

Sustainable Design and Construction Guidance

for planning applicants completing the Advisory Leaflet and the Small Scale Sustainability Form



*Starks Field Primary School
One of the exemplary sustainable developments in the Borough*

Introduction: The Case for Sustainable Design and Construction

*This leaflet is designed to provide background information to the **Sustainability Advisory Leaflet**, and to help you complete the **Small Scale Sustainability Form**.*

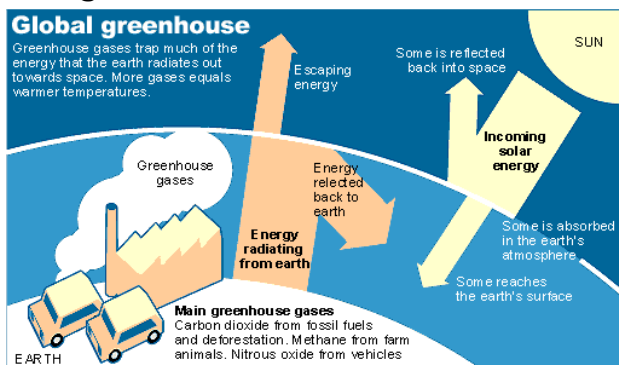
Background

We are facing a huge environmental challenge. Human activities have, over the last two centuries, been irreversibly affecting the environment in which we live and upon which we depend for our survival.

One of the major impacts of human activity upon the environment is what's known as the 'greenhouse effect', which is contributing to the warming of our planet, often referred to as 'global warming'. The effects of global warming in London could include longer, hotter, drier summers; and wetter winters, and a significant increase in high rainfall in short periods. We may therefore experience water shortages in summer, and an increased risk of flooding in winter.

What Causes Global Warming?

Greenhouse gases are released into the atmosphere and build up, trapping heat radiation. This causes the temperature on earth to increase, leading to climate change.



Above: explanation of the greenhouse effect



How to Use this Guide

This leaflet is designed to provide background information to the **Sustainability Advisory Leaflet**, and to help you complete the **Small Scale Sustainability Form**.

For further information you may wish to consult our two sustainability publications; "*Greening Your Home: A Householder's Guide*" and "*Sustainable Design and Construction Guide: for Developers and Building Professionals*". These are both available on our website www.enfield.gov.uk or by contacting Planning Services on 0208 379 3821.

How to use this guide

This guide aims to provide you with a better understanding of the sustainability measures detailed in the advisory leaflet and Small Scale Sustainability Form. The guide generally follows the order of the forms, and seeks to give background information on what each measure can do to help achieve sustainable buildings.

We hope this guide both assists you in the completion your form and increases your awareness of environmental issues within the Borough.

planning advice on sustainability assessments for householders and small scale developments

Energy Efficiency and Conservation

Use this section to help you complete Section 1 of the Small Scale Sustainability Form

Best Practice

- Design buildings to make the most of passive solar energy for the heating and lighting of buildings
- Ensure measures to prevent overheating from excessive solar gain are included in the design of the building, such as eaves, screens, or brise soleil.
- Minimise the demand for energy by providing natural ventilation, good daylighting, excellent levels of insulation and high performance glazing
- Use carefully designed conservatories and sunspaces to enhance the energy performance of a building
- Conserve energy use within the building – this can be achieved very easily and cheaply
- Choose a renewable energy supply or highly efficient boiler to meet the building's energy requirements



Background

The energy we use to build and operate buildings can have a large impact on the environment, potentially contributing to global warming through CO₂ emissions associated with the production of electricity by burning coal, and in the burning of gas. By carefully designing buildings to be energy efficient, making the most of passive solar energy, and using a renewable energy supply, you can help to reduce CO₂ emissions as well as create more comfortable living and working environments.

Building Design and Layout

Introduction

Buildings can be designed to minimise the energy they need to provide heat, light and ventilation.

Passive solar energy (the energy provided by sunlight entering buildings) can be utilised to reduce the amount of energy needed for heating and lighting, therefore reducing CO₂ emissions.



Best Practice

Designing for Solar Benefit

- Good orientation and layout allows you to make the most of sunlight both for warming buildings and providing natural light to rooms.
- Try to create opportunities for orienting the building to the south of the site where possible. This will allow you to utilise the sun's energy to improve the comfort and warmth of the building.
- Skylights and windows on the southerly facing sides of buildings bring more free warmth from the sun into your building – especially in the winter. It is important to also consider including some shading, such as eaves and blinds, so that the rooms do not overheat in midsummer.
- Thermal massing (providing structural elements with a high mass) helps to maximise the benefits of passive solar gain and helps to reduce temperature fluctuations within the building. These elements will absorb heat during the day and release it slowly during the night, when it's cooler.

Insulation

- Thickness of the walls, type of glazing and the level of roof insulation all affect the amount of heat lost from buildings. The more heat that is lost from a building, the more money needs to be spent on keeping it warm, resulting in more energy use, and therefore higher CO₂ emissions.
- Heat is lost in buildings through the roof, walls, floor and windows, but can also be lost from hot water storage tanks, and hot water pipes. Make sure that you insulate the building's floor, walls and roof to a high level, beyond building regulation minimum standards if possible. If these areas are well insulated, less heat loss will occur, but buildings will also be kept cooler in summer.
- Why not consider using a natural insulation material, to further reduce environmental impacts?
- Don't forget to insulate your hot water tank and hot water pipes to minimise heat loss.
- Try and insulate the floor, roof, and walls **above** minimum building regulation standards for a more comfortable building (*see table 1 for more information*)

Ventilation and Lighting

- Using 'passive' ventilation is the best way of ventilating a building, as it does not require the use of energy. Examples of passive ventilation include anything from simply opening a window to installing trickle vents in your window heads.
- Windows should have varying sizes of opening to allow ventilation to be varied without compromising security and safety. A trickle ventilation slot built into a window head is sufficient for minimum level ventilation for bedrooms and the living room. It is noted that the installation of a fireplace will require its own ventilation.
- For kitchens and bathrooms, warm air and pollution from indoor cooking processes makes it very important to ventilate these areas well. Low-level mechanical ventilators for bathrooms and kitchens are a requirement under building regulations.

Air Tightness

- It is anticipated that from April 2006, the Building Regulations will be amended to require that new buildings are sufficiently airtight. An otherwise energy efficient building can be compromised by heat being lost through uncontrolled ventilation.
It is highly recommended that new buildings are designed to be in accordance with these new regulations. See www.odpm.gov.uk for further details.

What are U-Values?

U Values indicate the heat flow through materials – the lower the value the better the insulation.

Window Performance

- Windows control how much heat and light is let into a building, but they can also let a lot of heat out of the building when temperatures are colder outside than inside. The location and design of windows is therefore of great importance. The orientation, size, and type of glazing selected will all have implications on the level of comfort in a building.
- Generally, windows on northern facades of the building should be smaller and well insulated, unless they are required for cooling purposes. Windows on the southern facades of buildings can be larger, as they provide opportunities to allow sunlight into the building. A ratio of around 8% window to floor area should be used for south facing windows to achieve a high level of solar gain, but take care to ensure that overheating is avoided during the summer months by using eaves and screens for shading.
- Choosing effective double or even triple glazing will ensure that both heat and light are let into the building, but that the loss of cold air is reduced.

Area	U-Values for a house to meet Building Regulations (as at November 2005)	What you can achieve in a well-insulated home
	U-Value and Material	U-Value and Material
<i>Pitched Roof</i>	0.16 – 0.20 (200mm recycled cellulose or 250mm mineral wool)	0.12 (300mm recycled cellulose or 300mm mineral wool)
Cavity Masonry walls	0.35 (70/80mm recycled cellulose or 75mm mineral wool)	0.3 (100mm recycled cellulose or 125mm mineral wool)
Ground floor	0.25 (100mm recycled cellulose or 150mm mineral wool)	0.2 (120mm recycled cellulose or 200mm mineral wool)

Table 1: Insulation levels required under Building Regulations and what you can achieve in a well insulated home.

Conservatories and Sunspaces

Conservatories and sunspaces can play an important part in improving the energy efficiency of your home, but must be designed and used properly in order to gain the maximum benefit from them and to avoid excessive heat loss.

A conservatory or sunspace, when designed properly, can save you energy in 4 ways:

- Providing thermal buffering – adding an extra layer of ‘insulation’ to external walls and windows (see diagram 1)
- Provision of pre-heated ventilation air – fresh air can be preheated in sunspaces before entering the dwelling through windows, doors, or ventilators (see diagram 2)
- As a draught lobby – by acting as an air lock when external doors are opened, preventing accidental heat loss from the main part of the dwelling (see diagram 3)
- Evening heat: by storing and re-radiating heat stored in solid walling sunspaces can continue to provide warmth in the evenings once outside temperatures have cooled. (See diagram 4)

- Conservatories work best if they are on the southerly aspect of buildings and are free from over-shading by trees and other structures.
- High and low level opening vents and blinds need to be provided to help reduce excessive summer and afternoon heat.
- Conservatories should be separate from the main building. Walls, windows and doors facing into the conservatory should be insulated to the same standard as any other external part of your home.
- Conservatories should not be heated (other than background heat to prevent frost damage).

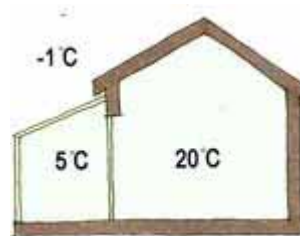


Diagram 1: Thermal buffering

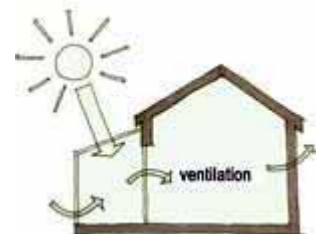


Diagram 2: Ventilation air



Diagram 3: Draught Lobby

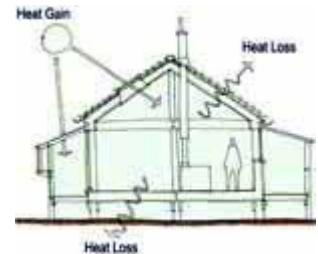


Diagram 4: Evening heat store

Right: all diagrams after Borer and Harris, 1998



Figure 1: Conservatories and sunspaces should be separated from the main building to reduce heat loss and improve performance

Energy Supply and Energy Use

Introduction

The source of the energy used in buildings is a very important factor when trying to reduce the amount of CO₂ emissions from a building. Electricity that is produced by coal-fuelled power stations has a high level of CO₂ emissions associated with it, whereas a renewable energy source such as solar power or wind power results in little or no CO₂ emissions.

If you are constructing a new building, consider the installation of a renewable energy source, be it a solar hot water heating system, some photovoltaic panels, a micro wind turbine, or a biomass boiler.

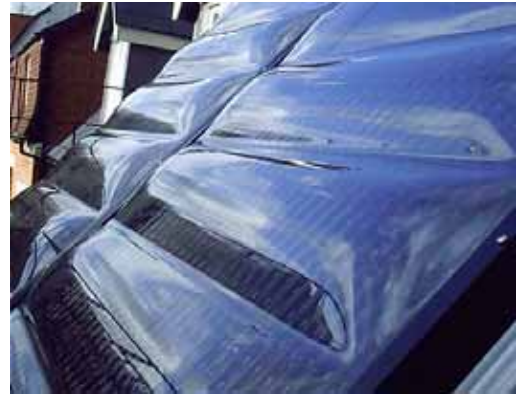
If you are renovating your home and installing a new heating system, it is also a good opportunity to think about the installation of a renewable energy source.

Renewable Energy

Solar Energy

The sun is the source of nearly all energy on earth. We use this energy all the time in buildings as it enters through the windows and warms the fabric of our buildings. This use of solar energy is called passive solar energy as no mechanism is used to enhance or collect it.

Active solar energy uses special collectors of which there are two main types: solar systems for heating hot water and photovoltaic cells which convert light energy to electrical energy. If you are replacing or installing a new heating, hot water or energy system, why not consider solar energy as an environmentally sound alternative?



Above: Solar Hot Water Panels

Solar Hot Water Heating Systems

If there is a southerly facing roof in the development, this is the best situation to consider solar water heating. Though more expensive than traditional systems, a solar system can preheat water entering a conventional system and cut 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.

Photovoltaic Cells

Photovoltaic (PV) cells convert light energy into electric energy, and only need daylight to work, rather than sunshine. While the installation of a photovoltaic system can seem expensive, the price of units will come down as more and more people install them. You can either install individual panels, or replace your existing roof tiles with solar tiles. If a solar PV tiled roof is installed, you could prevent over 34 tonnes of greenhouse gas emissions during its lifetime!



Above: Installation of PV tiles on a roof

Wind Energy

- Wind is a free resource that unlike solar power, is available 24 hours a day, 365 days a year, day or night, depending on wind flow patterns.
- While most of us might think of large wind turbines when we think of renewable wind technologies, there are small scale turbines available that have been specifically designed for household and small scale use. These are commonly known as microgeneration technologies.
- While this is a relatively new industry, there is great potential for you to generate your own energy using the wind. Some power companies will assist you with installation of a wind turbine and will even buy your excess electricity from you. Check with your supplier.
- The cost of microturbines in £/kW (pounds per kilowatt of energy generated) compares favourably with solar technologies.
- For an average three bedroom home, the optimum sized wind turbine would need to be between 1.5 – 3 kW, costing around £1500.
- Note that other planning issues such as visual impact, conservation area/historic building issues, and noise will need to be addressed. It is also noted that there are some models on the market that are virtually silent.



Above: an example of a microgeneration wind turbine. (www.renewabledevices.com)

Saving Energy in the Home

There is a range of simple and effective things you can do to save energy in the home or office to save energy and lower your fuel bills...

- Use energy saving light bulbs
- Make sure your hot water cylinder is well insulated
- Insulate hot water pipes
- Fix brush seals to exterior doors and letterboxes
- Put aluminium foil behind radiators to reflect heat into the room



Above: a well insulated hot water cylinder

Biomass

Biomass boilers burn wood pellets, logs and chips, or pellets derived from non-wood products in a boiler to provide heat and water heating. They are typically very efficient, reaching efficiencies of 80% and above.

Some boilers are self-stoking, but others are required to be stoked by hand. Self-stoking models are generally more expensive.

If you are thinking of installing a biomass boiler, consider the following points:

Fuel: It is important that you have somewhere to store the fuel, have access to the boiler to stoke it, and a local fuel supplier

Flue: This must be specially designed for wood fuel appliances.

Regulations: Ensure you comply with all safety and building regulations (see Part J of the Building Regulations)

Smokeless Zone: Wood can only be burnt on exempted appliances under the Clean Air Act. This mainly applies to domestic appliances.

Planning: if the building is in a conservation area, is a listed building, or is in an Area of Outstanding Natural Beauty (AONB), then planning permission will probably be required for the flue. Contact your local planning authority for further assistance.

Alternative Options

- Installing an energy efficient condensing boiler is another effective way of reducing the energy used within a building to provide heating and hot water.
- An energy efficient condensing boiler is a boiler that converts more than 88% of its fuel into heat, compared with 'standard' boilers that convert up to 78%.
- Replacing an old boiler (more than 10 years old) with a high efficiency condensing boiler will save you around 1/3 on your heating bills.
- It is noted that under current building regulations, you are required to install an energy efficient condensing boiler whenever you install a new boiler or replace an existing one. Check with your local building control department for further details.

FURTHER INFORMATION

www.solarforlondon.org.uk A London based initiative aimed at bringing solar water heating systems to London homes.

www.est.org.uk/myhome the Energy Savings Trust advice on what renewable energy technologies are suitable for your home

www.clearskies.org Information on grants available for the installation of renewable energy technologies

www.bwea.com The British Wind Energy Association

www.greenenergy.org.uk/logpile Information on wood as a fuel and a list of suppliers of stoves, boilers, and a database of fuel suppliers.

www.est.org.uk/myhome/efficientproducts/ for recommended boilers

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Water Conservation and Management

Use this section to help you complete Section 2 of the Small Scale Sustainability Form

Best Practice

- Choose water saving taps and showers
- Ensure you install low/dual flush toilets
- Avoid power showers!
- Install a water butt to collect rainwater from the roof for watering the garden and washing the car
- Minimise the amount of paved surfaces on site to allow rainwater to drain into the ground
- Install an efficient washing machine and only wash when you have a full load
- If you are refurbishing your home or office, check for dripping taps – they waste water and can be easily fixed



Background

Households are the biggest users of water (55% of all water used in the UK). People in Enfield use approximately 150 litres of water per person per day – enough to fill 15 buckets. On average more than 50 litres of this good quality clean water is flushed down the toilet.

And while we may think that it's always raining, we don't actually have that much water – in 2005 Southern England had its driest winter, spring and summer since 1976, with only two-thirds of the average rainfall. We need to design our buildings in such a way that we reduce our water consumption, and also look at ways to collect water for use around the home and garden.

We also need to make sure that when it does rain, the water that drains from our patios and parking areas is as clean as possible before it enters the drainage system – which often drains straight to our rivers and streams.



Above: Gentleman's Row Bridge crossing the New River

Minimising Water Use

- When specifying water fittings such as showers, taps and toilets for a new or refurbished development, specify ones that have water saving features such as aerating heads. These can save up to 80% of the water used in 'ordinary' taps.
- Avoid power showers. 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!
- Use low/dual flush toilets. Low flush toilets use 4 litres of water per flush compared with old style cisterns which use 9 litres of clean drinkable water per flush!

For further information on saving water, see www.environment-agency.gov.uk

Harvesting Rain Water

Collect rain water to water the garden and wash the car. Rainwater collection systems can be simple or complex depending on your needs. In most cases a simple water butt connected to the rainwater drains collecting water from your roof will be all you'll need.

Table 2: Water Use Within the Home

Water Use	Percentage
Flushing the toilet	33%
Washing machines	21%
Baths and showers	17%
Kitchen sinks	16%
Washbasins	9%
Dishwashers	1%
Hosepipes	3%



Above: examples of a water butt

Controlling Rain Water Run-off

It is important to think about where the rainwater goes that falls on our properties.

If there are a lot of paved or hard surfaces on a site, the water runs off these rather than being absorbed into the ground, placing additional strain on stormwater drainage systems.

Rain can pick up contaminants off the paved surfaces such as car oil, litter and heavy metals from cars. As run-off generally drains to rivers and streams, these contaminants affect water quality and wildlife in our waterways.

Permeable surfaces, which allow rainwater to drain freely into the ground, are the best option for paved areas. In addition to wood chippings and grass, it is now possible to make hard surfaces from brick pavers, recycled concrete or tarmac that allows water to flow through them. Use of gravel is not recommended for semi-hard paths since the sourcing of gravel can have adverse impacts on natural habitats and landforms.

Green Roofs

Green roofs are purposefully designed roofs that incorporate a vegetative element ranging from low growing mosses and lichens to more intensive plants such as shrubs and even trees!

Green roofs help regulate water flow from a roof by slowing down the flow rates. They also provide a valuable wildlife resource and even help regulate the temperature of the building beneath.

The advantages of a green roof are wide and varied, and include the following:

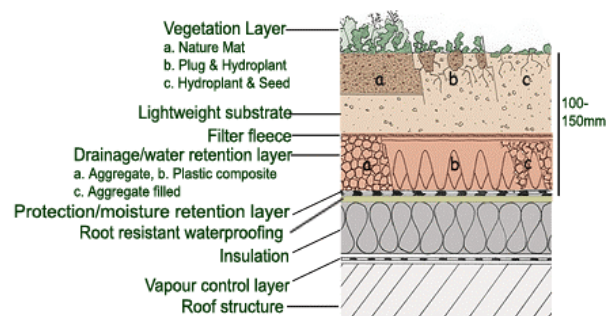
- Low maintenance is required with little or no artificial irrigation required
- Improved rainwater management. Volume and rate of rainwater run off from the roof is reduced dramatically.
- Improved building thermal performance. The building is insulated from heat loss in the winter and heat gain in the summer.
- Reduction in sound transmission through the roof
- Improvement of air quality by removal of carbon dioxide, release of oxygen and water vapour, deposition of particulate pollutants, and absorption of organic volatiles.
- Reduction of the 'urban heat island effect'
- Provision of a habitat for wildlife



Above: This is NOT what a green roof should look like – it should be a well-planned and designed structure!



Below Left: part of the green roof at Beaufort Court, Kings Langley. Below: the structure of a green roof system (www.greenroof.co.uk)



FURTHER INFORMATION

www.greenroof.co.uk

www.ciria.org.uk/suds information provided by CIRIA on using Sustainable Urban Drainage Systems (SUDS) to help control water run-off and improve water quality of run-off.

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Access, Safety and Security

Use this section to help you complete Section 3 of the Small Scale Sustainability Form

Best Practice

- Provide housing that is designed in accordance with *Lifetime Homes* standards
- Provide secure, safe and covered parking for bicycles
- Ensure the site is developed in accordance with *Secured by Design* standards
- Ensure that the boundaries of the site are secure, but that they provide good visibility between the site and the public realm
- Avoid blank expanses of walls, for example at the end of terraces – these are prime targets for graffiti!
- Avoid high level dense planting – this can provide screening for potential assailants in certain locations.



Background

Access, safety and security all play an important part in the way in which a development is used and enjoyed by its occupants.

The accessibility of a development refers not only to how people get to and from the site, but how versatile the buildings themselves are for various uses and, in relation to housing, how flexible the design is to ensure that a house can meet the changing needs of its occupants.

The design and layout of buildings on sites can have an impact on the safety and security of an area. Good design of built up areas can contribute to a reduction in vandalism, incidences of crime, and fear of crime.

Access

Introduction

Access covers the issues of how users get to and from the site, as well as how they use and move around the buildings on the site.

Reliance on the car as a primary means of transportation can result in adverse environmental impacts, and designing developments that provide solely for the car can alienate users of other modes of transport such as cyclists.

However, provision of facilities for cyclists such as secure, covered cycle parking and changing facilities can encourage cycle use.



Lifetime Homes

The Lifetime Homes concept was developed in 1991 by a group of housing experts known as the Joseph Rowntree Foundation Lifetime Homes Group in response to concern by the JRF about the inconvenience and inaccessibility of many houses to large segments of the population, from those with young children to those with disabilities or illnesses, and the elderly.

Lifetime Homes are designed to provide accessibility and design flexibility for the changing needs of a house's occupants. The accent is on accessibility and design features that make the home flexible enough to meet whatever life may bring to the occupants.

Lifetime Homes may appeal to a wider market appeal as they will be more attractive than traditional houses to those who are elderly or have disabilities.

Transportation

Reliance on the car as a primary means of transportation and designing solely for its requirements can 'design out' opportunities for users of other means of transport such as cyclists and pedestrians. Providing 'equality of access' to developments contributes to encouraging alternative means of transport, thus reducing carbon emissions. If major development sites are in close proximity to cycle or footpath networks, the provision of clear, safe accesses to these networks can encourage workers or residents to utilise them.

Provision of safe facilities for cycle storage/lock up within a development provides options for users of the development to use bicycles, thus reducing reliance on the private car. Ensure bicycles can be locked in a well lit, accessible and secure environment, conveniently located within the development

Safety and Security

Introduction

In the design of new developments, it is important to consider the implications of the design on the personal safety and safety of property within the development. The Secured by Design Initiative offers design guidance and an accreditation system to help designers 'design out crime' from developments. The UK Police initiated the standards and it provides advice and assistance through the design process.

The ODPM has also produced a helpful document that contains information on 'designing out crime' in developments. It is titled 'Safer Places: The Planning System and Crime Prevention'. Copies are available from www.odpm.gov.uk

The above publication provides useful case studies and guidance on seven key areas to address when designing developments that can influence the occurrence or prevention of crime and anti social behaviour.

- Crime often occurs in areas that are isolated from observation by others. Increasing the visibility between the house and the street raises the level of 'informal surveillance'. This increases street users' perception of safety when using the street, and as your house is also visible from the street, protection of your property from crime is increased.
- Avoid the creation of blank windowless walls to a street frontage. If they are unavoidable, either provide a buffer area between the pavement and the wall, plant a creeper over the wall, or use graffiti resistant paints or finishes on end terraces and building walls.
- Be careful to ensure that boundary treatments retain visibility between public and private spaces. This can be achieved by using railing fences rather than solid walls.
- Ensure that planting is not so high or dense that it blocks views between public and private areas. It is also important to ensure that shrubby planting does not create a potential 'hiding' place for possible assailants, particularly alongside pathways.
- If it is absolutely necessary to have a security fence or grill, try and design it in such a way that it is an attractive feature, rather than an imposing a 'fortress' like structure on the street scene.

Best Practice

There are three key principles to designing safety into a development:

- Ensure natural surveillance and human presence
- Minimise conflict by providing safe routes for walking and cycling
- 'Design in' territoriality and community involvement

Further Information

www.odpm.gov.uk The document 'Safer Places: The Planning System and Crime Prevention' is available here

www.securedbydesign.com Information on the Secured by Design Initiative

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Biodiversity

Use this section to help you complete section 4 of the
Small Scale Sustainability Form

Best Practice

- Evaluate what you have on the site before you start designing your project.
- Take into account the impacts the development will have on the natural features of the site and try to avoid these effects when designing your proposal.
- If it is unavoidable to affect habitats and natural features, mitigate and compensate for these impacts.
- Aim to improve the overall quality of the natural features on the site once development has been completed.



Did You Know?

- While many species native to Britain are relatively common, between 10 and 20% of native species are considered threatened and over 30% of mosses, lichens and liverworts are threatened or nationally scarce
- 22 species of lowland farmland bird have declined in population size and distribution
- The number of lakes and ponds has dramatically decreased by over 30% since 1945
- Over 30% of British mammals and over 50% of dragonflies and butterfly species have experienced a decline in population in the last 25 years

From www.buildingsustainability.co.uk

Background

Biodiversity is the amazing range of wildlife and habitats on earth. Habitats can range from snowy mountains to woodlands, from your back garden to an abandoned industrial site. Even today the range of biodiversity is extraordinary. You can find an extraordinary number of species anywhere from a city car park to a deserted beach.

These organisms all live in a delicately balanced relationship, each contributing to the balance of nature and the survival of the planet.

However, human activities are increasingly having an adverse impact on these species and the delicate equilibrium that exists between these species.

Whether you're building a simple extension to your house or constructing a new dwelling on a vacant site, there will be potential effects on the biodiversity of the site.

Biodiversity should be taken into consideration early on in the design process for a new development, and at all stages throughout the development.

Biodiversity and Construction

It is good practice to follow the 5-step approach to protecting and enhancing biodiversity when designing and constructing a development.

1 Information

What do you know about the biological resources on the site? What effects will the proposed development have on those resources?

2 New Benefits

Are there any opportunities to improve the existing quality of the site?

3 Avoidance

How can you avoid as much as possible any adverse effects on wildlife species and habitats?

4 Mitigation

If adverse effects are unavoidable, can they be minimised by the use of mitigation measures?

5 Compensation

If there will be residual adverse effects that cannot be mitigated, these must be compensated. For example, the replacement of a particular habitat that had been damaged, or as a last resort, the relocation of a species/habitat.



Biodiversity in the Garden

There are a wealth of insects and animals that live in gardens and green spaces, which can be encouraged by creating a pleasant environment for them. Many of these insects are beneficial to plants, eating pests such as aphids and flies. Maximising the amount and variety of plants in gardens and landscaped areas helps encourage wildlife, as does minimising the amount of hard paved surfaces.

Why not consider the following as additional ways of improving biodiversity in the garden?

- Add a pond to your garden – you may find more dragonflies, frogs, and even newts!
- Welcome birds by putting out food and water, especially in winter, and put up nest boxes in safe spots
- Collect water from your roof in a water butt. Not only does it save water, but rainwater is actually better for your garden than tap water.
- Create a log pile—log piles attract beetles and other insects that provide food for larger creatures. A warm sunny side will attract basking reptiles and cool shady spots can shelter amphibians.
- Reduce chemical use—Keep a natural balance in the food chain by reducing pesticide and herbicide use
- Plant a hedge—a mixed hedge can provide colour and interest, plus food and shelter for wildlife.

Resource Efficiency and Waste Management

*Use this section to help you complete Section 5 of the
Small Scale Sustainability Form*

Best Practice

- Choose sustainable building materials – re-use demolition materials, select products that constitute recycled material, and select products with a low environmental impact.
- Ensure all timber products are from an independently certified sustainable source such as the Forestry Stewardship Council (FSC)
- Avoid the use of u-PVC windows and doors – they contain chemicals that are harmful to the environment and u-PVC cannot be recycled or re-used when it is damaged.
- Reduce construction waste – even the smallest building project can generate excessive waste. Separate building waste and re-use or recycle where possible.
- Reduce household waste – put a compost bin in the garden for kitchen and garden scraps.



Background

A lot of construction materials have environmentally harmful production methods. Where possible, choose materials that are independently certified as being less harmful to the environment, and use natural products for flooring and paints etc.

Waste is generated not only by the end users of the building, but during the construction of the building. The amount of waste going to landfill can be reduced by looking carefully at the amount of materials ordered, how much packaging they come in, and identifying those materials that can be reused or recycled where possible.

Choosing Sustainable Building Materials

- Where possible use recycled materials including bricks, roof tiles and slates, and crushed concrete.
- Use timber windows and doors since these have less environmental impact than their PVC counterparts. Make sure that all wood is from independently certified sources such as Forest Stewardship Councils (FSC).

Soft wood in the UK is likely to be treated with preservatives. However, it is possible to find European non-treated soft woods – such as pine and birch plywood. Semi-durable wood such as larch from certified sources is another alternative.

WWF have collated research on the costs and benefits of wooden and u-PVC windows which is available from their website www.wwf.org.uk

- Specify A rated materials from the 'Green Guide to Specification' – a document that details the environmental performance of various building materials.
- Use local materials from local suppliers and use products made of recycled materials. 'Local' has been defined by the National Association of Farmer's Markets as an area within 50 miles in a major urban centre. However, take care where securing a locally sourced product may lead to a compromise in environmental quality – a balance needs to be sought.
- Avoid tropical hard woods (including plywood) unless they are clearly labelled as being wood from a sustainable source
- Use paints that are water based or vegetable oil based since these have lower health and environmental impacts than oil-based paints and varnishes which give off volatile organic compounds.
- For insulation give a preference to natural materials. Wool and cellulose are both effective insulators and are great for DIY enthusiasts, as they are more appealing to handle than rockwool or mineral wool. Other natural materials include cork, recycled newspaper, and flax.

Right: a simple compost bin in your garden can reduce the amount of rubbish you throw out each week, as well as providing you with a valuable soil enriching fertiliser.



Waste Management

Construction Waste

Nearly 30% of the solid waste produced in the UK is construction waste. The majority of this is simply dumped as landfill. Much of this 'waste' is actually a valuable resource that could be re-used in other construction projects or recycled. Think about what you're throwing in the skip and whether someone else might have a need for it.

Household Waste

Each household in Greater London produces approximately 1 tonne of waste per year. Of this waste, approximately 73% is disposed of in landfill sites outside of London, and only 8% is recycled or composted. Householders can contribute to reducing the waste they produce by recycling.

Householders can contribute to reducing the waste they produce by composting and recycling kitchen and garden waste. The provision of on-site composting facilities, be it a composting bin for each household or a more centralised composting system, can encourage more people to compost.