** There may be cost and technical issues here, for example drying times for water based paints, and durable finishes in high-use public areas. We recognise that these issues could increase project costs. Lead paint is a specific issue since it has unrivalled durability on timber, and we support its use. Lead paints that contain no lead carbonate or lead sulphate pigments can be used without any legal restrictions. Paint containing lead carbonate (white lead) can be used on Grade 1 and II\* buildings (Grade A and B in Scotland), subject to a declaration to English Heritage, Cadw or Historic Scotland.

**Slate and construction waste.** Slate quarried in the UK is a traditional material to be favoured on heritage grounds. Because of the amount of wastage in production, it is sometimes argued that UK-sourced slate is not only more expensive than imported slate, but also has higher environmental costs. There can also be issues about the landscape and nature conservation impacts of some slate quarrying

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<sup>8</sup> Department of the Environment, Food & Rural Affairs (DEFRA), 2006. *Procuring the Future*.

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and reserves are relatively low. However, we still favour the use of UK-sourced slate on heritage grounds and due to the embodied energy used in transporting imported slate<sup>9</sup>.

### 2.5 Construction waste

The construction industry creates 36 million tonnes of landfill waste a year – more than one third of the UK's total. Addressing waste management and minimisation during the construction phase offers lots of opportunity for both environmental and financial improvement. Improved resource use, reduction in greenhouse gases (methane, a main component of landfill gas, being particularly important), and less traffic impact are just some of the environmental benefits that are easily achievable. In terms of financial savings, the average savings made through effective waste management have been shown to be around 3% of build costs<sup>10</sup>. There is also a social benefit: there is a strong correlation between effective waste and materials management and a low accident record.

What we expect

#### Both new-build and refurbishment projects

**All projects involving a capital or conservation costs of more than £200,000 should adopt a site waste management plan.** This means that a systematic appraisal has been carried out of the types and quantities of waste that are likely to be produced during construction. Measures can then be taken to minimise waste, and to manage the waste that cannot be avoided. It also helps ensure compliance with all statutory requirements associated with the management of waste. The voluntary Code of Practice for Site Waste Management Plans issued by the DTI in July 2004 provides guidance on how to do this – see the 'More help' section. On construction projects with costs of more than £300,000 site waste management plans are now mandatory.

### 2.6 Soil (including peat)

Soils help to shape the landscape and store vast quantities of carbon. They also buffer chemicals that might otherwise pollute water or air. The way soil is handled and managed can significantly reduce the carbon footprint of development and mismanagement of soil resource can lead to excessive runoff and pollution of water courses.

Transport of topsoil is one of the main methods of spreading a number of particularly invasive alien plants, whilst the redistribution of archaeological material is another problem of relocating topsoil. It is important that soils are effectively managed to prevent loss of biodiversity: avoiding the mixing of top- and sub-soils is one example of good practice that may be easily implemented in many projects.

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<sup>10</sup> Figures produced by WRAP and Envirowise

<sup>9</sup> National Green specification, 2007. [www.greenspec.co.uk/html/materials/pitchedroofs.html](http://www.greenspec.co.uk/html/materials/pitchedroofs.html)

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The destruction of peat habitat is a particular concern. Peat grows extremely slowly and can't be replaced at the same rate at which it is currently being used. Its destruction accelerates the release of CO<sub>2</sub> and methane, whilst peat bogs are also vitally important for conservation of historical and archaeological resources.

What we expect

### All projects

#### **We do not expect peat to be used in any HLF-funded project**

**Careful management of existing soil resources on site** to prevent damage to their structure – for example by vehicles or by mixing with other soils or waste. Careless storage of topsoil results in loss of or changes to its characteristics such as micro-fauna, seed content and pH – if, for example, it is stored in large heaps then the micro-fauna and seeds in the middle are likely to be destroyed, and the outside of the heap may be colonised by less desirable and more aggressive species. Proper management of soil is essential to avoid this, generally by storing it in shallow piles to avoid heat build-up and damage to its structure.

#### **Where additional topsoil is required on a site, excavated subsoil should be mixed with composted material and then re-used, in preference to importing topsoil.**

This is particularly the case where the compost can be made on site. As much as anything, this creates fewer lorry movements and less noise, disturbance and emissions. If the soil on the site is of poor quality, it may be feasible to compost green waste and mix it with subsoil from the site to produce reasonable quality topsoil. However, beware of enriching soil where wild flowers are intended to grow, particularly if existing species are intended to be re-introduced following completion of a building project. Many valuable wild flower species need poor soils to thrive, and will be shaded out by competing plants if the soil is enriched. This is another area where a good ecologist can provide invaluable advice and information – even more the case if you are restoring habitats or land-use and need to ensure the right soil conditions (physical, chemical and biological) are in place.

## 2.7 Timber

There are many advantages to using timber; managed woodlands help to maintain the natural environment, store carbon as well as providing social benefits. Worldwide, the maintenance of well-managed forests is of vital importance if we are to deal with issues such as climate change, biodiversity loss and poverty reduction.

There is now a great deal of advice and information available from government and others on the ways that sustainable timber can be obtained, including details of the types of documentation that can provide confidence that timber has come from a well-managed source. This recent work means that it is becoming easier to obtain timber products which do not damage the environment.

UK-grown hardwoods and softwoods are preferable to imported timber, and all UK woodlands with woodland management plans approved by the Forestry

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Commission are deemed to provide sustainable timber. Durable UK softwoods you could use instead of imports include larch, western red cedar and Douglas fir.

### What we expect

#### All projects

HLF adopted a sustainable timber procurement policy in 2005. We expect **all timber used on HLF projects to come from verifiable legal sources and sustainably managed forests**. The methods for demonstrating and verifying that timber has been sourced legally and sustainably which HLF will accept are those that have been approved by the government's Central Point of Expertise on Timber (CPET). More details can be found in the 'More help' section – including information about how to use our free advice service on timber procurement.

## 2.8 Biodiversity

All projects will involve some wildlife issues, whether they are in an urban or rural setting. The very nature of construction means that there is great potential for negative impacts like direct species loss, fragmentation of habitats, and disturbance during feeding and nesting periods. However, an informed and positive approach to working with wildlife can lead to significant benefits and it is always worth contacting the relevant authority for general biodiversity and natural heritage advice – see the 'More help' section.

### What we expect

#### All projects

The first priority for all projects is to know your site: what wildlife is there now, and what are the likely or potential impacts of your construction project on this wildlife. It's also important to know whether there are any designations. These may be national (Site of Special Scientific Interest, Special Protection Area, Special Conservation Area) or local (Local Nature Reserves, Local Wildlife Sites) covering your site. Your local authority will be able to give you details of any designations affecting your site. You will need to consider both the species present and the habitats on which they depend to survive. Depending on the scale of your project, you may need to commission expert advice and surveys to establish what species are present; you will certainly need expert help if there are protected species such as bats, great-crested newts, red squirrels or badgers on or perhaps even near your site, and it is likely that you will need a licence to carry out work. As well as plants and birds, surveys should also cover mammals, invertebrates, reptiles, amphibians and – in some cases – lower plants. These should be undertaken by trained surveyors at the right time of year (for example, botanical surveys in winter will not be effective).

There may be significant constraints on your project if such species are present, including where and when you can carry out building or landscaping work. You are not allowed, for example, to cut back or remove hedges or trees where there

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might be nesting birds during the nesting season (the spring and summer months). Bat roosting sites must be maintained at all times and building activity is prohibited when they are in use.

Once you know what is there now, you can begin to plan. You will need to ensure that a range of actions is carried out at different stages of the project:

- As far as you possible, protect what is there already. This is, of course, a legal requirement if there are statutory designations or protected species on your site.
- If you cannot protect existing habitats and species, plan how you can reduce the impact of your project – both during the building works and afterwards. This could include mitigation measures designed to alleviate the immediate impact or enhancement measures, designed to improve conditions elsewhere or in other ways.
- Consider how you can improve the overall biodiversity of your site, perhaps by providing different habitats either as part of a building design or through landscaping and planting. Green roofs, for example, offer some benefits for wildlife particularly in urban environments (as well as other advantages such as insulation and reducing the rate of water run-off). A very wide range of other measures can be introduced at little or no additional cost to encourage a greater variety of wildlife, and it is important to consider the opportunities at the earliest possible stage of your project.

Taking all these points into account, overall, **we expect that all projects should be able to enhance the overall biodiversity interest of their site.** This enhancement can come over time as you manage the site. For example, proper management can encourage a hay meadow rather than a close cropped lawn. **Where there has been some loss of biodiversity interest this should be compensated by an improvement in other aspects.**

### 2.9 Visitor transport

When planning your project, there are two aspects of transport that you should consider. The first is the transport of materials, people and waste to and from your site during the construction phase. This is one of the reasons for using local materials but there are also other ways in which you can reduce the transport impacts of your project, such as ensuring that lorries are full when arriving at and leaving your site.

Secondly, at the early stages of planning your project, you should think about how you can reduce the environmental impacts of visitors travelling to (and perhaps around) the site once it is up and running. Providing ways for the public to reach your site without using a car must be a high priority, with links provided to public transport and cycleways complemented, perhaps, by ticketing systems that reward visits made in more environmentally-friendly ways.

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### What we expect

#### **All projects at sites that attract visitors on an ongoing basis**

Overall the project should seek to establish a 'people-friendly' rather than 'car-friendly' environment on the site. **We do not expect to fund car parking facilities**, unless a case can be made to show they are absolutely vital to the use of the site.

All projects should monitor how visitors arrive at their site and establish some methods for achieving **a proportion of visitors, staff, volunteers and contractors to come by public transport, walking or by bicycle.**

If car parks have to be provided, materials for surfacing **should be of natural materials such as stone or recycled aggregates that are in keeping with the local environment. Sustainable Urban Drainage (SUDS) techniques should be incorporated** (see section on 'Water').

### **3 Summary of the guidance**

In all applications for grants of more than £50,000, the information about resource-use impacts should be provided under the environmental impacts heading within Section 4 of the second-round application on 'the environmental impact of your project'.

After first checking the project size/type summary below, you should provide details **on any of the issues that you believe to be relevant to your project.** You should state how you plan to address each issue, and what outcome you expect to achieve. The table is intended as a guide to help you assemble the right information; the information can be provided in this format, but does not have to be. **Where you don't think an issue applies to your project or where you think our expectation is not something that is appropriate or possible for you to meet, this should be stated and explained.**

In all cases financial levels relate to the **size of the capital or conservation costs of the project for which you are requesting a grant award from HLF.**

For grants of less than £50,000 it is unlikely that significant resource-use issues will apply. Applicants for projects of under this amount should simply state in the appropriate section of the application form if they think any of the issues in this guidance are relevant, and what measures they want to take.

For most projects it ought to be possible to provide all the information at the second round on less than 4 sides of A4. For larger or more complex projects you may want to refer to more detailed reports and analysis that has been undertaken.

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The table shows our 'expectations' – what we think projects can achieve. Which of these do you think applies to your project? And which can you meet?	Capital/conservation cost band		
	£50,000 to £200,000	£200,000 to £1m	> £1m
<b>Energy</b>			
Design and construct a building which has no need of a heating system and which uses natural ventilation only	X	New build only	New build only
Achievement of energy efficiency to at least that required by Building Regulations	✓	✓	✓
Install appropriate renewable energy technologies	X	✓	✓
Install heat recovery from waste water systems	X	✓	✓
Install appropriate electrical circuits to enable the later addition of photovoltaic technology	X	✓	✓
Installation of energy efficient equipment and fittings	✓	✓	✓
Use of natural insulation materials	✓	✓	✓
<b>Water</b>			
Install flow-reducing valves to pipe-work that are not used for high volumes of water	✓	✓	✓
Install aerated taps and other water-saving fittings	✓	✓	✓
Install Sustainable Urban Drainage Systems (SUDS)	✓	✓	✓
Install grey water systems	X	X	New build only

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The table shows our 'expectations' – what we think projects can achieve. Which of these do you think applies to your project? And which can you meet?	Capital/conservation cost band		
	£50,000 to £200,000	£200,000 to £1m	> £1m
<b>Building materials/ construction waste</b>			
Use of traditional products and building materials	✓	✓	✓
Use of local products	✓	✓	✓
Use of products with low embodied energy	✓	✓	✓
Paints, varnishes and other finishes to be natural oil or water-based and not petro-chemical or solvent based	✓	✓	✓
Incorporate re-used materials from your existing building	Refurb only	Refurb only	Refurb only
10% of the materials value on a project to come from recycled content	✓	✓	✓
Adopt a site waste management plan	✗	✓	✓
<b>Soil, timber and biodiversity</b>			
No peat to be used	✓	✓	✓
All timber to come from proven legal and sustainable sources	✓	✓	✓
Biodiversity impact assessments to be carried out before work starts	✓	✓	✓
Enhance the overall biodiversity interest of the site	✓	✓	✓
<b>Visitor transport</b>			
Monitor and set targets for the % of visitors and other site users arriving by public transport.	All projects at sites that attract visitors for at least 3 months of the year.		
Car park surfacing should be from natural materials and be visually in keeping with the surroundings.	All projects where car parks are being built as part of the HLF-funded project.		

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### 4 More help – sources of further information

#### 4.1 Whole life costing

##### AE7 Whole Life Costing and Cost Management

is one of a series of Achieving Excellence guides produced by the Office for Government Commerce (OGC).

It can be downloaded from [www.ogc.gov.uk/documents/CP0067AEGuide7.pdf](http://www.ogc.gov.uk/documents/CP0067AEGuide7.pdf)

##### Inventory of Carbon & Energy (ICE)

produced by the University of Bath, is freely available to help calculate the life-cycle carbon impact of building materials. It is available for download as a pdf file from [www.bath.ac.uk/mech-eng/sert/embodied/](http://www.bath.ac.uk/mech-eng/sert/embodied/)

#### 4.2 Energy efficiency

##### The Department for Communities and Local Government (DCLG)

publishes guidance on meeting the requirements of the Building Regulations in what are known as Approved Documents. The two which are relevant to energy efficiency in non-domestic buildings can be downloaded from

[www.planningportal.gov.uk/england/professionals/en/1115314110382.html](http://www.planningportal.gov.uk/england/professionals/en/1115314110382.html)

They are:

- Approved Document L2A: Conservation of fuel and power (New buildings other than dwellings) (2006 edition)
- Approved Document L2B: Conservation of fuel and power (Existing buildings other than dwellings) (2006 edition)

The equivalent building regulations for Scotland and Northern Ireland can be downloaded at: [www.hmso.gov.uk/legislation/scotland/ssi2004/20040406.htm](http://www.hmso.gov.uk/legislation/scotland/ssi2004/20040406.htm) and [www.dfpni.gov.uk/index/law-and-regulation/building-regulations.htm](http://www.dfpni.gov.uk/index/law-and-regulation/building-regulations.htm)

##### Chartered Institute of Building Service Engineers (CIBSE)

[www.cibse.org](http://www.cibse.org)

Provides advice and guidance on energy assessment and low carbon technology.

##### English Heritage

[www.english-heritage.org.uk](http://www.english-heritage.org.uk)

Has a section on its website dedicated to climate change, including guidance on energy efficiency at [www.english-heritage.org.uk/server/show/nav.18525](http://www.english-heritage.org.uk/server/show/nav.18525)

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And has also produced a useful guide on simple energy efficiency measures in traditionally constructed buildings which can be downloaded from [www.helm.org.uk/upload/pdf/EnergyConservation.pdf](http://www.helm.org.uk/upload/pdf/EnergyConservation.pdf)

Energy Saving Trust

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

Advice and guidance on cutting CO<sub>2</sub> emissions by promoting sustainable and efficient use of energy.

Carbon Trust

[www.carbontrust.co.uk/default.ct](http://www.carbontrust.co.uk/default.ct)

Development of low carbon technologies and working with business and the public sector to reduce carbon emissions.

Directgov

[www.direct.gov.uk/en/Environmentandgreenerliving/Energyandwatersaving/DG\\_064371](http://www.direct.gov.uk/en/Environmentandgreenerliving/Energyandwatersaving/DG_064371)

Government advice on energy saving at a domestic level.

Combined Heat and Power Association

[www.chpa.co.uk](http://www.chpa.co.uk)

Works to promote the wider use of combined heat and power and community heating.

National Energy Foundation

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

'Promoting the better use of energy to counter climate change'.

### 4.3 Renewable energy

There are a number of websites available which provide information on suppliers of renewable energy and help you compare costs. One of these is [www.green.energyhelpline.com](http://www.green.energyhelpline.com)

Energy Savings Trust

has information about renewable technologies on its website, at [www.energysavingtrust.org.uk/generate\\_your\\_own\\_energy](http://www.energysavingtrust.org.uk/generate_your_own_energy). There is also a range of factsheets on renewable technologies which are available from [www.energysavingtrust.org.uk/schri/resources/factsheets.cfm](http://www.energysavingtrust.org.uk/schri/resources/factsheets.cfm)

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National Energy Foundation

[www.nef.org.uk/actonCO2/renewableenergy.htm](http://www.nef.org.uk/actonCO2/renewableenergy.htm)

Detailed information about a wide range of renewable energy options.

Renewable Energy Association

[www.r-e-a.net](http://www.r-e-a.net)

Represents UK renewable energy producers and promotes the use of sustainable energy in the UK.

Directgov

[www.direct.gov.uk/en/Environmentandgreenerliving/Energyandwatersaving/DG\\_064372](http://www.direct.gov.uk/en/Environmentandgreenerliving/Energyandwatersaving/DG_064372)

Information on types of renewable energy, technologies and grant availability.

English Heritage

See again the English Heritage website and its section on climate change in particular [www.english-heritage.org.uk/server/show/nav.18525](http://www.english-heritage.org.uk/server/show/nav.18525)

### 4.4 Water

The National SUDS Working Group

has produced an Interim Code of Practice for Sustainable Drainage Systems (SUDS) which aims to facilitate the implementation of sustainable drainage in developments in England and Wales. It can be downloaded from [www.ciria.org.uk/suds/icop.htm](http://www.ciria.org.uk/suds/icop.htm)

Waterwise

has a range of factsheets (for domestic-type and business usage) on water-efficient products, available from [www.waterwise.org.uk/reducing\\_water\\_wastage\\_in\\_the\\_uk/house\\_and\\_garden/saving\\_water\\_at\\_home.html](http://www.waterwise.org.uk/reducing_water_wastage_in_the_uk/house_and_garden/saving_water_at_home.html). Other information is also available on the website.

Water Regulations Advisory Scheme

[www.wras.co.uk](http://www.wras.co.uk)

Includes a reference directory of approved fittings, materials and appliances.

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Directgov

[www.direct.gov.uk/en/Environmentandgreenerliving/Energyandwatersaving/DG\\_064370](http://www.direct.gov.uk/en/Environmentandgreenerliving/Energyandwatersaving/DG_064370)

Government advice on water saving at a domestic level.

Environment Agency

[www.environment-agency.gov.uk/subjects/waterres/287169](http://www.environment-agency.gov.uk/subjects/waterres/287169)

Advice on water saving.

Water Guide

[www.water-guide.org.uk](http://www.water-guide.org.uk)

Information on water saving measures and rainwater harvesting.

Royal Horticultural Society

has a number of factsheets on the use of resources in horticulture, including one on 'Water supplies: Conservation and protection from pollution', available from [www.rhs.org.uk/Learning/research/conservation\\_and\\_environment.asp](http://www.rhs.org.uk/Learning/research/conservation_and_environment.asp)

### 4.5 Building materials

GreenSpec

provides information aimed at helping you to design more energy and resource efficient buildings, using materials and technologies that minimise damage to people and the environment – [www.greenspec.co.uk](http://www.greenspec.co.uk)

BioRegional Reclaimed

has published a guide to re-using building materials, 'Reclamation Led Approach to Demolition' which aims to explain the opportunities for contractors to increase the reclamation and reuse of construction and demolition waste. It can be downloaded from

[www.bioregional-reclaimed.com/Case%20study%20files/BRJuly07.pdf](http://www.bioregional-reclaimed.com/Case%20study%20files/BRJuly07.pdf)

Sustainable Building Association (AECB)

(also Association for Environmentally Conscious Building)

[www.aecb.net](http://www.aecb.net)

Promotes the use of products and materials which are safe, healthy and sustainable.

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Building Research Establishment (BRE)

[www.bre.co.uk](http://www.bre.co.uk)

Research, consultancy, training, testing and certification organisation delivering sustainability and innovation across the built environment and beyond.

Green Guide to Specification

[www.brebookshop.com/details.jsp?id=93716](http://www.brebookshop.com/details.jsp?id=93716)

Guidance for designers, specifiers and clients on the environmental impacts of a variety of building materials and components.

Jewson

[www.jewson.co.uk/en/templates/sustainability/mainpage.jsp?page=11400001](http://www.jewson.co.uk/en/templates/sustainability/mainpage.jsp?page=11400001)

Information on a variety of sustainable building materials.

Wolseley Sustainable Building Centre

[www.wolseleysbc.co.uk](http://www.wolseleysbc.co.uk)

Information on a variety of sustainable building materials and products.

English Heritage

English Heritage can provide advice and provides information about useful publications on building limes and building stone on its website:

[www.english-heritage.org.uk/server/show/nav.1045](http://www.english-heritage.org.uk/server/show/nav.1045)

### 4.6 Construction waste

WRAP (Waste Resource Action Plan)

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

'Works in partnership to encourage and enable businesses and consumers to be more efficient and recycle more things more often.'

NISP (National Industrial Symbiosis Programme)

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

Sustainable resource management solutions for a variety of businesses.

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Envirowise

[www.envirowise.gov.uk](http://www.envirowise.gov.uk)

Government funded programme of free confidential advice to UK businesses to help increase resource efficiency and reduce environmental impact.

Environment Agency

[www.environment-agency.gov.uk/subjects/waste/?version=1&lang=\\_e](http://www.environment-agency.gov.uk/subjects/waste/?version=1&lang=_e)

Advice on waste management.

DEFRA

has information about the statutory requirements for Site Waste Management Plans which come into effect on 6 April 2008:

[www.defra.gov.uk/environment/waste/topics/construction/index.htm#swmp](http://www.defra.gov.uk/environment/waste/topics/construction/index.htm#swmp)

DTI Voluntary Code of Practice for Site Waste Management Plans

along with a checklist which can be adapted to suit any project, is available from [www.constructingexcellence.org.uk/resources/publications/view.jsp?id=2568](http://www.constructingexcellence.org.uk/resources/publications/view.jsp?id=2568) This site also has presentations from the launch of the Code of Practice, providing further information.

### 4.7. Soil (including peat)

Environment Agency

[www.publications.environment-agency.gov.uk/pdf/GEHO1007BNDB-e-e.pdf](http://www.publications.environment-agency.gov.uk/pdf/GEHO1007BNDB-e-e.pdf)

Our strategy for protecting, managing and restoring soil.

DEFRA

[www.defra.gov.uk/environment/land/soil/index.htm](http://www.defra.gov.uk/environment/land/soil/index.htm)

DEFRA information on soil.

Soil Association

[www.soilassociation.org](http://www.soilassociation.org)

National Soil Resource Institute

[www.cranfield.ac.uk/sas/nsri/index.jsp](http://www.cranfield.ac.uk/sas/nsri/index.jsp)

Leading independent organisation on soil resources in the UK.

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Soil Management Initiative

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

Promotes the adoption of cultivation systems designed to protect and enhance soil quality, minimising soil erosion and water pollution.

Royal Horticultural Society

[www.rhs.org.uk/advice/index.asp](http://www.rhs.org.uk/advice/index.asp)

Includes a variety of gardening advice.

### 4.8 Timber

FSC (Forestry Stewardship Council)

[www.fsc.org/en](http://www.fsc.org/en)

Promoting responsible stewardship of the world's forests.

PEFC (Programme for the Endorsement of Forest Certification)

[www.pefc.org](http://www.pefc.org)

Promoting sustainably managed forests through independent third party certification.

ProForest

[www.proforest.net](http://www.proforest.net)

An independent company working with natural resource managers worldwide on practical approaches to sustainable timber procurement. Proforest provides UK government's 'Central Point of Expertise on Timber' (CPET) service and offers advice and guidance on timber procurement for private sector companies, public sector organisations and the voluntary/community sector through the Responsible Purchasing Advice Centre (RePAC) which is run by ProForest. Contact: +44 (0)1865 243439 Email: [support@responsiblepurchasing.net](mailto:support@responsiblepurchasing.net).

Forests Forever

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

Encouraging environmentally responsible trading practices in the UK.

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### 4.9 Biodiversity

#### Natural England

has a range of guidance documents on managing biodiversity, including statutory requirements for dealing with rare or endangered species such as bats, badgers and newts. These and other information can be downloaded from [www.naturalengland.communisis.com/NaturalEnglandShop/browse.aspx?CID=c5afa57b-a980-4097-9942-999fc74f7ae9](http://www.naturalengland.communisis.com/NaturalEnglandShop/browse.aspx?CID=c5afa57b-a980-4097-9942-999fc74f7ae9)

#### Scottish Natural Heritage

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

#### The London Development Agency (with the London Biodiversity Partnership and English Nature)

has produced guidance on 'Design for Biodiversity': available from [www.lda.gov.uk/upload/pdf/Design\\_for\\_\\_Biodiversity.pdf](http://www.lda.gov.uk/upload/pdf/Design_for__Biodiversity.pdf)

#### CIRIA (Construction Industry Research and Information Association)

has a wide range of publications including a 'Working with Wildlife Site Guide', available from [www.ciria.org/acatalog/c567.pdf](http://www.ciria.org/acatalog/c567.pdf)

#### Landscape Institute

[www.landscapeinstitute.org](http://www.landscapeinstitute.org)

Charitable body working to enhance and conserve rural, urban and coastal landscapes. Members are involved in the planning, design and management of open spaces.

#### DEFRA

[www.defra.gov.uk/wildlife-countryside/biodiversity](http://www.defra.gov.uk/wildlife-countryside/biodiversity)

DEFRA information on biodiversity with links to a wide variety of articles.

#### Environment Agency

[www.environment-agency.gov.uk/subjects/conservation/1512139/?version=1&lang=\\_e](http://www.environment-agency.gov.uk/subjects/conservation/1512139/?version=1&lang=_e)

Environment Agency information on biodiversity with links to a wide variety of articles and publications.

- [www.greenroof.co.uk](http://www.greenroof.co.uk) discusses the concept, design and construction of green roofs

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- [www.naturenet.net/biodiversity](http://www.naturenet.net/biodiversity) – an overview of biodiversity in the UK
- [www.ukbap.org.uk](http://www.ukbap.org.uk) – UK Biodiversity action plan website

### 4.10 Visitor transport

Department for Transport

[www.dft.gov.uk/pgr/sustainable](http://www.dft.gov.uk/pgr/sustainable)

Information on initiatives to reduce congestion, improve local environments and encourage healthier and safer lifestyles. Includes advice on creating travel plans.

Sustrans

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

Sustainable transport charity working on practical innovative ways of dealing with transport challenges in the UK.

Campaign for Better Transport

[www.bettertransport.org.uk/about\\_us](http://www.bettertransport.org.uk/about_us)

Helping to create sustainable transport policies and programmes with the aim of securing an efficiency transport system and delivering a cleaner, more pleasant environment.

Cycle Campaign Network

[www.cyclenetwork.org.uk/index\\_js.html](http://www.cyclenetwork.org.uk/index_js.html)

UK national federation of cycle campaign groups, supporting cycling locally, regionally, nationally and within Europe.

Environmental Transport Association

[www.eta.co.uk/pages/About-Us/36/default.htm](http://www.eta.co.uk/pages/About-Us/36/default.htm)

Raising awareness of the impacts of excessive car use and helping individuals and organisations make positive changes in their travel habits.

### 4.11 General

Sustainable Build

[www.sustainablebuild.co.uk](http://www.sustainablebuild.co.uk)

‘Eco-friendly building tips and advice’

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### Constructing Excellence

**[www.constructingexcellence.org.uk](http://www.constructingexcellence.org.uk)**

Construction best practice organisation aiming to deliver improved industry performance resulting in a demonstrably better built environment. Dedicated sustainability team.

### Sustainable Energy Action

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

Working in the key areas of energy, resource use, transport, the built environment and renewables with local authorities, private business, charities and communities to foster a low carbon world.

### Sustainable Construction

**[www.sustainable-construction.org.uk](http://www.sustainable-construction.org.uk)**

Practical guidance for planners and developers.

### BERR (Department for Business, Enterprise and Regulatory Reform)

**[www.berr.gov.uk/sectors/construction/sustainability/page13691.html](http://www.berr.gov.uk/sectors/construction/sustainability/page13691.html)**

Sustainable construction pages with links to discussion papers.

### Chartered Institute of Building Services Engineers (CIBSE)

**[www.cibse.org](http://www.cibse.org)**

Experts on building services engineering. Produces a variety of publications on construction, engineering and sustainability.

### Commission for Architecture and the Built Environment (CABE)

**[www.cabe.org.uk](http://www.cabe.org.uk)**

Champions well-designed buildings and public space. Aims to influence decision makers to choose good design.

### Historic Scotland

**[www.historic-scotland.gov.uk](http://www.historic-scotland.gov.uk)**

### Cadw (the historic environment service of the Welsh Assembly)

**[www.cadw.wales.gov.uk](http://www.cadw.wales.gov.uk)**

## **Planning greener heritage projects**

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Northern Ireland Government Environment & Heritage Service

**[www.ehsni.gov.uk](http://www.ehsni.gov.uk)**

Scottish Environment Protection Agency

**[www.sepa.org.uk](http://www.sepa.org.uk)**

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