Sustainable design and construction

Supplementary planning document

February 2009

RTPI

mediation of space · making of place

Commendation – Climate Change
RTPI Planning Awards 2009

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1. What is this document?

1.1 Role and purpose of this document

This document is known as a supplementary planning document (SPD). It provides guidance on how new development in Southwark should be designed and built so that it has a positive impact on the environment. It covers the following topics

- Energy use and minimising climate change
- Adapting to climate change that is unavoidable
- Avoiding pollution and environmental nuisance
- Avoiding waste and minimising landfill
- Protecting and enhancing biodiversity
- Conserving water
- Planning for flood risk.

This document outlines general design principles that new development should follow and also sets minimum and preferred standards for each of the topics above.

This SPD does not create new policy, but provides detailed guidance on how our current planning policies will be applied to different types of development. Our current policies are set out in the London Plan (consolidated with alterations) 2008, the Southwark Plan (2007) and our draft Core Strategy. The Core Strategy is currently being prepared and this document will be updated as the new core strategy replaces the Southwark Plan. Please make sure that you check our website to ensure you use our most up-to-date planning policies and guidance:
www.southwark.gov.uk/planningpolicy

The SPD is important (a material consideration) in helping the council make decisions about planning applications.

Appendix 1 explains all the planning policies that this SPD is providing guidance on.

Appendix 2 provides more information on key environmental challenges that we are facing and why it is so important to overcome them.

2. How to use this document

2.1 What development does it apply to?

This document applies to all planning applications that involve building or landscape works. This includes:

- Fit outs and refurbishment to existing buildings
- Extensions to existing buildings
- New buildings
- Public domain works such as new or improved open spaces.

This document applies to all types of land uses, including housing, offices, industrial development, retail, community and leisure facilities.

2.2 How to use the information in this document

Sections 1 and 2 provide important background information on what this document is and how it will be used.

Section 3 to 9 explain the general design principles that all new development in Southwark is expected to follow. There is a section for each topic. Following these principles will help you to achieve the minimum and preferred standards we expect new development to meet.

These standards are set out in Sections 11 and 12.

- If your application is for major development (generally proposals for 10 or more dwellings or over 1,000sqmof floorspace), you will need to meet the standards in Section 11.
- If your application is for minor development (those that fall below the above threshold), you will need to meet the standards in Section 12.

We will use these to help decide if a planning application meets the policies in the Southwark Plan and London Plan. Different standards apply to different types of development.

There are a number of appendices which provide further information on a range of issues.

A glossary is provided at Appendix 7 to explain technical terms.

We have identified key sources of further information on topics covered that you may find useful. These are shown next to the following symbol: *i*

2.3 Links to other planning documents

This SPD should be used along with other planning documents that provide guidance on other aspects of sustainable development, including

- Area Action Plans and Supplementary Planning Documents relating to specific areas and sites. These will identify more specific targets and opportunities for maximising the environmental benefits of new development, such as district heating and power or water supply schemes.
- Sustainability Assessment Supplementary Planning Document: this document explains the information that will be required to demonstrate the environmental impact of a development and how this will be balanced with other sustainability objectives.
- London Plan Sustainable Design and Construction Supplementary Planning Guidance: This sets out the Mayor of London's standards for environmental impact of major development.
- Design and Access Statements Supplementary Planning Document: this document explains how to prepare design and access statements, which need to be submitted with most planning applications.
- Residential Design Standards Supplementary Planning Document: this document explains minimum design standards for residential development to ensure it is of a high quality and meets housing need in the borough.

Please make sure that you check our website to ensure you use our most up-to-date planning policies and guidance: www.southwark.gov.uk/planningpolicy

2.4 Link to the Building Regulations

The Building Regulations are set by the Government and provide technical standards for different aspects of a building's construction to ensure that minimum health and safety levels are achieved. These regulations apply to most new buildings and many alterations to existing buildings.

The Building Regulations include standards which relate to the environmental impact of buildings. These include standards on energy conservation (Part L), ventilation (Part F), drainage (Part H) and waste storage (Part H).

Checking compliance with the Building Regulations is a separate process to getting planning approval. However as both the Building Regulations and planning policies need to be met for a development to be able to go ahead it is more effective and faster if they are both considered together in the design process. Southwark's planning policies and the guidance in this SPD will help achieve compliance with the Building Regulations. The council encourages standards of design and construction that go beyond the minimum standards set out in the Building Regulations.

For more information on Building Regulations go to www.safety.odpm.gov.uk/bregs

The general principles all development should follow

This section sets out the general approach to planning and designing a development that should be applied to all planning applications in Southwark. As well as the obvious benefits to the environment, following these principles will also benefit developers, occupants of the development and the community, for example through

- Reduced construction and operating costs
- Improved profile and marketability of a development
- Safer and healthier living and working environments.

More information on the benefits of sustainable design and construction is provided in Appendix 2.

3. Energy use and minimising climate change

This section looks at how new development can reduce greenhouse gas emissions through the way energy is used to build and operate buildings.

3.1 The energy hierarchy

- Consideration of energy issues needs to happen right at the start of the design process. All development with need to be designed in accordance with the energy hierarchy. This is a three step process and is described in the figure below.

First, use good design to minimise the development's energy needs

Before any mechanical systems are considered the development should be made as energy efficient as possible by maximising the use of sunlight, thermal mass and the site's microclimate to provide natural lighting, heating and cooling of buildings. Green roofs and walls should also be used where possible.

Then, make the most use of efficient energy, heating and cooling systems

If mechanical heating, cooling and ventilation is needed, this needs to be as efficient as possible. The priority is to use local (called "decentralised") energy sources, in particular combined heat and power (CHP) systems.

Then, use renewable sources of energy

There may still be demand for energy (for appliances, lighting and machinery). As much as possible this remaining energy demand should be met through zero and low carbon energy sources, such as solar power, wind power, bio-fuel and geothermal energy.

i The London Energy Partnership has developed the Low Carbon Designer, which is an electronic toolkit that allows the energy performance of a proposed development to be assessed in line with the energy hierarchy.

3.2 Choosing materials and fittings carefully

- As well as passive solar design measures, the energy used to build a development needs to be considered
  - as much as possible reuse and recycle building materials
  - source materials using local suppliers
  - do not use materials containing substances which contribute to climate change through ozone depletion
- Buildings should be fitted with energy efficient lighting and appliances. Lighting should be designed to minimise wasted light spilling to where it is not needed or being reflected to the night sky.

3.3 Efficient energy systems

- Regardless of the fuels used to heat and power buildings it is important that mechanical systems are not wasteful and use as little energy as possible.
- Where mechanical heating and cooling is required, developments should investigate the feasibility of using decentralised CHP and CCHP systems. The system that is most appropriate will depend on the circumstances of your scheme and where it is located, however the following order of preferences should be followed
  - connect to existing CHP or CCHP systems, including those on nearby housing estates.
  - if this is not possible, use a site-wide CHP/CCHP system that connects different uses and/ or groups of buildings. This should be powered by renewables or be gas-fired.
  - if this is not possible communal heating or cooling systems should be used, preferably powered by renewables, but at the very least gas-fired.
  - if none of the above are feasible, other efficient systems should be considered, such as heat pumps or heat recovery ventilation. These systems should be powered by low or zero emission fuels.
- It is important that occupants understand how to use the energy features of a building efficiently.
- The design of CHP/CCHP systems should minimise impacts on air quality

Fact Box: Decentralised energy and CHP/CCHP

Decentralised energy generation is a series of local systems generating heat and/or power at or near the point of use, connected to local distribution networks. This minimises energy that is lost in transmitting energy and makes us less reliant on remote energy sources.

The most efficient form of decentralised energy systems are combined heat and power (CHP) or combined cooling, heating and power (CCHP) systems. These are efficient because they make use of the waste heat left over from creating electricity. This means that much more of the energy that goes into the systems makes it to end uses compared to energy from the national grid.

To make CHP or CCHP systems viable there needs to be a relatively even and constant demand for energy. For this reason, area-wide schemes that cover mixed use communities are most viable. Currently, a CHP system is being installed at Elephant and Castle. We are also considering other areas where decentralised energy systems can be developed.

3.4 Guidance on deciding when to connect to existing CHP or CCHP energy systems

- Residential development should connect to area-wide CHP or CCHP systems where these exist or are being developed within the following distances of the site
  - Less than 20 dwellings: 50 metres
  - 20-30 dwellings: 100 metres
  - 31-40 dwellings: 150 metres
  - Over 40 dwellings: 200 metres.
- Commercial and other non-residential development within 200 metres of an area-wide CHP or CCHP system should connect unless it is demonstrated that there is not enough heating demand for an efficient connection. Non-residential uses are important in helping to create a constant demand for heat and power throughout the day.
- If there is no spare capacity in the system, the feasibility of contributing to expanding the capacity or upgrading the system should be investigated.
- Where a development will be completed before the public CHP or CCHP system it will connect to is completed, an efficient gas or bio-fuel boiler system should be used temporarily. The development should be designed so that it can quickly switch to the public CHP or CCHP system once it is completed. Planning obligations will be used to ensure connection occurs.

i The London Energy Partnership has developed a Community Heating database that contains details of communal boilers, CHP energy centres and district heating schemes in London.

3.5 Renewable energy

- Energy should be supplied as much as possible from renewable sources on-site or locally. This is less wasteful and will reduce our reliance on remote sources of energy, including imported oil and gas. Subscribing to green tariffs that draw energy from the National Grid will not be counted as this is not an efficient energy source.
- Where CHP/CCHP systems are not fuelled by renewable sources of energy, these should be used to help meet the remaining energy needs of the development that the CHP/CCHP system cannot meet

(see figure 3 on page 41). The system chosen will need to be compatible with the CHP/CCHP, usually this means electricity generating systems.

- The following are preferred for on-site renewable energy systems
  - Solar thermal
  - Wind turbines (in suitable locations)
  - Photovoltaic panels
  - Bio-fuels (subject to air quality standards)
  - Heat pumps
- Small-scale wind-turbines have not been shown to be highly effective in Southwark. Applications for wind-turbines will need to demonstrate that they will be effective taking into account the site constraints. Accurate information on wind-speeds through the site will be needed, rather than regional estimates.
- Heat pumps will not be counted as a 100% renewable sources of energy as they are powered by electricity. The electrical energy used to operate proposed heat pumps, and the CO2 produced doing this, will be subtracted from calculations of energy provided and CO2 saved by renewable sources of energy.
- Fuels containing a portion of fossil fuels, such as bio-diesel, will not be counted as a 100% renewable source of energy. Only the contribution to energy provision and CO2 savings made by the renewable portion of the fuel will be counted. Arrangements need to be put in place for the delivery and storage of bio-fuels. These should be sourced as locally as possible.

i The London Renewable Energy Toolkit has been developed to assist in assessing the feasibility and viability of renewable technologies.

i **Key sources of further information:**

Southwark Climate Change Strategy, Southwark Council, 2006

London Renewables Toolkit, Greater London Authority, 2004

Green Guide to Specification, 3rd Edition, Building Research Establishment, 2007

Energy Efficiency in Buildings, The Chartered Institution of Building Services Engineers, 2004

London Energy Partnership, www.lep.org.uk

Energy Savings Trust, www.est.org.uk

Historic Environment: Local Management (HELM) web site: at www.helm.org.uk under the guidance library/English Heritage guidance

4. Adapting to climate change

- Even if we limit the emission of greenhouse gases, a certain amount of climate change will still occur because of emissions that have already occurred. This is likely to mean hotter drier summers and wetter milder winters with more intense rainfall. New development will need to be designed so that it remains comfortable for users over its lifetime and avoids making local climactic conditions worse.
- Development should orientate buildings and streets to minimise summer and maximise winter solar gain, use trees and other shading, include green roofs and walls, maximise natural ventilation, and help create green spaces. The type of building materials and even the colour of finishing will also affect heat absorption. Green walls or roofs are to be included in all schemes, unless this is not feasible.
- Development will need to be adaptable to allow for additional shading or cooling requirements as the climate changes.
- Large expanses of hard surfacing, such as car parks, should be avoided. Policy 5.6 of the Southwark UDP states where more than 20 car parking spaces are proposed, applicants must demonstrate why this cannot be provided underground or within the building. Where large expanses of hard surfacing is unavoidable it should be shaded as much as possible and be light in colour.

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Key sources of further information:

The London Climate Change Partnership has produced helpful detailed guidance for developers - Adapting to Climate Change: A Checklist for Development, Three Regions Climate Change Group, 2005

Fact Box: The "urban heat island" effect

All urban areas create an "urban heat island" effect where higher ambient temperatures are experienced after sunset in comparison with rural areas, this is especially the case in the highly built up areas in the north of the borough. The hard surfaces of buildings and roads absorb more solar radiation than green spaces and vegetation. Combined with man-made heat emissions from buildings, machinery and traffic, this can make the centre of London up to eight degrees warmer than the green belt on summer nights.

Example of a sustainably designed building

1. Rubble/brown roof
2. Green roof
3. Green wall
4. Roof-mounted renewables
5. Bat-boxes
6. Bird-boxes
7. Mature trees retained
8. Permeable surfacing
9. Rainwater harvesting
10. Pond
11. Fruit & vegetable growing

Fact Box: Living roofs and walls

These can take many forms including vegetated walls, roofs, roof terraces and roof gardens and have many benefits, including

- acting as insulation, reducing the energy needs of a development and making indoor environments more comfortable
- keeping local areas cooler (reducing the "heat-island effect")
- absorbing rainfall and reducing run-off
- improving biodiversity
- improve amenity for occupiers and improve the appearance of a development

There are two main types of green roofs:

Intensive: A deep growing medium is used to allow more substantial planting such as trees and shrubs. The roof will require extra loading requirements within the building structure and a complex irrigation system. Intensive roofs are principally designed to provide amenity and recreational use usually in the form of roof gardens or terraces.

Extensive: Uses a shallow growing medium, requires minimal maintenance and is generally less expensive to install than an intensive roof. There are three main types

- Sedum mats – a base layer sprinkled with sedum cuttings and installed as a sedum blanket when plants are mature. Sedums are used because they are wind, frost and drought resistant
- Substrate based – crushed recycled brick is used as the base with sedum added on top
- Green/brown roofs – recycled aggregate used as the base and the roof is either left to colonise naturally or can be seeded with wild flowers or local plants.

Green Walls

Green walls provide a living, self-regenerating cladding system using climbing plants either planted into the structure of the wall itself or upon a structure attached to the wall.

Further sources of information about green roofs and walls

Environment Agency green roof toolkit: www.environment-agency.gov.uk/greenroofs
Independent UK Resource For Green Roof Information: www.livingroofs.org

5. Avoiding pollution and environmental nuisance

This section looks at air quality, noise, land contamination, water quality and the amenity impacts of construction activity and how these can be addressed through

- site selection
- designing the development
- planning construction activity
- the operation and use of the finished development.

5.1 Identify and clean up contaminated sites

- Sufficient information on the level and risks posed by contamination and whether it can be remediated to a safe level needs to be known before a development can proceed.
- Where contamination is present, the site will need to be remediated to a level that is appropriate for the use being proposed. The most sensitive uses are housing, schools, nurseries, hospitals, children's play areas and allotments.

5.2 Designing out pollution and nuisance

Site layout, building form and massing

- Existing sources of high and frequent noise near the site need to be considered when planning the layout of a site and the form and massing of buildings. Noise sensitive uses, such as hospitals, schools and residential developments, and amenity areas should be separated from noise sources.
- The most effective solution is likely to be by considering how the design and layout of the development can buffer background noise levels, for example by acting as a shield to a busy road. Buildings should not make background noise levels worse by channelling or amplifying existing noise – for example by creating a canyon effect.
- Industrial development and other uses where chemicals may be stored on site need to be properly designed to prevent spills washing into waterways.

Landscaping

- Consideration should be given as to how landscaping can screen and contain noise and light, such as through earth mounds and expanses of dense, tall foliage.
- Maximum use of plants should also be made to help filter air.

- Development should be designed to prevent sediment and chemicals washing into waterways, or drains which empty into waterways. Preference is for the use of sustainable urban drainage (SUDS) techniques which reduce or slow the amount of water leaving a site. (see section 9).

Building design and materials

- Development should maximise the use of passive design features that provide natural background ventilation. These include making effective use of landscaping, the site's microclimate and the layout of buildings.
- Dwellings that only have windows that open onto busy roads or railways are not supported by the council. Glazing should be used on windows to reduce noise levels inside buildings. However, this will only be effective when windows are closed and so should be used in conjunction with other solutions.
- The priority is that artificial lighting is only used when necessary. This includes choosing the right strength of lighting for the task and installing timer switches and motion sensors where appropriate. Poorly aimed lights can result in unnecessary light spillage. Any lighting installed should be designed so that it is directed to where it is needed and does not spill into neighbouring residential properties. Lighting must not cause a hazard to navigation, drivers or other road users.
- Planning conditions may be used to control the brightness of lighting or the times of day lighting can operate.
- Noise generating developments should contain noise through appropriate sound insulation and other noise reducing technologies.
- Materials that release noxious chemicals or odours inside buildings should be avoided.

Mechanical systems

- Mechanical systems should only be used as a complement to natural ventilation to ensure a constant standard of indoor air quality. They should not create a noise nuisance and should be efficient, where possible including technology to recover heat energy for other uses. Where mechanical systems are used, careful consideration will need to be given to ensure air intakes are positioned appropriately.
- Where mechanical ventilation is used, it should be designed to ensure no noise nuisance is caused to occupiers of other properties and that noise disturbance does not affect the property in which ventilation is situated.

Emissions from boiler systems

- Low NOx burners should be used.
- Fuels and technology chosen for CHP and other energy systems should be of a high quality resulting in low air pollution. If bio-fuels are to be used, the preference is for biogases, such as methane and hydrogen and alcohol, or for systems that use a gasification process. Generally, large-scale community CHP systems are preferred as these are likely to be less polluting than the combined impact of individual boilers.
- Arboricultural waste, such as clippings from parks, are a potential good local supply of fuel. Steps will

need to be taken to ensure that these are processed and used in a way that reduces air emissions.

- As a last resort, technical measures such as filters may be required to keep polluting emissions at an acceptable level.
- Polluting emissions from energy supply systems must not exceed legal limits. A permit from the Environment Agency may be required. You may also need to get approval from the council's Environmental Protection Team to burn permitted fuels.

5.3 Considerate construction activity

- Construction sites should be carefully managed and maintained to prevent sediment and chemicals washing into waterways or drains which empty into waterways, and also to control dust and noise emissions and vibrations causing nuisance to surrounding properties . The type of machinery used, hours that construction occurs and the times that deliveries are made should be carefully managed so as to reduce impact.
- Planning conditions will be used to control impacts from the construction of new development. This may include restrictions on hours of operation and construction.

Fact Box: Considerate Constructors Scheme

The Considerate Constructors Scheme is the national scheme created by the construction industry to improve its image. The scheme is a voluntary code of considerate practice, to which participating construction companies sign up their sites.

All sites registered with the Scheme are monitored by an experienced industry professional to assess their performance against an eight point Code of Considerate Practice which includes the categories: Considerate, Environment, Cleanliness, Good Neighbour, Respectful, Safe, Responsible and Accountable. The three main areas that the Scheme's Code covers are

- **The environment:** Registered sites should do all they can to reduce any negative effect they have on the environment. They should work in an environmentally conscious, sustainable manner.
- **The workforce:** Registered sites should provide clean, appropriate facilities for those who work on them. Facilities should be comparable to any other working environment.
- **The general public:** Registered sites should do all they can to reduce any negative impact they may have on the area in which they are working. Sites should aim to leave a positive impression on those they affect.

Further information can be found on www.considerateconstructorsscheme.org.uk

5.4 Reducing pollution and amenity impacts during operation and use

- Where hard surfaces are necessary, these need to be kept clean.
- Plant and machinery should be maintained so as to keep them operating efficiently. Inspection and maintenance should be undertaken regularly.
- Noise generating development, such as entertainment venues, should be operated in a way that reduces noise and vibration impacts.
- Industrial activities and sites where chemicals may be stored should be managed and designed carefully to prevent contamination occurring.
- Commercial and industrial uses that have the potential to pollute the air may require a permit from the Environment Agency and council's Environmental Code of Construction Practice.

Key sources of further information

Air quality
Building Regulations Approved Document Part H – Ventilation
London Councils Air Quality and Planning Guidance, January 2007
Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems, DEFRA, January 2005
London Best Practice Guidance: The control of dust and emissions from construction and demolition, produced in partnership by the Greater London Authority and London Councils

Water quality
Building A Better Environment: A Guide for Developers, Environment Agency, 2006
Planning Policy Statement 23: Planning and Pollution Control, Department of Communities and Local Government, 2004

Noise nuisance
Southwark Environmental Code of Construction Practice
British Standard BS8233:1999 - Sound Insulation and Noise Reduction for Buildings
British Standard BS4142: 1997 Method for rating industrial noise affecting mixed residential areas.
Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems, DEFRA, January 2005
Guidelines for Community Noise, World Health Organisation, 1999
Sounder City - The Mayor's Ambient Noise Strategy

Light nuisance
BS 5489-1: 2003 Code of practice for the design of road lighting
BS EN 12193: 2003 Light and lighting – Sports lighting
Environmental Considerations for Exterior Lighting, Chartered Institute of Building Services Engineers, October 2003
Guide on the limitations of the effect of obtrusive light from outdoor lighting installations, International Commission on Illumination (CIE), 2003

Contamination
Southwark Council's Land Contamination team will be able to help identify the potential for your site to be contaminated.
Planning Policy Statement 23: Planning and Pollution Control - Annex 2: Development on Land Affected by Contamination
British Standard BS10175: 2001 - Code of Practice for the Investigation of Potentially Contaminated Sites.

6. Avoiding waste and minimising landf ll

All developments will be expected to take the following approach

- Avoiding the creation of waste in the first place
- Reusing waste that is created as much as possible
- Allowing left-over waste to be recycled elsewhere as much as possible, minimising the waste that ends up in landfill.

This will apply to the way a development is constructed. However, the design of development will need to ensure it can be used in accordance with the above principles.

6.1 Building construction

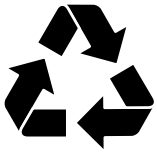
- The priority is to reduce the amount of raw materials used over the lifetime of a development. The priorities are
  - Existing buildings on a site should be adapted and reused as much as possible. It may be possible to achieve other environmental objectives (such as improving energy efficiency) by small additions and adaptations to the fabric (such as new window fittings and extra insulation).
  - Where the adaptive reuse of the whole building is not appropriate, developments should investigate reusing parts of the existing building.
  - Demolition materials should be reused on-site where possible, such as for aggregate, fill or landscaping, or as part of new structures.
  - Where additional building materials are required, the use of recycled materials is preferred and these should be from sustainable or local sources
  - Demolition materials or surplus materials not required for the development should be collected for reuse and recycling in other building schemes.

Fact Box:

Responsibly sourced products
The responsible sourcing of materials provides a holistic approach to managing a product from the point at which a material is mined or harvested in its raw state through manufacture and processing, through use, re-use and recycling, until its final disposal as waste.

FSC timber and other responsible sourcing certification
The Forest Stewardship Council (FSC) has developed a system of forest certification and product labeling that allows consumers to identify wood and wood-based products from well-managed forests. In order to gain FSC certification, a forest must be managed in an environmentally appropriate, socially beneficial and economically viable manner.

BRE Global has launched a new framework standard for the responsible sourcing of construction products - BRE Environmental and Sustainability Standard (BES) 6001:2008. Further information can be found on www.bre.co.uk



ICE Demolition Protocol

The development of the Demolition Protocol was driven initially by the Resource Sustainability Initiative, a joint initiative of the Institute of Civil Engineers (ICE) and Chartered Institute of Waste Management (CIWM), in recognition of the unsustainable nature of waste and resource management in the United Kingdom construction and demolition industries.

The Protocol provides methods to assess and recover demolition material as well as specify recovered (recycled & reclaimed) material in the new build. The benefits of using the protocol are

- Development savings on construction materials costs
- Planning benefits for development through the adoption of sustainable design principles
- Achieves key Sustainable Construction objectives
- Dramatic reduction in waste going to landfill and associated costs
- Helps local authorities meet waste reduction targets
- Stimulates local recycling industries and jobs
- Demonstrates innovation and proactive planning
- Sustainable resource use by substituting primary materials with recycled

i The detailed documents can be found on the following websites:
www.ice.org.uk
www.londonremade.co.uk
www.envirocentre.co.uk

Other Sources of Information

WRAP (Waste and Resources Action Programme) is a not for profit company backed by the Government to help individuals, businesses and local authorities reduce waste, recycle more, make better use of resources and help tackle climate change. WRAP has produced numerous publications and tools to help minimise waste in the construction process, which can accessed on www.wrap.org.uk

London Remade is a not for profit business that works in partnership to develop and improve waste management, recycling and green procurement in London. Their recycling programmes include a sustainable product directory. Further information can be found on www.londonremade.com

- The construction process should be carefully managed to reduce the creation of waste, such as by careful specification of materials and the use of prefabricated building elements.
- Building materials should be long lasting, taking into account what they are being used for and the conditions they will be exposed to (such as frequent traffic, pollution, weather and extremes of temperature). This will reduce the amount of materials needed to maintain them a building.
- Buildings should be designed to be adaptable. This will extend a building's lifetime. Occupants need to understand how to maintain buildings in ways that will prolong their life.

6.2 Provide facilities for sustainable waste management

- Enough space should be provided on-site to securely and safely store waste and recycling bins. This storage space should be designed according to the following principles
  - Bins should be stored at ground level and there should be a flat route between the storage area and the point where they will be collected from.
  - The collection point should be accessible by the size of collection vehicle used in Southwark. The route between the storage area and collection point should be wide enough to allow bins to pass through easily.
  - Bins should be stored as near to the boundary of a site as possible, and in the case of large bins (over 240L) no further than 10 metres.
  - Occupants should not have to walk more than 30metres to the storage area, excluding any vertical distances.
  - The storage area should be appropriately screened and it should allow easy access to all the bins being stored.
- Where internal streets will be used by waste collection vehicles, these will need to be wide enough and strong enough to accommodate these vehicles.
- Space for composting organic waste should be provided in residential development. This should be designed as part of private or communal green spaces on a site. This should be located in an easily accessible location that is well drained and receives as much sun as possible.
- Space should be provided inside buildings where occupants can separate out waste into separate containers for recyclables, organic waste and non-recyclables.

i **Key sources of further information:**

British Standard BS 7543:2003 – Guide to durability of buildings and building elements, products and components

Green Guide to Specification, Building and Research Establishment

British Standard BS 5906:2005 – Waste management in buildings

Building Regulations Approved Document H – Drainage and Waste Disposal

Sustainable Aggregates Information Service, WRAP, www.aggregain.org.uk

A Report on the Demolition Protocol, prepared by EnviroCentre Ld for London Remade

Building A Better Environment: A Guide for Developers, Environment Agency, 2006

7. Protecting and enhancing biodiversity and the natural environment

It is important that development not only respects and protects existing habitats and wildlife, but also contributes to enhancing the local environment. To do this it will be important to understand the site and its context. The following approach should be taken:

1. Understand the natural conservation value of the site.
Are there protected or priority species or habitat present? What natural features does the site have? How does it link with nearby natural areas and habitat.

2. Identify how the development may impact on the nature conservation value of the site.
How will the site layout and uses affect any habitat or species present? How can nature conservation be designed into the development so that it helps improve biodiversity?

3. Will there be a negative impact on nature conservation value?
Only in very exceptional circumstances will development that harms protected or priority species or results in a significant loss of habitat (including trees) be allowed. This would be as a last resort, where no viable alternatives can be found and the benefits of the development far outweigh the harm caused. If this occurs, there will need to be compensation for the loss.

4. How will the way the development is built impact on nature conservation?
How will important habitats and trees be protected? What species may be present at the time the construction will take place?

Appendix 4 contains details of protected and priority species in Southwark and guidance to help you decide if your scheme could cause harm to them.

7.1 Avoid harm to protected and priority species and their habitat

- There is potential for protected and priority species of plants and animals to be located on most sites. All types of development, including changes in the way land is used, alterations to roofs and walls, and extensions have the potential to harm or disturb plants and animals.It is important that enough information is known about the ecology of a site to allow development to occur in a safe way.
- Development that will result in disturbance or harm to protected and priority species must be avoided. Natural features that could provide habitat, such as mature trees, hedges, shrubbery, ponds and deadwood, should be retained, as it is preferable to work with existing habitats than replace with new ones.
- In many cases, potential harm to plants and animals can be minimised by sensitively designing the layout, scale and landscaping of a development. This includes avoiding the loss or damage to trees and ensuring buildings do not change the microclimate on a site in a way that damages plants and animals

(such as through overshadowing, heat from walls or wind tunnels). Overspill from lighting can also affect habitats and wildlife.

- The way a development is built can also cause disturbance or harm to animals and plants. The construction process should be carried out in a way that avoids disturbance and harm to plants and animals. Root protection zones should be defined around trees and kept clear of buildings, construction activity and hard paving.
- Appropriate maintenance and management plans should be prepared to ensure that plants and animals are protected during use of land and buildings. This includes controlling the use of outdoor lighting, considering how lawns should be mown and installing signage to educate the public about features of nature conservation.
- The council will protect trees that are considered to be an important feature of the local environment by designating them with a Tree Preservation Order.
- Planning obligations will be used to control the impact of development on protected and priority species and their habitat. This includes requiring the monitoring of impacts and the submission of evidence that compensation has been implemented successfully.

7.2 Compensate for any unavoidable harm

- The negative impacts of the development should first be reduced as much as possible through design, construction and management. The compensation could include replacement, enhancement, recreation or relocation of habitat or species. The type, quantity and quality of compensation should result in a net overall benefit to protected and priority species. Generally, this means 'like for like' replacement or better.

7.3 Create and enhance habitat

- Even where little biodiversity interest has been identified on a site, developers should aim to create features that will provide habitat for wildlife. The design of landscaping presents an obvious opportunity for enhancing biodiversity. However even where there are space constraints, there are many different ways habitat improvements can be achieved in cost effective ways, including through green roofs and installing bat bricks, bird boxes or stag beetle loggeries.

Fact Box: Swift boxes

Swift Bricks are an example of bird bricks. Made of a type of concrete with a hollow interior for the birds to nest in, the bricks can be used in blockwork or brickwork walls, ideally as the top course to provide a very cost effective contribution to biodiversity. The outer face of the brick can be rendered or faced with stone so that they appear inconspicuous on a façade.
The bricks should be located out of direct sunlight or else shaded beneath broad eaves and be 5 metres or more above ground. The nests should not be obstructed by nearby trees, cables, creepers or aerials. Swifts are very clean and don't leave piles of droppings that some other birds do.
Install 1 to 4 Swift Bricks on a medium to large house, from 4 to 10 on a small block of flats, and 10 to 20 on a large site like a school, hospital or warehouse, or a major apartment development.

- New habitat should link to existing nearby habitat and opportunities taken to improve the ecological value of nearby public open spaces. This includes by contributing to green corridors between larger areas of open space. Native plant species should be used. Where new habitat is created, it should be properly maintained and protected against vandalism and accidental damage. Appendix 4 contains a list of recommended species, however other species may be appropriate.
- Trees should be planted in an appropriate locations where they have enough space to grow and will not cause unwanted overshadowing.
- Where problem species exist on a site these should be removed and replaced with more appropriate species. Development may also contribute to biodiversity by replacing problem species that exist in locations near to a site. A list of problem species is included in Appendix 4.

i

Key sources of further information:
Southwark Biodiversity Action Plan, Southwark Council, 2006
Design for Biodiversity: A guidance document for development in London, London Development Agency
www.right-trees.org.uk is an online tool to help you seclect the right tree for your site
Planning for Biodiversity and Geological Conservation: A Guide to Good Practice, Department for Communities and Local Government, 2006
Biodiversity by Design: A Guide for Sustainable Communities, Town and Country Planning Association, 2004
British Standard BS5837:2005 – Trees in Relation to Construction
Building Green: A guide to using plants on roofs, walls and pavements, Mayor of London, May 2004
Natural England, www.naturalengland.gov.uk (Natural England published a range of mitigation guidelines for protected species)
Connecting with London's Nature, the Mayor 's Biodiversity Strategy, July 2002
Connecting Londoners with Trees and Woodland: A Tree and Woodland Framework for London, March 2005

8. Conserving water

Like energy, the approach is to reduce the need for water through good design and then supply the water that is needed as efficiently as possible, reducing reliance on treated mains water.

8.1 Reduce the need for water

- In the first instance, developments should minimise the need for water. The simplest way of doing this is through installing efficient water fittings and plumbing, such as dual flush toilets, low flow shower heads and low water consuming washing machines.
- The use of durable plumbing is also important to prevent leakages.
- Individual dwellings and tenancies should be provided with water meters. These should be visible to occupants, as this has been shown to result in reductions in water use.

8.2 Supply water efficiently

- At least 50% of water consumed in homes and workplaces does not need to be of drinkable quality (for example water used for flushing toilets, washing laundry and watering parks and gardens). Rainwater should be collected or grey water reused to supply these uses. Grey water systems are often only feasible on large schemes as they require a dual plumbing system to be installed. Section 9 has more information on sustainable ways to capture and use rainwater.
- It may also be possible to draw water locally from boreholes, or connect to existing local water supply systems that source water from boreholes, such as is being done in the Elephant and Castle Opportunity Area where a district water supply system will be installed. The council is also investigating the possibility of boreholes in other parts of the borough. Generally, sites over chalk soils will be suitable for boreholes. This is most sites north of Dulwich.
- It is important that occupants understand how to use the water supply systems in a building.

i **Key sources of further information:**
Adapting to Climate Change: A Checklist for Development, Three Regions Climate Change Group, 2005
Conserving Water in Buildings: Fact Sheets, Environment Agency, www.environment-agency.gov.uk
Building A Better Environment: A Guide for Developers, Environment Agency, 2006

9. Planning for f ood risk

Flooding not only poses a risk to people's lives, but can also cause significant damage to businesses and people's livelihoods. New development should therefore be located, designed, built and operated in ways that reduce the risks from flooding as much as possible.

A Strategic Flood Risk Assessment has been prepared for Southwark which explains the level and type of flood risk in different parts of the borough. The main flood risk in the borough is from the River Thames. A certain level of protection is provided by the Thames Barrier and flood walls along the riverside. However there is still a flood risk in the borough as it is possible these defences could fail or not be high enough to contain very high floods.

Much of Southwark north of Peckham and Camberwell is within the Thames flood plain. Much of this area is already heavily built up and includes major regeneration schemes. In the southern parts of the borough, where flood risk from the Thames is low, there are limited sites available for development. It is therefore not realistic to expect all new development to occur outside the flood risk area.

Figure 1 shows the different levels of flood risk in Southwark.

9.1 Building in flood risk areas

For development to be located in flood risk areas it will need to demonstrate that

- it isn't appropriate to be located anywhere else that has a lower risk of flooding, taking into account:
- whether the site could be used for another less vulnerable use
- the need to meet our housing targets
- provide mixed and balanced communities with access to vibrant town centres, jobs, and community facilities
- the impact on major regeneration programmes that are underway or planned
- the development will have social, economic and environmental benefits that outweigh the risk from flooding
- the occupants will be safe in the event of a flood (taking into account the vulnerability of use).

Fact box: Vulnerability of different uses

The government has published a planning document on flooding that sets out the approach we need to take. This is called Planning Policy Statement 25: Development and Flood Risk. It explains how different types of uses are more vulnerable to flooding than others, and therefore should be directed to areas of lower flood risk as much as possible.

Buildings that will be occupied by the very young (such as schools and nurseries), elderly (such as retirement homes), infirm (such as hospitals), where people may not be very alert (such as in bars and nightclubs) or where they are sleeping (such as houses) are the most vulnerable to flooding.

9.2 Making buildings safe

Development in flood risk areas will need to be made safe from flooding through the site layout (locating the most vulnerable uses in lower risk parts of the site and ensuring buildings do not block key flood routes) and the design of building (such as raising floor levels of buildings or locating vulnerable uses on upper levels).

- It is preferable that less vulnerable uses (such as shops, offices and leisure facilities) are located at ground floor level. Generally, basements should be avoided or used for storage, servicing or parking purposes only. At the very least, sleeping areas should not be located below the predicted 1 in 200 year flood level.
- Buildings also need to be designed and built to remain structurally sound and be easily repairable in the event of a flood.

Fact Box: Flood resilient v Flood resistant design

F**lood resistant design**, or 'dry proofing', is used to help prevent flood water entering a building. For example using flood barriers across doorways and airbricks, or raising floor levels.

Flood resilient design, or 'wet proofing', accepts that flood water will enter the building and allows for this situation through careful internal design for example raising electrical sockets and fitting tiled floors. The finishes and services are such that the building can quickly be returned to use after the flood.

- The approach taken will depend on the amount and speed of water likely to pass through a site during a flood event and how long it will remain. Where a low level of flooding is expected, measures to make a building flood resistant may be appropriate. Where higher levels of flooding are expected it will be more appropriate to make a building flood resilient.
- Developments need to be designed to allow occupants to safely escape during a flood and rescue services to gain access. Escape and emergency access routes should be above the flood level expected on a site. Where this is not possible limited flooding of routes may be acceptable if it can be demonstrated they will be safe (that is there is no risk of people being knocked over, swept away, drowning or electrocuted).
- Flood warning measures should be put in place and occupants made aware of what to do in the event of a flood. This should include appropriate signage clearly identifying evacuation routes.
- Development should not rely solely on flood warning measures to offer flood protection.
- Detailed planning and design guidance for development in flood risk areas is set out in Appendix 5.

9.3 Reducing flood risk

- Not all flood risk is from the River Thames. Poor designed and maintained drainage and too many hard surfaces can also lead to localised flooding in heavy rainfall. If not designed properly, new development can increase the flood risks elsewhere from increased run-off, poorly designed drainage or by affecting the flow of floodwaters.
- New development should be designed and laid out to route water away from vulnerable uses if a flood were to occur. Buildings should not block key flood flow paths.
- The design of drainage is very important. This needs to be able to cope with the heaviest of storms expected over the buildings lifetime (this is around 60 years for commercial development and 100 years for residential development) and also help reduce and slow the amount of run-off leaving a site (which can cause flooding elsewhere and lead to water pollution).
- Surface water should be managed on-site or as close to the site as possible, using sustainable urban drainage techniques (SUDs).

Fact Box: Sustainable Urban Drainage Systems (SUDS)

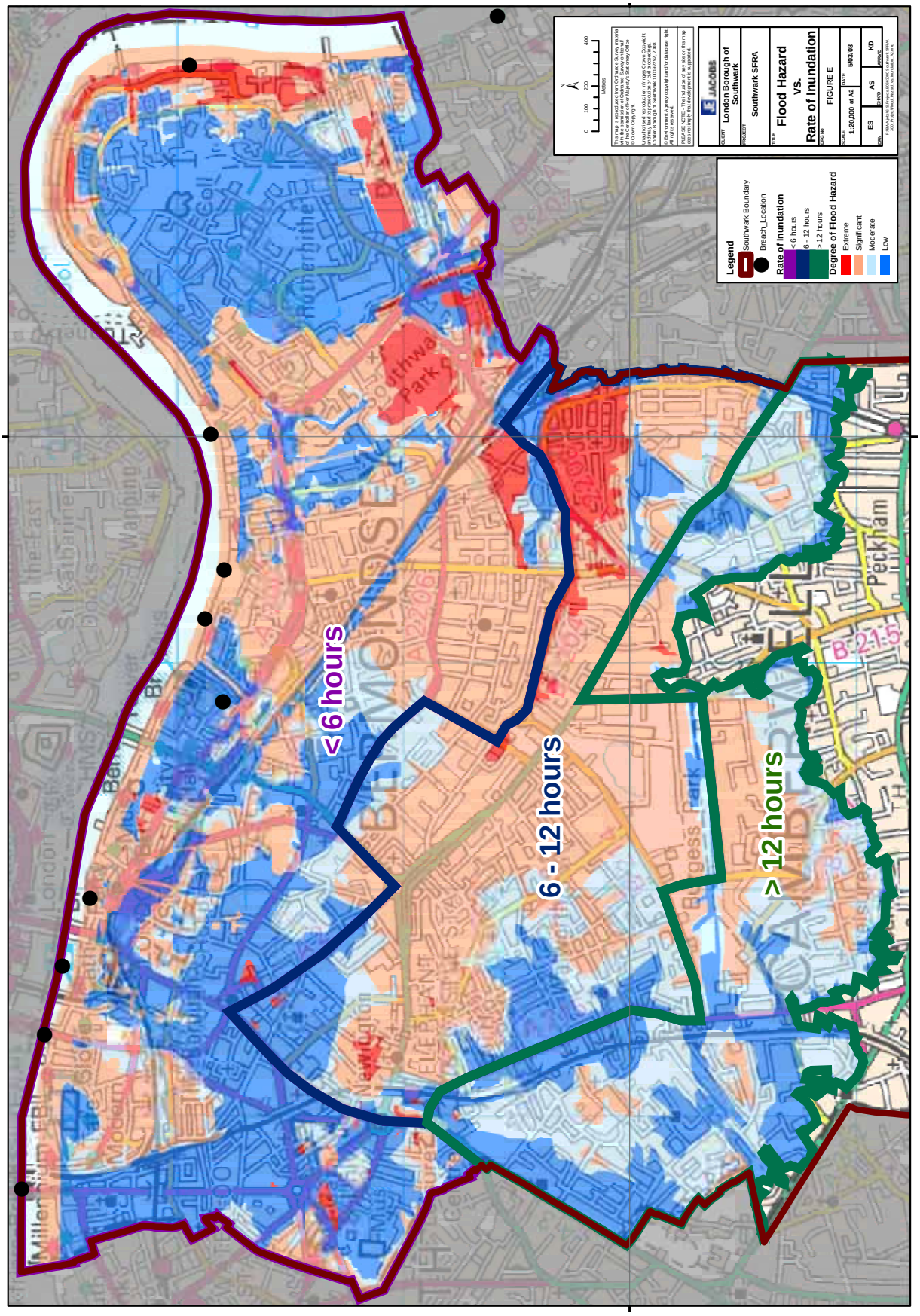
SUDS is a term used to describe the various approaches that can be used to manage surface water drainage in a way that mimics the natural environment. SUDS helps reduce the amount of surface water leaving a site and slows down the rate as it does this. It also helps improve water quality by filtering out contaminants. SUDS can also provide broader benefits, including the capture and re-use of site runoff for irrigation and/or non potable uses, and the provision of greenspace areas offering recreation and/or aesthetic benefits, and habitat for wildlife.

- The SUDs technique suitable for a site will depend on its location, size, the density of development, the type of soils, depth of the groundwater and the presence of contamination. A combination of techniques might be most effective. This combination should provide a water quality and biodiversity benefit as well as reducing the amount and rate of run-off leaving a site. The following order of preference should be followed
- Where possible, water should be collected and stored on-site for later use. In non-clay areas use infiltration techniques such as porous surfaces,
- The next preference is for collecting water for slow release into a waterway (the preference is to store water in ponds or open water features, otherwise rainwater tanks or sealed water features should be used).
- The next preference is to drain water directly into a watercourse. Where this is not possible, water should be directed into surface drains.

- Only where none of the above measures are practical due to site constraints should water be directed directly into sewers. There will need to be adequate spare capacity in sewers to allow this.
- Drainage techniques relying on water soaking into the soil underneath a site (known as infiltration systems) will not be effective in parts of the borough with clay soils as they become waterlogged easily. Figure 2 shows the different types of soils in Southwark.
- Contributions towards the upgrading and replacement of flood defences may be used to help reduce the risks of flooding to a development.

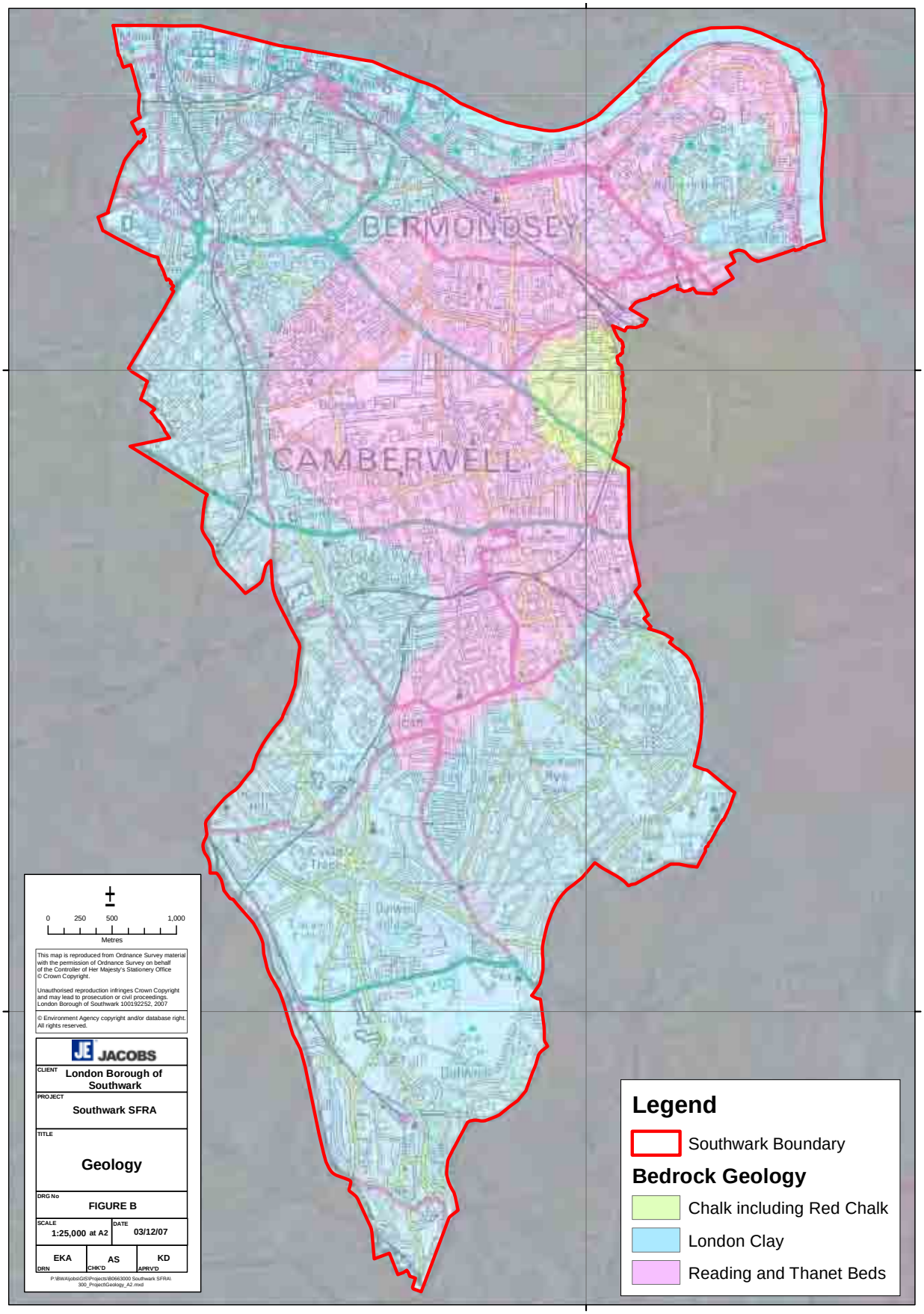
Key sources of further information:
London Borough of Southwark Strategic Flood Risk Assessment
Building A Better Environment: A Guide for Developers, Environment Agency, 2006
Adapting to Climate Change: A Checklist for Development, Three Regions Climate Change Group, 2005
Environment Agency Standing Advice on Flood Risk Assessment, www.environment-agency.gov.uk/research/planning/33098.aspx
Development and Flood Risk: A Practice Guide Companion to PPS25, Department for Communities and Local Government, 2007
Interim Code of Practice for Sustainable Drainage, National SUDS Working Group, July 2004
C635 CIRIA Guidance documents - Designing for Exceedance in Urban Drainage, London 2006.
Improving the Flood performance of new buildings - Flood resilient construction, DEFRA, May 2007

Figure 1 Flood risk zones and breakdown of flood hazard in Southwark



Note
This map is based on broad-brush modelling undertaken for the SFRA. It presents an extreme-case scenario for the borough, based on a broad-level understanding of land levels and barriers to flooding. Information on flood hazard, flood levels and rates of inundation at a particular site revealed through detailed site-specific modelling will take priority over the information on this map.

Figure 2 Soils in Southwark



10. At a glance: the how and what of sustainable design and construction

	Selecting a site	Planning a site	Designing buildings	Mechanical systems	Demolition and Construction	Occupancy
Climate Change	How energy efficient are the existing buildings on the site? Is it near an existing or planned community energy facility?	Are buildings orientated to make maximum use of solar energy. Does landscaping provide appropriate shading and sunlight access? Are there locations suitable for renewable energy technology? Do building footprints allow natural ventilation to occur?	Are the materials used low in embodied energy and greenhouse gases and sourced as close to the site as possible? Can the buildings be adapted and/or reused? Are reused or recycled materials used? Do materials provide good insulation and help heat and cool buildings naturally? Are windows and doors appropriately sealed and glazed? Does the floor plan allow individual areas to be heated and cooled? Are efficient appliances and lighting used? Is the building air-tight? Have green walls or roofs been used?	Are heating, cooling and water systems chosen the most efficient? Has renewable energy technology been installed or has the development been connected to community energy systems? Are chosen renewable energy technology appropriate for the site? Are meters provided?		Have occupants been given information on how to make the most of the energy efficiency features of the development? Will they understand how renewable energy technology works? Are there instructions on how mechanical systems should be maintained? An Energy Performance Certificate should be provided.
Air quality	What is the air quality in the area? Is it in an Air Quality Management Area?	Are building footprints appropriate to make use of natural ventilation? Are buildings orientated away from polluting sources and towards plants and other natural filters?	Are windows provided to areas providing a good source of fresh air? Have materials been sourced as locally as possible? Has energy efficiency been maximised?	Is adequate ventilation provided to maintain a good level of indoor air quality? Is appropriate ventilation provided to kitchens? Is exhaust located so as not to cause nuisance from odours to surrounding properties?	Is construction and demolition well managed to prevent dust spreading, for example by watering down the site and using dust screens	Is enough information provided on how ventilation systems operate?

	Selecting a site	Planning a site	Designing buildings	Mechanical systems	Demolition and Construction	Occupancy
Noise pollution	What are existing noise levels on the site and where are they coming from? Are adjoining land uses sensitive to noise?	Are buildings located to provide buffer to existing noise and avoid exposing sensitive land uses to noise? Are sensitive land uses located furthest from the noise?	Are openable windows provided to frontages that have low levels of noise? Have buffers been built into the design, such as landscaping and acoustic screens? Are windows appropriately glazed for the building location? Is appropriate noise insulation used?	Are mechanical systems chosen quiet?	Is construction and demolition carried out in a way that reduces noise disturbance, for example by limiting the times works are carried out or using quieter construction techniques?	Is noise pollution considered with regard to the possible negative impacts on the health of occupants?
Light pollution	What are the surrounding sources of artificial light? Are adjoining land uses or habitats sensitive to light?	Are buildings orientated to make maximum use of natural light and avoid disturbance from artificial light?	Has the use of artificial lighting been kept to a minimum and the use of natural lighting maximised? Is lighting provided with timers and sensors and designed to only fall on the areas where it is needed? Have buffers to existing sources of unwanted light been designed into the building?		Is construction activity managed to reduce light pollution, for example by limiting the times works are carried out or providing light shields?	Is information provided to occupants on using timers and light sensors?
Contamination	Understand the risk from any potential contamination. Can the site be made safe for the proposed use?	Have sensitive uses been located where there is no risk from contamination?			Is construction activity managed to avoid contamination of sites, for example by appropriately managing chemicals?	

	Selecting a site	Planning a site	Designing buildings	Mechanical systems	Demolition and Construction	Occupancy
Waste and resources	Are the buildings on the site able to be reused or adapted?	Is enough space provided for recyclable and non-recyclable waste storage? Is this in a convenient location? What composting facilities could be provided?	Has the use of recycled and reused materials been maximised? Can any parts of existing buildings on the site be reused? Is space provided within buildings for separating recyclable and non-recyclable waste?	Is there opportunity to generate energy from waste? Is there an opportunity for waste compaction?	Is there a plan in place for the sorting and collection of demolition materials for reuse and recycling? Have only the amount of materials needed been ordered. Have methods of construction that reduce waste, such as prefabrication been considered?	Are plans in place to manage waste that is produced by the occupants of the development? Is information provided to occupants on what waste management facilities there are and what arrangements are in place for collection?
Biodiversity	Understand the natural value of the site. Is the development appropriate in light of the types of plants, animals and habitat on the site? Will it avoid harm to protected species?	Are areas of nature conservation value protected? Are trees protected? Is space provided for new habitat as part of landscaping?	Have opportunities for habitat enhancement been designed into the building, such as green roofs and walls and bat and bird boxes?	Is renewable energy technology appropriate given trees and landscaping on the site or proposed to be planted?	Are trees, vegetation and other natural features protected during construction and demolition works, for example by being fenced off?	Is information provided on any features of nature conservation interest, including educational signage?

	Selecting a site	Planning a site	Designing buildings	Mechanical systems	Demolition and Construction	Occupancy
Water use	How water efficient are existing buildings? Are there any local sources of water nearby?	Are drought-resistant species used in landscaping? Is there opportunity for boreholes or to connect to existing local water supply systems?	Have water efficient fittings been installed? Is the plumbing made from durable materials?	Have rainwater harvesting and grey water recycling systems been designed into the building? Are meters provided?		Is information provided on rainwater harvesting and grey water recycling systems built into the development and how these should be maintained?
Water pollution	Understand where water run-off from the site drains to.	Is there opportunity for SUDS as part of the site landscaping? Are buildings, particularly for vulnerable uses, located in the parts of the site with least flood risk?	Have areas storing chemicals been appropriately designed to contain spills?		Is there appropriate control of dust and sediment?	Is information provided on SUDS included in the development? Is there a maintenance plan in place for SUDS?
Flooding	Understand the flood risks at the site. Are appropriate sites with lower levels of risk available?		Has the building been designed to be flood resilient or resistant? Are vulnerable uses located above predicted flood levels?			Have flood warning and emergency procedures been prepared and is enough information available to occupants?

Development standards needing to be met

This section sets out the minimum and preferred standards that new development in Southwark should meet. It gives guidance for different types of development. These standards will be used to help decide if a proposal meets related planning policies.

Minimum standards

Applicants should demonstrate that the proposal exceeds or meets the minimum standards applying to the type of development proposed. The minimum standards are based on current requirements of the Southwark Plan and the London Plan, the Building Regulations and good industry practice.

Where proposals do not meet or exceed the minimum standards a robust justification must be provided. You will need to show you have done as much as you can to exceed or meet the requirements. The council may seek to use planning conditions or negotiate planning obligations for off-site contributions or payments in lieu in order to mitigate the impact of the failure to meet the minimum. More guidance on planning obligations in set out in Southwark's S106 Planning Obligations SPD.

Preferred standards

We encourage applicants to go beyond the minimum standards. Applicants should also highlight situations where proposals exceed the minimum standards but do not quite reach the preferred standards.

Going beyond the minimum requirements will have direct benefits for developers, occupiers as well as the wider community. These include lower running costs associated with more energy efficient buildings, increased marketability (particularly given that information about energy and the Code for Sustainable Homes rating will be included in Home Information Packs (HIPs)), and wider benefits associated with social cohesion and a healthy economy.

It is commonly assumed that including sustainability features in a development will greatly increase its costs. However, research has indicated that significant improvements in performance can be achieved at little extra cost, and usually increased cost can be covered by increase in the value of the development and savings in operating costs.

More information on the costs of sustainable design and construction is provided in Appendix 2.

11. Development standards for major development

11.1 Overall target – Code for Sustainable Homes and BREEAM

A Code for Sustainable Homes or BREEAM assessment should be undertaken for all major development proposals.

All housing developments should aim to achieve a Code level 4 or the equivalent in any successor rating system. All housing developments should achieve Code level 3 as a minimum . Higher levels are preferred. Where the council has sold land for housing development or is procuring housing development, a minimum of Code level 4 is a target in Council's Corporate Plan.

All non-residential development should aim for BREEAM "Very Good" as a minimum.

Many of the minimum standards set out in this section will be easily met by achieving either Code level 3 or BREEAM "Very Good" ratings.

Achieving even higher levels of sustainable building design (such as Code for Sustainable Homes Levels 5 and 6) may be possible in the future. The government has announced the intention of ensuring that all homes are CfSH Level 6 by 2016. Proposals will need to comply with these regulations where these are more stringent than CfSH Level 4.

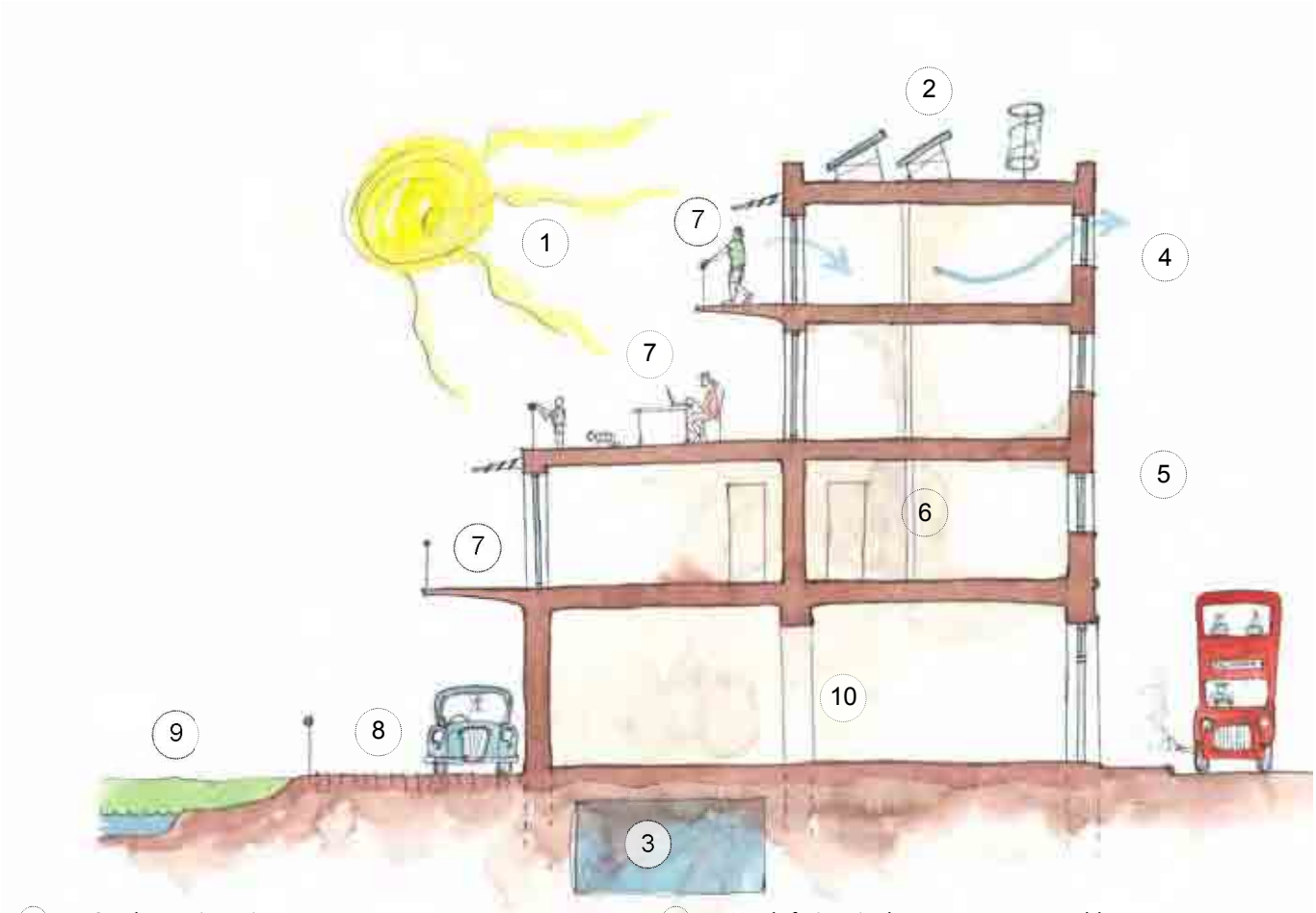
Where sufficient information is available, a CSH or BREEAM design stage assessment should be submitted with the application. These should be carried out by a licensed assessor. The assessor's name and license number should be clearly stated. If, at the time the application is submitted, there is not sufficient information to enable an assessment to be made, for example in the case of an outline planning application, the council will condition any approval to ensure that a CSH or BREEAM design stage assessment is submitted prior to the commencement of construction of the development.

The council will also condition any approval to ensure that the targeted CSH or BREEAM ratings are met and that certificates are submitted to the council once the development has been completed at post construction stage. From August 2008 BREEAM certificates are issued after a post-construction review. An interim certificate is issued at design stage.

Preferred Standards
Higher levels of environmental performance are preferred:
Non-residential development achieves BREEAM "Excellent"
Residential schemes achieve Code Level 4 or higher.

- We will raise the standard development needs to meet as the government raises its standards for environmental performance through the Building Regulations.

Cross section of a sustainably designed mixed use building



1. Southern orientation
2. Renewables (solar & wind) on roof
3. Rainwater harvesting
4. Smaller openings to north
5. Windows to busy road should not be only openable ones
6. North-facing single aspects not acceptable
7. Balconies/terraces/outdoor amenity with southern aspect
8. Hardstanding/hard-landscaping with permeable surface
9. SUDS
10. Mixed-use development

Fact Box – Link to BREEAM and Code for Sustainable Homes Assessments

BREEAM

BREEAM (Building Research Establishment Environmental Assessment Method) is a tool which can be used to assess the environmental performance of new and refurbished buildings, including schools, offices and industrial buildings. Bespoke assessments can be carried out for unusual or mixed use buildings. The assessment gives buildings a score of pass, good, very good, or excellent. The residential part of BREEAM (usually called Eco Homes) has been replaced by the Code for Sustainable Homes.

Code for Sustainable Homes

The Code for Sustainable Homes (CSH) is a national standard to guide the design and construction of sustainable homes. The Code gives a rating from 1 (*) to 6 (******). The higher the rating, the more sustainable the design of the home (Code level 4 (****) is roughly the equivalent of a BREEAM excellent score). The assessment includes efficiency in energy, water, waste, materials, ecology and flooding.
The government introduced the mandatory requirement to make an assessment against the Code for Sustainable Homes for all new housing built from 1 May 2008. Homes which have not been formally assessed by a licensed assessor will receive a certificate stating that the home has been "nil-rated". Code for Sustainable Homes certificates or "nil-rated" certificates will be provided to house buyers in the Home Information Pack (HIP).

Government Targets for Energy Efficiency

Part L of the Building Regulations sets out minimum energy efficiency levels that by law must be achieved by new buildings. The Government intends to amend the Building Regulations so that from 2010 all new homes must be 25% more energy efficient that the current Building Regulations, from 2013 44% more efficient and from 2016 they will need to be "zero carbon" . It is far better to build above the minimum standards now so that energy can be reduced over the building's lifetime. It will cost more to bring existing buildings up to standard later on by retrofitting extra insulation.

Where sufficient information is available, a CSH or BREEAM design stage assessment should be submitted with the application. These should be carried out by a licensed assessor. The assessor's name and license number should be clearly stated. If, at the time the application is submitted, there is not sufficient information to enable an assessment to be made, for example in the case of an outline planning application, the council will condition any approval to ensure that a CSH or BREEAM design stage assessment is submitted prior to the commencement of construction of the development.

The council will also condition any approval to ensure that the targeted CSH or BREEAM ratings are met and that certificates are submitted to the council once the development has been completed at post construction stage. From August 2008 BREEAM certificates are issued after a post-construction review. An interim certificate is issued at design stage.

11.2. Standards for energy use and minimsing climate change

Overall energy efficiency from all measures

- By applying the energy hierarchy, development should achieve at least a 25% improvement over the Building Regulations energy efficiency standards current at the time of the application. Council procured housing should achieve a 44% improvement.
- An assessment of the energy demand and carbon dioxide emissions from the development must be provided. This should demonstrate how the development has been designed in accordance with the guidance in Section 3. Energy calculations need to include all energy uses in the development. Detailed requirements for the assessment are set out in Appendix 6.
- Development should connect to existing CHP/ CCHP networks where possible, following the guidance in Section 3.4.

Renewable energy target

- Developments must achieve a reduction in carbon dioxide emissions of 20% from onsite renewable energy generation (which can include sources of decentralised renewable energy) unless it can be demonstrated that such provision is not feasible.
- Evidence of what renewable energy options have been considered and how much CO2 is saved by the chosen option need to be provided (refer to Appendix 5).
- Where it is demonstrated that it is not possible to meet the target requirement due to site constraints, financial contributions towards renewable energy projects in Southwark may be sought to make up for the lack of on-site renewable provision.

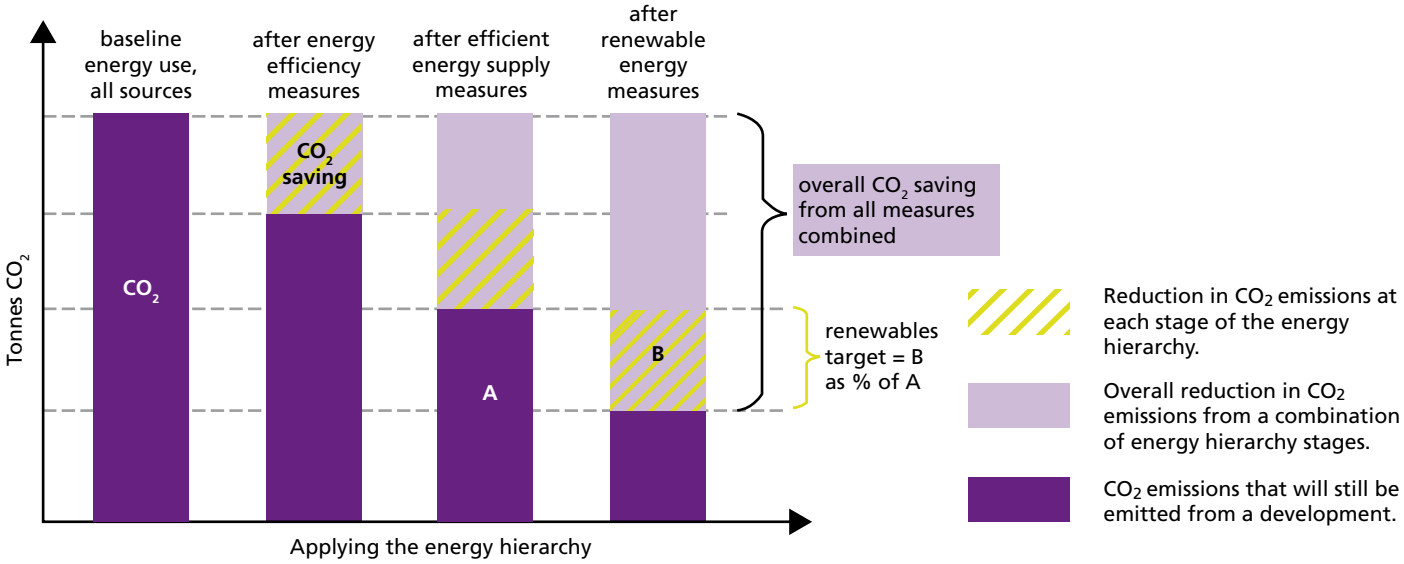
Special considerations:

- The 20% target applies to the predicted CO2 emissions of the development, after passive design measures and efficient energy supply measures have been applied, this includes connection to an area-wide CHP/CCHP scheme not powered by renewables, such as at Elephant and Castle. This is illustrated in Figure 3.

Development in Conservation Areas:

- Development in conservation areas should aim to achieve the 20% renewable energy target. However, it is acknowledged that there may be design and heritage constraints preventing the target being fully met.

Figure 3 - Approach to meeting energy targets



Other minimum standards

- Wherever on-site outdoor lighting is proposed as part of a development it should be energy efficient, minimising light lost to sky.
- Only 'A rated' or 'Energy Saving Recommended' appliances and lighting should be used.
- Electricity and gas sub metering should be provided to individual dwellings and tenancies. These should be visible to occupants, as this has been shown to result in reductions in energy use.
- Insulation materials containing substances known to contribute to stratospheric ozone depletion or with the potential to contribute to global warming must not be used.

Preferred Standards

In addition to the minimum standards, development should aim to:

- Achieve 100% improvement over the Building Regulations, or be zero carbon
- Exceed 20% target for renewables
- Energy systems should be provided with the capacity for future expansion or other development to connect at a later date
- At least 75% of the main elements of the building achieve an A rating in the BRE Green Guide to Specification

11.3 Standards for adapting to climate change

- The proposal includes living roofs and walls where feasible
- Buildings provide for flexibility of uses during their projected operational lives
- Buildings adapted to and mitigate for the effects of the urban heat island and the expected increase in hot dry summers and wet mild winters

11.4 Standards for avoiding pollution and environmental nuisance

Outdoor air quality

- Development in the Air Quality Management Area will need to provide a formal air quality impact assessment (as set out in appendix 6).
- Applications for district CHP and CCHP schemes will need to be accompanied by a formal air quality impact assessment (refer to appendix 6). This includes explaining the type of fuels to be used and how these have been sourced as close to the site as possible. Where biomass boilers are proposed, further information will be required to be submitted (refer to appendix 6).
- Where the use of zero emission fuels are demonstrated to not be feasible, systems should be designed to allow easy conversion to these fuels in the future.
- All new gas boilers should produce low levels of NOx.

Indoor air quality

- Development must meet the minimum requirements of Part F of the Building Regulations.
- Applications should include information on how development has been designed to provide good indoor air quality and minimise the need for mechanical ventilation.
- Exhaust from kitchens or other uses with the potential to release odours should be appropriately controlled so that they do not create a nuisance for neighbouring occupiers. Applications should include information on how this will be achieved.
- Inert and low emission finishes, construction materials, carpets and furnishings should be used
- All plant and machinery should be accessible for easy maintenance

Land Contamination

- Where a sensitive use is proposed or on sites that have had or are adjacent to past industrial uses, a study must be submitted with the planning application that identifies the potential for contamination on the site based on past land uses and site conditions.
- Where there is a real potential for contamination, or not enough information is available to show there is no risk of contamination, a more detailed study will be required that determines whether contamination actually exists, its nature and the risks it may pose and whether these can be satisfactorily reduced to an acceptable level through remediation. This study must be carried out by a qualified professional.

- A report demonstrating the effectiveness of the remediation carried out will be required before building work can begin.

Water quality

- Development should incorporate sustainable drainage techniques suitable to the site (see standards for reducing flood risk).
- Planning applications for industrial uses need to provide information on expected waste discharges and how risks of pollution are being avoided. Where discharges into waterways are proposed a permit from the Environment Agency may be required.

Indoor noise levels

- Residential development should be designed to so that noise levels for indoor spaces are below
  - LAeq 16hr 35dB (07:00-23:00) and LAeq 8hr 30dB
  - LAFmax 45dB (23:00-07:00).
- Non-residential buildings should be designed to meet the recommended levels set out in British Standard BS8233:1999 (in particular Tables 5 and 6).
- For changes of use/conversions, the building should be adapted so that it meets the British Standard levels for the proposed use.
- Information on how a development has been designed to minimise noise impact and meet the guidance in section 5.2 should be included as part of the Design and Access Statement.
- Where noise sensitive uses are proposed in locations that may be affected by noise, such as from railways, busy roads and industrial activity, applications should include a formal acoustic study that explains how noise impacts have been mitigated.

Noise generating development

- Noise generating development, such as industrial uses, entertainment venues and commercial kitchens, should not result in an increase in background noise levels Applicants are encouraged to use the methodology set out in BS 4142:1997 to assess their site.
- Applications will need to provide information on the noise that will be generated and the times and duration that it will occur. This includes information on noise from plant, machinery and deliveries. The application will need to explain how this noise may impact upon nearby sensitive uses and demonstrate how this noise has been contained so that the British Standard levels are met.

External Lighting

- External lighting should meet the recommended levels set out in British Standards BS5489_1: 2003 and BS EN 12193: 2003 where relevant.
- Applications should provide information on how lighting has been used efficiently and how unnecessary light spill has been overcome. This should be covered in the Design and Access Statement.

- For developments that include proposals for significant amounts of lighting, such as outdoor sports facilities, public domain works and outdoor industrial uses, applications should provide the following information
  - Description of lighting poles including height and colour
  - The expected brightness of the lighting
  - The location of the nearest residential properties
  - Any screening that may mitigate against unnecessary light spillage into neighbouring residential properties
  - The expected times of day that the lights will operate.

Considerate construction activity

- Construction works should be carried out in accordance with council's Environmental Code of Construction Practice.
- Applications should include a construction management plan that sets out how noise and vibration impacts will be managed.
- The Air Quality Impact Assessment should cover the construction process (see appendix 6).
- Prior to construction beginning, the applicant will provide a method statement setting out dust and emission control measures to be used during construction.

Preferred standards

In addition to the minimum standards, development should aim to:

- For residential development, noise levels for indoor spaces should be below :
  - LAeq 16hr 30dB (07:00-23:00) and LAeq 8hr 30dB
  - LAFmax 45dB (23:00-07:00)
- Noise levels for outdoor spaces should be below:
  - LAeq 16hr 50dB (07:00-23:00)
- For non-residential development, noise levels should meet the "good" criteria in Tables 5 and 6 of BS 8233:1999).
- Sign up to Considerate Constructors Scheme

11.5 Standards for avoiding waste and minimising landfill

Building construction

- Existing buildings are reused where practicable and the use of reused or recycled construction materials is maximized.
- Information on the materials used, how they will be maintained and how long they are likely to last before they need replacing or repairing should be provided with planning applications.

- 50% timber and timber products from Forest Stewardship Council (FSC) source and balance from a known temperate source.
- A Site Waste Management Plan will need to be submitted. The SWMP will need to contain a commitment to minimise waste generated on site and sort, reuse and recycle construction, demolition and excavation waste. Further information on what to include can be found on www.NetRegs-swmp.co.uk. WRAP also has guidance documents on www.wrap.org.uk.
- Demolition to be carried out in accordance with the ICE Demolition Protocol.

Space for sustainable waste management

- Development must meet the minimum requirements of Part H of the Building Regulations, subject to the capacity requirements set out below

  Residential development

  - Development should provide adequate external storage for the following volume of refuse:
    - Recycling: 15L per unit + 35L per bedroom
    - Non-recyclables: 22.50L per unit + 52.50L per bedroom.
  - The area needed for storage will depend on the types of bins to be used. Appendix 3 provides guidance on the different types of bins that the council provides and details of their dimensions.
  - Each dwelling should provide internal storage space for at least 30L of waste, either within a cupboard in kitchens, or in a utility room or connected garage close to the kitchen. This storage should be able to store at least three bins no smaller than 7L for different types of waste.
  - Space for on-site composting should also be provided, enough to hold 240L of organic waste per dwelling with a garden and 70L per dwelling without a garden. Where it is not possible to treat compost on-site due to site constraints, waste storage areas should be to be adapted to store organic waste separately from other refuse, should collection schemes for organic waste be provided in the future.

  Non-residential development

  - Applications will need to provide information on the expected waste to be generated by the proposed use and the frequency of collection and explain how the storage capacity provided is adequate, including for organic waste. Generally, enough space to store waste for a week should be provided.
  - British Standard BS 5906:2005 should be used to calculate the capacity of waste storage needed. Where the end user of a building is not known, calculations should assume the highest levels of waste generation likely for that use class.
- Storage of bins on public streets will not be supported.

- Storage areas for household bins should be separate from storage areas for non-residential development.
- Recycling facilities should be as easy to access as waste facilities
- An operational waste management plan should be submitted with the application covering the issues listed in Appendix 6.

Preferred standards
In addition to the minimum standards, development should aim to

- Use prefabricated and standardised modulation components to minimise waste. If this is not feasible use low waste fabrication techniques.
- Prepare a green procurement plan which explains how construction materials will be sustainably sourced, including how the following targets will be met
  - 90% structural timber from FSC source and the balance of timber products from a known temperate source
  - 95% of all construction, demolition and excavation waste is reused or recycled
  - No peat or natural weathered limestone used in buildings or landscaping
  - 50% of construction materials by mass used in the development to be sourced from a factory/ plant, quarry, wharf, railhead or recycling centre within 35 miles of site
  - 10% total value of materials used to be derived from recycled and reused content in products and materials selected
- At least 75% of the main elements of the building achieve an A rating in the BRE Green Guide to Specification

11.6 Standards for protecting and enhancing biodiversity

Avoiding harm

- Developers must comply with protected species legislation. A precautionary approach will be taken. Where development could result in harm to protected or priority species, a Scoping Study will be required. This study will identify if protected or priority species are using the site. In many cases this will involve a quick assessment by a trained ecologist. Appendix 4 will be used to help determine if a Scoping Study should be carried out.
- Site surveys should be undertaken at the appropriate time of year for the species concerned.
- The council will refuse applications that do not provide enough information on protected or priority species.
- There should be no net loss in ecological value of a site. The proposal must not reduce access to nature or harm the ecological value of any site of importance for nature conservation (SINC) or local nature reserve (LNR).

- A Tree Report should be submitted, covering the issues set out in appendix 6. The loss of or damage to trees protected by a Tree Preservation Order will only be allowed where the benefits of the development outweigh the value of trees to be lost. "Like for like" replacement or relocation of trees will be expected.
- Construction works should be carried out in accordance with council's Environmental Code of Construction Practice.

Special considerations for sites known to contain protected or priority species:
Where species are known to use a site, or a Scoping Study recommends, a full ecological assessment should be submitted with planning applications. This assessment should explain how negative impacts have been minimised. Where negative impacts are unavoidable, justification should be provided on how these are outweighed by the environmental, social and economic benefits of the scheme.
Details on what alternative development options have been considered to avoid or reduce negative impacts should be provided, along with an explanation of why the option chosen is the best one.
Details of proposed compensation will need to be provided, including when the compensation will be provided and how it overcomes the negative impacts.
A licence may be required from Natural England where development is to occur on sites where there are protected species.

Enhancing biodiversity

- All development needs to contribute to improving biodiversity in the borough and should increase the number and coverage of plant species on a site.
- Artificial habitats, such as Swift boxes, bat bricks and stag beetle loggeries, should be integrated into the design of buildings, unless this is demonstrated to not be feasible. This is particularly important where is limited space for natural habitats.
- Green walls or roofs are to be included in all schemes, unless this is not feasible.
- Design and Access Statements should explain how the development has been designed to maximise its contribution to nature conservation in light of site constraints. This should include information on plant species that will be used and how opportunities to link with nearby open spaces have been addressed.
- Where specialist habitat areas are proposed, information on how the new habitat will be managed and maintained throughout the lifetime of the development should be provided.

Preferred standards
In addition to the minimum standards, development should aim to:
Net gain of biodiversity and access to nature on the development site and a reduction in areas of deficiency in access to nature

11.7 Standards for conserving water

- Applications should demonstrate how the water demand of the development has been minimised through water efficient design.
- Residential developments should achieve a potable water use target of 105L per person per day.
- Non-residential development should achieve at least 1 BREEAM credit for water consumption.
- Highly efficient water saving fixtures, fittings and appliances should be used.
- Development should include a system to collect rainwater for use in external irrigation/watering, unless this is not feasible due to site constraints.
- The development should connect to a local water supply or borehole where this is available.
- There should be 100% metering of all newly built property

Preferred standards

In addition to the minimum standards, development should aim to

- Residential developments should achieve a potable water use target of 80L per person per day.
- Non-residential development should achieve at least 2 BREEAM credit for water consumption.
- Use of grey-water for all non potable uses

11.8 Standards for building in flood risk areas and reducing flood risk

Building in flood risk areas (see figure 1)

- Development must meet the criteria set out in Section 9.1 and appendix 5. Evidence to support this must be provided as part of a flood risk assessment..
- A site-specific flood risk assessment must be carried out and submitted, covering the issues set out in appendix 6.
- Architectural drawings should compare the predicted 1 in 200 year flood level with the proposed floor levels of the development.
- Buildings should be set back at least 8 metres from flood defences to allow for cost effective maintenance and improvements to defences. Development in or within 8m of the Thames will need the approval of the Environment Agency.

Development on sites over 1ha outside flood risk areas:

- All applications involving new building work will need to be accompanied by a flood risk assessment that demonstrates that the development does not increase flood risk elsewhere. This should cover the issues set out in appendix 6.

Reducing flood risk

- Achieve 50% reduction in surface run-off (measured in litres per second per hectare)leaving the site at peak times. The rate at which run-off leaves a site should be controlled so that it is the same for all storms expected in a 100 year period.
- Development must not increase the area of hard standing areas
- Sustainable Urban Drainage Systems (SUDS) should be used on each site, in accordance with the preferences set out in section 9.3. Justification for why a SUDs technique higher up the hierarchy cannot be used should be included with planning applications.
- Drainage must meet the minimum requirements of Part H of the Building Regulations. Where drainage is to be adopted by Thames Water, it will need to meet the authority's design requirements.
- Drainage should be designed so that is does not flood during the worst storm likely to occur within a 50 year period. Existing drainage should be brought up to this standard.
- Contributions towards off-site sustainable urban drainage schemes will be sort where a development cannot fully manage surface water on-site.

Preferred standards

In addition to the minimum standards, development should aim to

- Run-off from the site reduced to green-field levels (8L/s/ha), using SUDS techniques
- Reduce area of hard standing surfaces on a site
- Drainage should be designed so that is does not flood during the worst storm likely to occur within a 100 year period

11.9 Special considerations for additions or modifications to development that is already approved on an application site

Where an application for planning permission will increase the total amount of development on a site to more than 10 dwellings or more than 1,000sqm (ie. the threshold for major development) of other floorspace the minimum standards below will be applied to the development already approved on the site in addition to the proposed development.

This is because subdivision of sites and lots of small developments over time can escape the requirements of policy for large schemes even though, combined, they will have the same impacts as one large scheme in terms of energy and water use, pollution, waste, flood risk and biodiversity.

Energy use and minimising climate change

- A formal energy assessment of the whole site will be required. The whole site should meet the energy efficiency standards for major development.
- At the very least, if extensions to buildings with an existing floorspace over 1,000sqm are proposed, the whole building may need to be brought up to Building Regulation standard – refer to Regulation 17D of Part L.
- Energy should be drawn from on-site or decentralised renewable energy systems to achieve a reduction in carbon dioxide emissions of 20%, unless it can be demonstrated that such provision is not feasible. This should be based on carbon-dioxide emissions of the whole site.
- The scheme should meet the Other minimum standards for major development.

Adapting to climate change

- The proposal should meet the requirements for major development

Avoiding pollution and environmental nuisance

- The proposal should meet the requirements for major development

Avoiding waste and minimising landfill

- The proposal should meet the requirements for major development
- The Operational Waste management Plan should cover the whole site.

Protecting and enhancing biodiversity

- The proposal should meet the requirements for major development

Conserving water

- The proposal should meet the requirements for major development

Planning for flood risk

- The proposal should meet the requirements for major development

12. Development standards for minor development

12.1 Standards for energy use and minimising climate change

- Where changes are proposed that will increase the energy demand of a site, such as changes of use, or additional floorspace or dwellings, information on how the development has been designed to be as energy efficiency as possible should be provided in the Design and Access Statement.
- If extensions to buildings with an existing floorspace over 1,000sqm are proposed, the whole building may need to be brought up to Building Regulation standard – refer to Regulation 17D of Part L.
- All development should draw some of its energy needs from renewable sources unless this not viable or there are site constraints. Design and Access Statements should include information on what renewable energy options have been considered and why a particular option has been selected.
- The proposal should meet the "Other minimum standards" for major development in Section 11.2.

Preferred Standards
In addition to the minimum standards, development should aim to

- Meet all the minimum standards for Major Development

12.2 Standards for adapting to climate change

- Buildings provide for flexibility of uses during their projected operational lives
- Buildings adapted to and mitigate for the effects of the urban heat island and the expected increase in hot dry summers and wet mild winters

Preferred Standards
In addition to the minimum standards, development should aim to

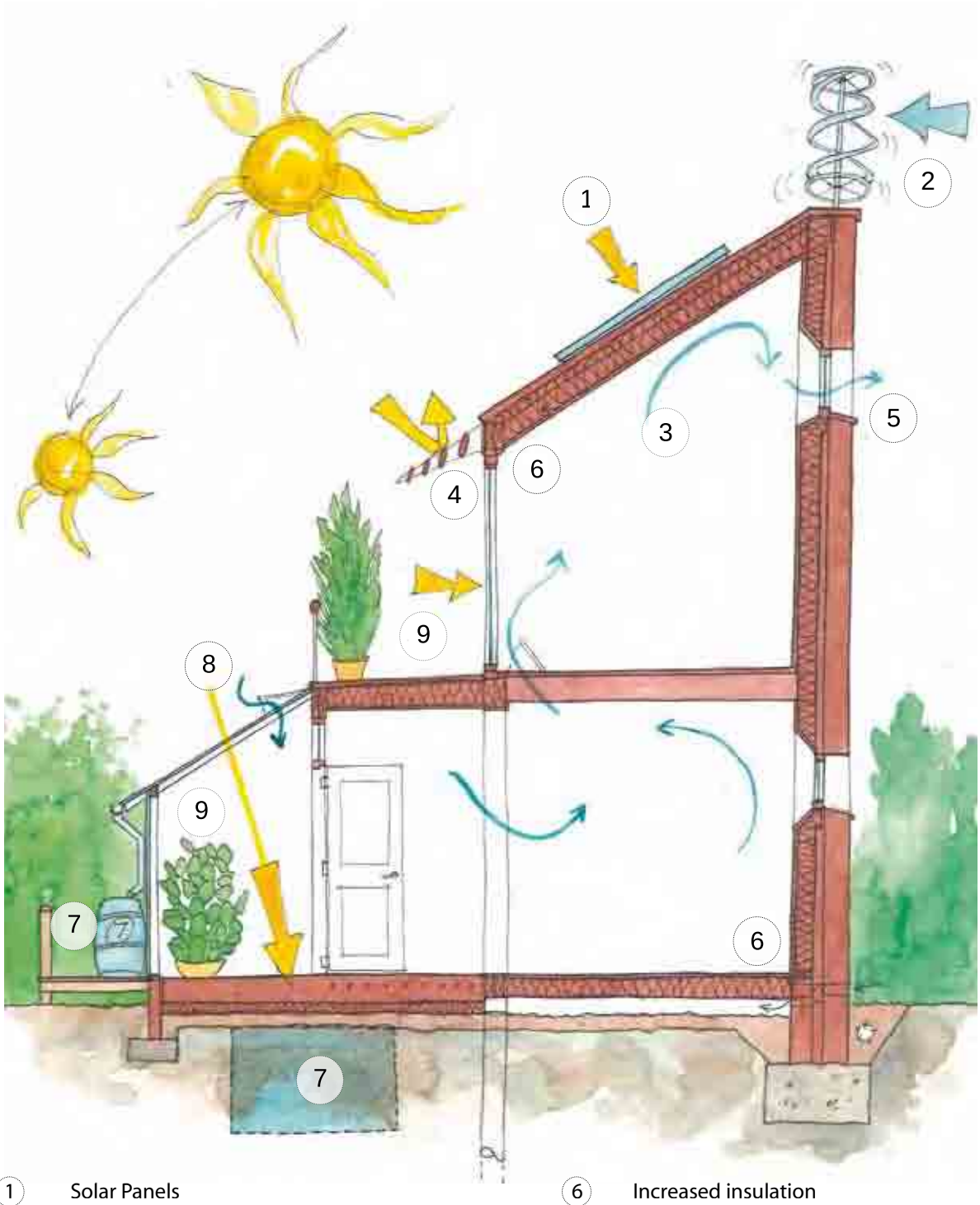
- includes living roofs and walls

12.3 Standards for avoiding pollution and environmental nuisance

Outdoor air quality

- Development in the Air Quality Management Area will need to provide a formal air quality impact assessment (as set out in appendix 6).
- All new gas boilers should produce low levels of NOx.

Cross section of a sustainably designed building



1. Solar Panels
2. Wind turbine
3. Natural ventilation
4. Louvres (Adjustable) to deflect mid-summer sun
5. Smaller openings on northern aspects
6. Increased insulation
7. Rainwater harvesting
8. Passive solar gain to thermal mass
9. Balconies, openings & conservatory to maximise southerly aspect

Indoor air quality

- Design and Access Statement should include information on how development has been designed to provide good indoor air quality and minimise the need for mechanical ventilation.
- Development must meet the minimum requirements of Part F of the Building Regulations.
- Exhaust from kitchens or other uses with the potential to release odours should be appropriately controlled so that they do not create a nuisance for neighbouring occupiers. Applications should include information on how this will be achieved.
- Inert and low emission finishes, construction materials, carpets and furnishings should be used
- All plant and machinery should be accessible for easy maintenance

Land Contamination

- Where a sensitive use is proposed or on sites that have had or are adjacent to past industrial uses, a study must be submitted with the planning application that identifies the potential for contamination on the site based on past land uses and site conditions.
- Where there is a real potential for contamination, or not enough information is available to show there is no risk of contamination, a more detailed study will be required that determines whether contamination actually exists, its nature and the risks it may pose and whether these can be satisfactorily reduced to an acceptable level through remediation. This study must be carried out by a qualified professional.
- A report demonstrating the effectiveness of the remediation carried out will be required before building work can begin.

Water quality

- Planning applications for industrial uses need to provide information on expected waste discharges and how risks of pollution are being avoided. Where discharges into waterways are proposed a permit from the Environment Agency may be required.

Indoor noise levels

- Residential development should be designed to so that noise levels for indoor spaces are below:
  - LAeq 16hr 35dB (07:00-23:00) and LAeq 8hr 30dB
  - LAFmax 45dB (23:00-07:00)
- Non-residential buildings should be designed to meet the recommended levels set out in British Standard BS8233:1999 (in particular Tables 5 and 6).
- For changes of use/conversions, the building should be adapted so that it meets the British Standard levels for the proposed use.
- Information on how a development has been designed to minimise noise impact and meet the guidance in section 5.2 should be included as part of the Design and Access Statement.

- Where noise sensitive uses are proposed in locations that may be affected by noise, such as from railways, busy roads and industrial activity, applications should include a formal acoustic study that explains how noise impacts have been mitigated.

Noise generating development

- Noise generating development, such as industrial uses, entertainment venues and commercial kitchens, should not result in an increase in background noise levels Applicants are encouraged to use the methodology set out in BS 4142:1997 to assess their site.
- Applications will need to provide information on the noise that will be generated and the times and duration that it will occur. This includes information on noise from plant, machinery and deliveries. The application will need to explain how this noise may impact upon nearby sensitive uses and demonstrate how this noise has been contained so that the British Standard levels are met.

External Lighting

- External lighting should meet the recommended levels set out in British Standards BS5489_1: 2003 and BS EN 12193: 2003 where relevant.
- Applications should provide information on how lighting has been used efficiently and how unnecessary light spill has been overcome. This should be covered in the Design and Access Statement.
- For developments that include proposals for significant amounts of lighting, such as public domain works and outdoor industrial uses, applications should provide the following information
  - Description of lighting poles including height and colour
  - The expected brightness of the lighting
  - The location of the nearest residential properties
  - Any screening that may mitigate against unnecessary light spillage into neighbouring residential properties
  - The expected times of day that the lights will operate.

Considerate construction activity

- Construction works should be carried out in accordance with council's Environmental Code of Construction Practice.
- The Air Quality Impact Assessment should cover the construction process (see appendix 6)

Preferred standards

In addition to the minimum standards, development should aim to

- Development should incorporate sustainable drainage techniques suitable to the site (see standards for reducing flood risk)
- For residential development, noise levels for indoor spaces should be below :
  - LAeq 16hr 30dB (07:00-23:00) and LAeq 8hr 30dB
  - LAFmax 45dB (23:00-07:00)
- Noise levels for outdoor spaces should be below:
  - LAeq 16hr 50dB (07:00-23:00)
- For non-residential development, noise levels should meet the "good" criteria in Tables 5 and 6 of BS 8233:1999).
- Applications should include a construction management plan that sets out how noise and vibration impacts will be managed.
- Sign up to Considerate Constructors Scheme

12.4 Standards for avoiding waste and minimising landfill

Building construction

- Design and Access Statement should include information on how a development has been designed to minimise the use of building materials, reuse existing buildings and materials on-site and recycle materials that are not needed. This includes information on how long materials used are likely to last before they need replacing or repairing.
- Construction works should be carried out in accordance with council's Environmental Code of Construction Practice.

Space for sustainable waste management

- Development must meet the minimum requirements of Part H of the Building Regulations, as per major development.

Preferred standards
In addition to the minimum standards, development should aim to

- Use prefabricated and standardised modulation components to minimise waste. If this is not feasible use low waste fabrication techniques.
- 50% timber and timber products from Forest Stewardship Council (FSC) source and balance from a known temperate source
- No peat or natural weathered limestone used in buildings or landscaping
- A Site Waste Management Plan and Operational Waste Management plan is prepared.
- Demolition to be carried out in accordance with the ICE Demolition Protocol.
- No construction material nor specification with high embodied impact to be used (as defined within BRE Green Guide to Specification) unless a compelling whole life energy or technical case for its use exists.

12.5 Standards for protecting and enhancing biodiversity

Avoiding harm

- The minimum requirements for major development should be met

Enhancing biodiversity

- The minimum requirements for major development should be met

Preferred standards
In addition to the minimum standards, development should aim to

- Net gain of biodiversity and access to nature on the development site and a reduction in areas of deficiency in access to nature

12.6 Standards for conserving water

- All development should include measures to minimise water use. Design and Access Statements should include information on how the need for water has been minimised.
- Highly efficient water saving fixtures, fittings and appliances should be used.
- There should be 100% metering of all newly built property

Preferred standards
In addition to the minimum standards, development should aim to

- Residential developments should achieve a potable water use target of 105L per person per day.
- Non-residential development should achieve at least 1 BREEAM credit for water consumption.
- Development should include a system to collect rainwater for use in external irrigation/watering, unless this is not feasible due to site constraints.
- The development should connect to a local water supply or borehole where this is available.

12.7 Standards for building in flood risk areas and reducing flood risk

Building in flood risk areas (see figure 1)

- Development must meet the criteria set out in Section 9.1 and appendix 9.3. Evidence to support this must be provided as part of a flood risk assessment.
- A site-specific flood risk assessment must be carried out and submitted, covering the issues set out in appendix 6.
- Architectural drawings should compare the predicted 1 in 200 year flood level with the proposed floor levels of the development.
- Buildings should be set back at least 8 metres from flood defences to allow for cost effective maintenance and improvements to defences. Development in or within 8m of the Thames will need the approval of the Environment Agency.

Reducing flood risk

- No increase in surface run-off leaving the site (measured in litres per second per hectare) leaving the site at peak times. The rate at which run-off leaves a site should be controlled so that it is the same for all storms expected in a 100 year period.
- Development must not increase the area of hard standing areas.
- Drainage must meet the minimum requirements of Part H of the Building Regulations. Where drainage is to be adopted by Thames Water, it will need to meet the authority's design requirements.
- Drainage should be designed so that is does not flood during the worst storm likely to occur within a 50 year period.
- Where a flood risk assessment is not required, information on how a development has been designed to manage surface water should be included as part of Design and Access Statements.

Preferred standards

In addition to the minimum standards, development should aim to

- Incorporate Sustainable Urban Drainage Systems (SUDS) on-site.
- Reduce run-off from the site
- Reduce area of hard standing surfaces on a site
- Drainage should be designed so that is does not flood during the worst storm likely to occur within a 100 year period

APPENDIX 1: Planning Policy Context

The Sustainable Design and Construction SPD has been prepared so that it is consistent with national, regional and local planning policy and guidance. The key policies that apply are explained below.

National Policy

- **Planning and Climate Change Supplement to PPS1**
  This supplement states that new development should be built to have lower carbon footprints and should be designed to withstand the likely impacts of climate change. Planning policy should contribute to meeting the government's target to reduce greenhouse gas by 60% by 2050 and secure the highest levels of energy efficiency.

- **PPS9: Biodiversity and Geological Conservation**
  The use of renewable sources of energy, alongside improvements to energy efficiency, will make a vital contribution to the government's aim of reducing greenhouse gas emissions by 60% by 2050, and to keep reliable and efficient energy supplies. 10% of UK electricity should be generated by renewables by 2010 and 20% by 2020. Policy policies should promote and encourage renewable energy development, of all sizes, whilst addressing potential negative impacts.

- **PPS10: Planning for Sustainable Waste Management**
  PPS10 aims to reduce waste by making sure re-use/recycling facilities are in new developments, and to manage waste as near as possible to its place of production because transporting waste itself has an environmental impact.

- **PPS22: Renewable Energy**
  PPS22 states that the use of renewable sources of energy, alongside improvements to energy efficiency, will make a vital contribution to the government's aim of reducing greenhouse gas emissions by 60% by 2050, and to keep reliable and efficient energy supplies. 10% of UK electricity should be generated by renewables by 2010 and 20% by 2020. Planning policies should promote and encourage renewable energy development, of all sizes, whilst addressing potential negative impacts.

- **PPS23: Planning and Pollution Control**
  PPS23 aims to work towards minimising the levels of air, water and land pollution caused by development.

- **PPG24: Planning and Noise**
  PPG24 aims to reduce the noise impacts of development by outlining issues that need to be taken into account when deciding planning applications for noise-sensitive developments and for those activities which generate noise. It also advises on the use of conditions to minimize the impact of noise.
- **PPS25: Development and Flood Risk**
  PPS25 aims to avoid and reduce the impacts of flooding on people, property and the environment through good planning and management of flood risk. Flood risk needs to be taken into account at

all stages of the planning process, and should be reduced through the location, layout and design of development, taking into account the impacts of climate change. Development in flood risk areas should be avoided, and should only be permitted if there are no other sites and the benefits of the development outweigh the risk from flooding. Use development opportunities to reduce the causes and impacts of flooding.

Development in areas at high risk of flooding will need to have a flood risk assessment. Flood risk assessments should also be carried out for development on sites over 1ha, regardless of its location.

Regional Planning Policy - The London Plan (consolidated with alterations) 2008

- **Policy 2A.1 Sustainability Criteria**
  Provides the criteria for development to secure the social, environmental and economic objectives of the London Plan

- **Policy 2A.9 The Suburbs: supporting sustainable communities**
  Sustainable communities should be supported in areas of both inner and outer London in order to enhance the quality of life, economy and environment of suburban London

- **Policy 3D.14: Biodiversity and nature conservation**
  New development should have regard to nature conservation and biodiversity and opportunities should be taken to achieve positive gains through the form and design of development. Development should not have a significant negative impact on protected and priority species. Damage to sites of importance for nature conservation should be avoided. Where harm is unavoidable and justified in light of the benefits of a development, appropriate compensation should be sought.

- **Policy 3D.15:Trees and Woodland**
  Trees and woodland should be protected, maintained and enhanced in support of the London Tree and Woodland Framework

- **Policy 4 A.1: Tackling Climate Change**
  Developments will need to make the fullest contribution to the mitigation of and adaptation to climate change and to minimise emissions of carbon dioxide. The Energy hierarchy set out will be used to assess applications
- **Policy 4A.2: Mitigating Climate Change**
  The Mayor will work towards the long term reduction of carbon dioxide emissions by 60% by 2050 and the following minimum reduction targets for London against a 1990 base: 15% by 2010; 20% by 2015; 25% by 2020; and 30% by 2025.

- **Policy 4A.3 Sustainable Design and Construction**
  Future developments will need to meet the highest standards of sustainable design and construction. All major applications will need to include a statement on the potential implications of the development on sustainable design and construction. The statement should address demolition, construction and long term management

- **Policy 4A.4: Energy Assessment**
  An assessment of the energy demand and carbon dioxide emissions of proposed major development is required, which should explain the steps taken to reduce energy needs of as development, supply energy efficiently and make use of renewable energy.

- **Policy 4A.5: Provision of Heating and Cooling Networks**
  Boroughs should identify and safeguard existing heating and cooling networks and maximise the opportunities for providing new networks that are supplied by decentralised energy. All new development should be designed to connect to the heating and cooling network.

- **Policy 4 A.7: Decentralised Energy: Heating, Cooling and Power**
  All developments should demonstrate that their heating, cooling and power systems have been selected to minimise carbon dioxide emissions. Developments should evaluate combined cooling, heat and power and combined heat and power systems and the opportunities to extend schemes beyond the site boundary.

- **Policy 4A.7: Renewable Energy**
  Developments will achieve a reduction in carbon dioxide emissions of 20% from on-site renewable energy generation (which can include sources of decentralised renewable energy) unless it can be demonstrated that such provision is not feasible.

- **Policy 4A.9: Adaptation to Climate Change**
  The most effective adaptation to climate change should be promoted and supported.

- **Policy 4A.10: Overheating**
  Development should be strongly encouraged that avoids internal overheating and excessive heat generation and contributes to the prevention of further over heating.

- **Policy 4A.11: Living Roofs and Walls**
  Major development will be expected to incorporate living roofs and walls where feasible.

- **Policy 4A.12: Flooding**
  Boroughs should identify areas at risk from flooding, within which flood risk assessments of new development should be carried out in line with PPS25.

- **Policy 4A.13: Flood Risk Management**
  Where development in areas at risk of flooding is permitted the risks of flooding should be managed and the future increased risk and consequences of flooding as a result of climate change.

- **Policy 4A.14: Sustainable Drainage**
  Surface water run-off should be managed as close to its source as possible in line with the drainage hierarchy given. Sustainable Urban Drainage Systems should be promoted for development unless there are practical reasons for not doing so.

- **Policy 4A.15: Rising Groundwater**
  Where groundwater is an existing or potential problem, reasonable steps should be taken to abstract and use that groundwater.

- **Policy 4A.16: Water Supplies and Resources**
  In determining planning applications propoer regard should be given to the impact of the proposals on water demand and existing capacity. A maximum water use target of 105 litres per person per day should be applied for residential development.

- **Policy 4A.17: Water Quality**
  Boroughs should protect and improve water quality to ensure that the Blue Ribbon network is healthy, attractive and offers a valuable series of habitats.

- **Policy 4A.19: Improving Air Quality**
  Boroughs should implement the Mayor's Air Quality Strategy and achieve reductions in pollutant emissions and public exposure to pollution.

- **Policy 4A.20: Reducing Noise and Enhancing Soundscapes**
  A reduction of the negative impacts of noise will be sought by: minimising existing and potential adverse impacts of noise within or in the vicinity of development proposals; separating new noise sensitive development from major noise sources; reducing noise at source through new technologies and containing noise from late night entertainment and other 24-hour activities; and protecting areas of tranquility.

- **Policy 4A.21: Waste Strategic Policy and Targets**
  This seeks to minimise the level of waste generated, increase re-use and recycling and composting of waste and reduce landfill disposal and set outt he recycling targets that should be met.

- **Policy 4A.22: Spatial Policies for Waste Management**
  This seeks sufficient waste management facilities in London, including the provision of suitable waste and recycling storage facilities in new development.

- **Policy 4A.28: Construction, Excavation and Demolition Waste**
  Developers should be required to produce Site Waste Management Plans to arrange for efficient materials and waste handling. Waste and materials should be transported to and from the site by rail or water transport wherever practicable.

- **Policy 4A.30: Better Use of Aggregates**
  95% of construction and demolition waste should be recycled and re-used by 2020. 80% of that waste should be aggregates in London by 2020.

The London Plan is supported by supplementary planning guidance covering sustainable design and construction and renewable energy.

Local Planning Policy - the Southwark Plan

One of the key visions of the Southwark Plan is that all development achieves or contributes towards sustainable development (Strategic Policy 1). This is echoed by other strategic policies which seek to protect and improve amenity and environmental quality (Strategic Policy 11), reduce pollution and improve environmental performance on buildings (Strategic Policy 12), promote the efficient use of land (Strategic Policy 14), promote more sustainable transport (Strategic Policy 18) and reduce the need to travel (Strategic Policy 19).

All the policies of the Southwark Plan are aimed at creating sustainable communities that improve the quality of life in the borough without compromising the needs of others or the natural environment. These include those that deal with creating wealth and reducing poverty, good quality urban design and architecture, providing housing that meets need and ensuring development is accessible. Many of these policies are or will be supported by planning guidance, such as the draft Design and Access Statement SPD.

The SPD specifically provides further guidance on the following policies that relate to the environmental performance of buildings:

- **Policy 3.1: Environmental effects**
  States that planning permission will not be granted for development that has a negative impact.

- **Policy 3.2: Protection of amenity**
  States that planning permission will not be granted for development that causes loss of amenity, including disturbance from noise, to present and future occupiers on or nearby the site.

- **Policy 3.4: Energy efficiency**
  Requires all development must be designed to minimise energy consumption and carbon dioxide emissions. An energy assessment of major development is required.

- **Policy 3.5: Renewable energy**
  Requires new development to incorporate renewable energy technology and design where this would not make the development unviable. For major development outside conservation areas, renewable energy sources should provide at least 10% of the development's energy needs.

- **Policy 3.6: Air quality**
  States that planning permission will not be granted to development that has a negative impact on quality.

- **Policy 3.7: Waste reduction**
  Requires all developments to provide adequate and convenient facilities on-site for the storage and collection of waste and recyclable materials and for composting. Proposals need to explain how the waste minimisation, reuse and recycling will be incorporated into the construction and operation of the development.

- **Policy 3.9: Water**
  States that all development should incorporate measures to reduce demand for water and recycle grey water and rainwater. In addition, all development must ensure it does not lead to a reduction in water quality and that there is no increase in surface water run-off form the site. Major developments are required to incorporate sustainable methods of drainage.

- **Policy 3.10: Hazardous substances**
  States that development should not put people or the environment at risk from hazardous substances.

- **• Policy 3.13: Urban Design**
  States that good urban design should be achieved by all developments, which includes enhancing biodiversity through landscaping.

- **Policy 3.28: Biodiversity**
  States that biodiversity will be taken into account when all planning applications are being decided. The inclusion in development of features that improve biodiversity is encouraged. Ecological assessments will be required where relevant.

  The policy also states that development will not be allowed to damage the nature conservation value of Sites of Importance for Nature Conservation and Local Nature Reserves or damage protected or priority species or habitats. Where, in exceptional cases, damage is allowed to occur, the council will seek mitigation or compensation.

  Planning obligations may be used to protect and enhance the biodiversity of Southwark.

- **Policy 3.29: Development within the Thames Policy Area**
  This policy requires all development in the Thames Policy Area to protect and enhance the character and quality of the River Thames and the Thameside. This includes ensuring protecting the biodiversity and nature conservation value of the River and taking a precautionary approach to flood risk.

- **Policy 3.31: Flood Defences**
  This policy states that development adjacent to the River Thames will need to be set back from the river wall. Planning permission will not be given to any development that undermines or breaches flood defences in any way.

Planning policy supported by this SPD

Energy Use, Minimising Climate Change, Adapting to Climate Change
UDP • Policy 3.4 – Energy efficiency • Policy 3.5 Renewable energy **London Plan** • Policy 4A.1 – Tackling Climate Change • Policy 4A.2 – mitigating Climate Change • Policy 4A.3 – Sustainable Design and construction • Policy 4A.4 – Energy assessment • Policy 4A.5 – Provision of heating and cooling networks • Policy 4A.6 – Decentralised Energy: heating, cooling and power • Policy 4A.7 Renewable Energy • Policy 4A.8 Hydrogen Economy • Policy 4A.9 – Adaptation to Climate Change **PPS** • Planning and Climate Change Supplement to PPS1 • PPS22 – Renewable Energy
Improve air quality in Southwark
UDP • Policy 3.1 – Environmental effects • Policy 3.2 – Protection of amenity • Policy 3.6 – Air quality **London Plan** • Policy 4A.19 – Improving air quality **PPS** • PPS23 – Planning and Pollution Control

Reduce water pollution

UDP

- Policy 3.1 – Environmental effects
- Policy 3.9 - Water
- Policy 3.10 – Hazardous substances
- Policy 3.29 – Development within the Thames Policy Area

London Plan

- Policy 4A.14 – Sustainable Drainage
- Policy 4A.15– Rising groundwater
- Policy 4A.16 Water supplies and resources
- Policy 4A.17 water quality
- Policy 4.18 Water and sewerage infrastructure

PPS

- PPS23 – Planning and Pollution Control

Reduce disturbance from noise

UDP

- Policy 3.2 – Protection of amenity

London Plan

- Policy 4A.20 – Reducing noise and enhancing soundscapes

PPS

- PPG24 – Planning and Noise

Reduce disturbance from artificial light

UDP

- Policy 3.1 – Environmental effects
- Policy 3.2 – Protection of amenity

Maintain and enhance the quality of land and soils

UDP

- Policy 3.1 – Environmental effects
- Policy 3.10 – Hazardous substances

London Plan

- Policy 4A.33 – Bringing contaminated land into beneficial use
- Policy 4A.34 Dealing with hazardous substances

PPS

- PPS23 - Planning and Pollution Control

Reduce amount of waste being created and ending in landfill

UDP

- Policy 3.1 – Environmental effects
- Policy 3.7 – Waste reduction

London Plan

- Policy 4A.21 – Waste strategic policy and targets
- Policy 4A.22 – Spatial policies for waste management
- Policy 4A.28 – Construction, excavation and demolition waste
- Policy 4A.30 – Better use of aggregates

PPS

- PPS10 – Planning for Sustainable Waste Management

Protect and enhance biodiversity

UDP

- Policy 3.1 – Environmental Effects
- Policy 3.28 - Biodiversity
- Policy 3.29 – Development within the Thames Policy Area

London Plan

- Policy 3D.14 – Biodiversity and nature conservation
- Policy 4A.11 Green Roofs/Walls

PPS

- PPS9- Biodiversity and Geological Conservation

National law

- Habitats Regulation 1994
- Wildlife and Countryside Act 1981

Reduce water consumption

UDP

- Policy 3.1 – Environmental Effects
- Policy 3.9 – Water

London Plan

- Policy 4A.16 – Water supplies and resources

Reduce vulnerability to flooding

UDP

- Policy 3.1 – Environmental Effects
- Policy 3.9 – Water
- Policy 3.29 – Development within the Thames Policy Area
- Policy 3.31 – Flood Defences

London Plan

- Policy 4A.12 – Flood ing
- Policy 4A.13 Flood Risk Management
- Policy 4A.14 – Sustainable drainage
- Policy 4A.15 rising groundwater

PPS

- PPS25 – Development and Flood Risk

APPENDIX 2: The causes and consequences of the environmental issues in Southwark

What are the environmental issues we need to consider?

The table below outlines the key environmental issues faced in Southwark, their causes and their consequences.

Issue	Causes	Consequences
Climate change Most scientists agree the earth's temperature is getting warmer as a result of human activity.	Rising levels of carbon dioxide (CO2) in the atmosphere from burning fossil fuels to produce electricity, drive transport, construct and heat buildings and produce food and other goods, including building materials. Energy use in buildings is responsible for a large amount of CO2 emissions in Southwark. Methane produced from landfill also contributes to climate change.	This is one of the most serious problems facing the world. Even if emissions are reduced some climate change is inevitable, resulting in hotter drier summers, warmer wetter winters, more extreme weather, and rising sea levels. This will have implications for people's health, safety and comfort and on food production.
Air pollution The majority of Southwark is located within a designated Air Quality Management Area.	Emissions from power plant, vehicles, chimneys and industry. Emissions of fine particles (PM10) and nitrogen oxides (NOx) are the most damaging. Dust blown from construction sites also contributes to external air pollution. Inside buildings, chemicals used in building materials and furnishings can lead to poor air quality. This is made worse by poor ventilation. Climate change will make air pollution worse as a result of hotter drier weather.	Short and long term health impacts, including aggravation of existing heart and lung illnesses. The elderly, very young and sick could be affected more than others. It can also damage plants and ecosystems, for example from acid rain. As well as causing damage to buildings through surface corrosion.
Water pollution This is closely linked to air and soil pollution, climate change and flood risk.	Water run-off from the urban environment washes chemicals, sediment and litter from pavements and roads, construction sites, industry and gardens into waterways. Contaminated soil and landfill sites also cause water pollution. Chemical spills from industrial sites or construction sites can also pollute nearby waterways. Increases in hard surfaces will increase the amount of run-off. Climate change will increase the amount of extreme weather and flash flooding events.	It can cause damage to wildlife and river habitats. It can also affect human health through direct contact with water or by eating contaminated seafood.

Noise pollution Dense mixed use urban areas have higher concentrations of noise.	Traffic, industrial activity, construction activity, mechanical ventilation, recreation and entertainment venues and areas where people gather in large numbers. Placing noise generating and noise sensitive uses close together and not providing enough sound insulation make the problem worse.	Noise can have significant impacts on people's health and quality of life and can be the cause of stress, disputes, low productivity in the workplace and also damage wildlife areas.
Light pollution Dense urban areas have higher levels of artificial lighting.	Poorly designed or directed lighting of streets and public spaces, external areas of buildings, and flood lighting of outdoor sports facilities can cause light pollution. Lighting left on unnecessarily can also lead to light pollution.	Energy wastage, which can contribute to climate change and high running costs. Light pollution can also impact on people's quality of life, causing stress and disrupting sleep. It can also be damaging to wildlife.
Land contamination Many areas of the borough have been in industrial use at some point or have experienced bombing.	Harmful chemicals used in industrial activities can become absorbed by land in, on or under a site. Rubbish in landfill can also contaminate land. There could be unexploded ammunition from war bombing on sites, or shrapnel from exploded bombs could contaminate land.	Chemicals can be harmful to people's health, including causing cancer and infertility. Wildlife can also be harmed. If contaminated land is to be developed for a different more sensitive use such as housing it will need to be cleaned. Contaminated land also pollutes groundwater and waterways.
Increasing amounts of waste Disposing of waste in landfill sites has economic and environmental costs.	Left over materials from demolition and construction activities. Excessive packaging and increased consumption of goods. By-products from manufacturing processes and industrial/ commercial activities. A lack of space and facilities to separate for recycling and composting.	Rubbish sent to landfill can lead to water and air pollution and land contamination. Landfill is not an efficient use of land and destroys habitat. Methane produced in landfill contributes to climate change. Litter is unsightly and can be dangerous to animals. Energy is wasted processing waste and producing goods from raw materials.
Loss of biodiversity In urban environments traditional habitats have been lost and native plants and animals are under threat.	Clearing of habitat to allow development and recreation, paving of gardens, air, water, soil and light pollution, climate change, pesticide and fertiliser use, dogs and invasive weed species all contribute to the loss of biodiversity in the borough. Poorly managed construction activities and inappropriate maintenance of green spaces also contributes to the loss of plants and animals.	Birds, stag beetles, bats and amphibians are particularly affected. Many species of plants and animals are now protected by law. Increased pollution as plants help filter air, water and soil and also help control water run-off. Plants also absorb CO2 and help keep urban environments cool. The natural environment is also important to the health and wellbeing of humans. The loss of natural habitat means parks and gardens have become important habitats. Parts of buildings, such as roofs, may also become important habitat.

Water scarcity The borough is within an area of serious water stress - the amount of water being used is close to the total amount of water available, and demand for water is rising.	A growing population, inefficient appliances and fittings, leaking taps and pipes, non-native plants all contribute to increased demand for water. Climate change will result in hotter, drier summers, which could reduce the amount of water available.	In the short-term there could be increasing water restrictions. Longer-term consequences could include water shortages and rising water prices. Currently, all mains water is treated to drinking standard, which is an expensive and energy intensive process.
Flood risk A large part of the borough is within the River Thames floodplain, though is protected to a certain extent by the Thames Barrier. Water and sewerage infrastructure also pose a risk.	Poorly maintained drainage and piping, increasing amounts of hard surfaces from new development and poorly maintained flood defences will increase the risk and severity of flooding. The soils in the borough are clay, which becomes waterlogged easily. Climate change will also increase flood risk as it will result in rising sea levels and more extreme weather which could mean existing defences are not enough to protect against flooding.	Increasing number of lives and livelihoods in danger. Increasing investment required to maintain flood defences. Responding to flood events and repairing damage also costs the community through business losses, insurance bills and environmental damage.

What are the benefits of good design and construction?

Clearly, sustainable design and construction will have direct benefits for the environment by helping to overcome the issues described above. However, the community, occupants of the development and even developers will also benefit in the following ways:

Community benefits

- Improved health from cleaner air, water and soil. Improved green spaces will also encourage walking and cycling and improve the character of areas.
- Reduced damage in the event of a flood. Businesses can reopen faster.
- Greater awareness of nature and how our lifestyles impact on it.
- Benefits to local business from using local suppliers and labour.
- An improved sense of community from a cleaner greener environment and cutting edge development.
- Better prepared for the consequences of climate change

Benefits for occupants

- Reduced running costs through energy and water efficient buildings and landscaping. There could also be less maintenance required.
- More reliable and cheaper energy supply.

- More pleasant and healthy environments, for example from more natural lighting, better indoor air quality and the ability to adapt buildings to changing needs.
- Greater safety in the event of a flood.
- Reducing the carbon footprint of occupiers. This could become increasingly important if the Government introduces a system of carbon credits.

Benefits for developers

- Cost savings through more efficient use of materials and better planned development and construction
- Improved reputation
- Improved profile of a development and marketability. With increasing media attention on environmental issues, particularly climate change, there is a growing demand among the public for more sustainable products and services.
- The Government now also requires that all homes up for sale or rent have a formal energy efficiency rating (known as "Energy Performance Certificate"). Since May 2008 all new homes also have to have a rating against the Code for Sustainable Homes. All this information needs to be made available to prospective occupants.
- Improved property values as a result of the benefits offered to occupants.

How much does sustainable design and construction cost?

It is commonly assumed that including sustainability features in a development will greatly increase its costs. However, research has indicated that significant improvements in performance can be achieved at little extra cost and usually increased cost can be covered by increase in the value of the development and savings in operating costs.

In 2005, the Building and Research Establishment (BRE) estimated that achieving an excellent standard of performance in a location like Southwark (as measured by BREEAM) would add 3.3% to capital costs for a typical office scheme.

More recent investigations for Communities and Local Government in 2008[2] have shown that achieving Level 3[3] of the Code for Sustainable Homes would cost between 4% and 8% more to build than building to current Building Regulations standards. Achieving Level 4[4] would cost between 7% and 11% more than building to the Building Regulations. Costs are lowest for apartment style developments than for terrace and detached houses. Costs also tend to be lowest where renewable energy technology or site-wide combined heat and power (CHP) systems are used.

[2] A Cost Review of the Code for Sustainable Homes, Report for English Partnerships and the Housing Corporation, February 2007
[3] This means a 25% reduction in carbon dioxide emissions per home and water-usage of 105L/p/day
[4] This means a 44% reduction in carbon dioxide emissions per home and water usage of 105L/p/day

These costs need to be balanced with savings in running costs that would be achieved. These savings will grow as the price of energy increases. Also it is important to note that as technologies and skills in sustainable design and construction improve, the costs of achieving high levels of performance will come down.

By thinking about sustainability at the beginning of the design process the costs will be cheaper than adding on extras later in the process. Better planning of the construction process will also reduce costs by allowing more efficient use of building materials.

Finally, the costs of achieving sustainable design and construction should be considered against the consequences of not responding to the environmental challenges faced in Southwark.

i The following documents provide more information on putting a price on sustainable design and construction:

- Making Money from Sustainable Homes: A Developer's Guide, Elliot Carter, published by the Chartered Institute of Building and PDM Consultants.
- Costing sustainability: How much does it cost to achieve BREEAM and EcoHomes ratings? Building Research Establishment, 2005 www.bre.co.uk
- Cost Analysuis of the Code for Sustainable Homes – Final Report, Communities and Local Government, Juliy 2008
- A Cost Review of the Code for Sustainable Homes, Report for English Partnerships and the Housing Corporation by Cyril Sweet, February 2007

APPENDIX 3: Bin types and dimensions

The following table identifies the most commonly used bins for different development types.

Development type	Recycling	Non-recyclables
Detached, semi-detached houses or terraces that have their own yards at ground level	Blue box for each house for paper/ card and plastic/cans. A reusable bag for paper.	240L Wheeled bin for each house
Small flat developments (under 10 units)	Shared usage of separate 240L wheeled bins for each material.	240L wheeled bins, shared storage
Large flat developments	Shared usage of separate 1100L wheeled bins for each material.	1100L Eurobins, shared storage (Or Chute containers could be used)
Non-residential development	Will depend on the size and type of the development and the collection service.	

Bin Descriptions

Type	Capacity	Width	Depth	Height	Notes
Blue recycling box	55L	570mm	440mm	345mm	Plastic. Usually distributed with a blue bag for paper.
Wheeled Bin	240L 180L	585mm 480mm	730mm 730mm	1100mm 1070mm	Plastic bins with wheels.
Chute bin	720L 940L	1040mm 1040mm	790mm 980mm	1430mm 1430mm	These are wheeled bins and used for communal refuse storage in medium and high rise development. They are normally housed in chambers that form part of the building and are fed via chutes with hoppers at each floor.
Eurobins	1100L 660L	1270mm 1265mm	1000mm 740mm	1380mm 1320mm	These are large heavy metal wheeled bins, used as an alternative to chute bins. They have the advantage of a lower loading height.

APPENDIX 4: Protected, priority and problem species

The following table lists the protected and priority species most likely to occur in the borough. This table should be used as a guide only. It is possible that these species, and others, could be present on most sites. For more information on legal requirements, you should refer directly to the laws listed.

Key Species in Southwark	Level of protection	Most likely to be found	Development that could cause harm or disturbance
Common pipistrelle (bat)	The highest level of protection. All species of bats are protected by the Habitats Regulation 1994. This means that as well the bats themselves being protected from harm or deliberate disturbance, their breeding or nesting sites are also protected from damage or destruction – even if they are not in use. The Wildlife and Countryside Act 1981 also applies and makes it illegal to block access to nesting to breeding sites.	Hibernates frequently in cavities in buildings, such as inside cavity walls and roofs or under eaves – where there is a small crack or gap for them to get in. Usually older buildings, however breeding sites are often found in modern housing estates. Also found in crevices and hollows or under the bark of large trees with complex growth forms.	Removal or works to trees. Works affecting roof or roof space of a building, particularly housing. Demolition or major repairs or alterations to external structure of a building. Changes to external lighting.
Soprano pipistrelle (bat)			
Daubenton's bat		Hole dwellwer. May enter roof voids and roost at apex. Hibernates usually in underground structures such as cellars and tunnels. May also be found under bark or cavities of large trees.	
Noctule (bat)		Hole dweller. Rarely in buildings and unlikely to fly inside. Mainly in tree cavities and under bark.	
Great Crested Newt (amphibian)	The Habitats Regulation 1994 protects the Great Crested Newt as well as places used for nesting or breeding. The Wildlife and Countryside Act 1981 also applies, making it illegal to block access to breeding and nesting sites.	Medium sized ponds (100 – 300sqm) which are well vegetated and not too shaded for breeding. And sites with dense ground vegetation within 500m of a pond, including scrub, woodland, and hedgerows and rough grassland.	Development that impacts on ponds. Clearing, cutting, digging or storing materials on dense vegetation within 500m of a pond.
Black Redstart (bird)	Special protection under the Wildlife and Countryside Act 1981 from deliberate harm as well as deliberate or reckless disturbance. This protection includes the birds, their eggs and their nests while they are in active use or being built.	Derelict or relatively undisturbed buildings, particularly along rivers and canals, with sparsely vegetated areas or rocky terrain for foraging nearby.	Redevelopment works or works affecting structure of derelict or relatively undisturbed buildings.

House Sparrow (bird)	Protection under the Wildlife and Countryside Act 1981 from deliberate harm. This protection includes the birds, their eggs and their nests while they are in active use or being built.	Large trees and scrub, tall vegetation, derelict or relatively undisturbed buildings. Particularly where there is abundant deadwood, cavities, splits and hollows. Swfits tend to nest on roofs of pre-1944 buildings.	Removal or works to trees. Clearing of scrub or vegetation. Redevelopment works or works affecting structure of derelict or relatively undisturbed buildings. Works affecting roof ot roof space of a building.
Lesser spotted woodpecker (bird)			
Linnet (bird)			
Reed bunting (bird)			
Song thrush (bird)			
Starling (bird)			
Swifts (bird)			
Slow-worm (lizard)	Under the Wildlife and Countryside Act 1981it is illegal to intentionally kill or injure these animals.	Variety of habitats including vegetated areas, brownfield sites, railway embankments	Digging on a site, clearing land, cutting vegetation to a low height, storing construction materials, removing rubble and other debris.
Stag Beetle	These are not legally protected by law, but are listed as a priority species under the UK, London and Southwark Biodiversity Action Plans.	Sites with dead wood at ground level, apart from wood from coniferous species. The beetle does not eat live wood. It is more common in the south of the borough, particularly around Dulwich.	Removal of deadwood. Stump grinding.
Other priority species for action	The London Biodiversity Action Plan and Southwark Biodiversity Action contain lists of species of animals which are a priority for conservation action. These can be found in a variety of locations		

The following table lists recommended and priority plant species and habitat types that the council is looking to protect and increase across the borough. These species support bats, birds, butterflies and other wildlife and so will have a positive impact on biodiversity. They should be considered as part of planning and designing new development, where site conditions are suitable. Other species may also be appropriate and can be discussed with council's Ecology Officer.

Problem species are also listed which should not be planted. Where they exist on a site they should be replaced with more appropriate plant species.

Priority habitats	
Key priority habitats	Meadow, woodland, reed beds, wetlands, wasteland, standing water, The Thames, churchyards and cemeteries
Other priority plant species	The London Biodiversity Action Plan and Southwark Biodiversity Action contain lists of species of plants which are a priority for conservation action. These can be found in a variety of locations including private gardens.
Recommended plants	
Trees	English Oak (for Large Gardens/Spaces only), Birch, Ash, Field maple, Black Poplar (a London priority Species), Hawthorn, Blackthorn, Hornbeam and Rowan
Shrubs	Dog rose, Gorse, Hazel, Hebe, Guelder rose, viburnum Cotoneaster (various), Mahonia, Pyracanther, Rubus, and Escallonia.
Climbers	Honeysuckle Native and European, White jasmine, Native Ivy (Very good for birds and bats) and Sweet briar
Herbs/flowers	Angelica, Fennel, English marigolds, Lavenders, Lemon balm, Echinacea, Poppies, Ox-eye daisy, Evening primrose, michaelmas daisy, red valerian, St John's wort, Sweet William, Mallow, Cherry pie and Sedums (often used in green roofs).
Problem species	
These are non-native species that have spread throughout the borough stopping other plants from growing or poisoning animals. More details can be found in the Southwark Biodiversity Action Plan.	Japanese knotweed, Giant hog weed, Spear thistle, Parrots feather (Aquatic plant), Australian swamp stonecrop, Broad-leaved dock and Creeping or field thistle

APPENDIX 5: Guidance for developing in f ood risk areas

Standards			PPS25 Flood Zone Zone 3a High Probability (refer Figure1)		
			Extreme & Significant Hazard	Medium Hazard	Low Hazard
Floor Level (refer Section 6.6.2 of Southwark SFRA for more detail)	More Vulnerable Development	Rate of Inundation <6hrs	No residential development is permitted at ground floor level. Ground floor levels for non residential development should be situated 300mm above the Q200 plus Climate Change flood level, assuming a breach of the River Thames defences		
		6 to 12hrs	Ground floor levels should be situated 300mm above the Q200 plus Climate Change flood level, assuming a breach of the River Thames defences		Flood resilient design techniques should be adopted to mitigate the potential damage to property in case of flooding.
		Rate of Inundation >12hrs	Flood resilient design techniques should be adopted to mitigate the potential damage to property in case of flooding.		
	Less Vulnerable Development		Flood resilient design techniques should be adopted to mitigate the potential damage to property in case of flooding.		
Site Access & Egress	More Vulnerable Development		Access and egress routes should be designed to meet Environment Agency defined criteria, as set out in Appendix B of Southwark's Strategic Flood Risk Assessment report. Only where this is not feasible, a dedicated 'safe haven' must be provided above the Q200 plus Climate Change flood level (assuming breach failure) to enable rapid escape should a failure of the defences occur. This may be provided in the form of a sheltered communal space within the building, accessed via internal stairs. It will be necessary to ensure that the safe haven is sufficient in size to safely house all residents.		Access and egress routes should be designed to meet Environment Agency defined criteria, as set out in Appendix B of the SFRA. It is essential to ensure that the nominated evacuation route does not divert evacuees onto a 'dry island' upon which essential supplies (ie. food, shelter and medical treatment) will not be available for the duration of the flood event.
	Less Vulnerable Development		Site specific emergency evacuation procedures must be in place to ensure that the risk to life is minimised should a breach of the River Thames defences occur. Coordination with the emergency services will be required in the event of a flooding emergency		
Basements (refer Figure C)	Rate of Inundation <6hrs		There is a potential risk to life where less than 6hours warning is available following a sudden breach of the River Thames defences. No basements permitted within this area.		
	6 to 12hrs		Basements must be restricted solely to non-residential uses within the 'extreme' hazard zone. Basements must be protected with a continuous secondary fixed flood defence and be provided with an internal access to above the Q200 plus climate change flood level, assuming a breach of the River Thames defences. Flood resilient design techniques must be used for all basements.	Basements must be flood resistant and have an internal access to above the Q200 plus climate change flood level, assuming a breach of the River Thames defences. Sleeping accommodation is not permitted at basement level. Flood resilient design techniques must be used for all basements.	Basements must be flood resistant, and have an internal access to above the Q200 plus climate change flood level, assuming a breach of the River Thames defences. Sleeping accommodation is not permitted at basement level. Flood resilient design techniques must be used for all basements.
	Rate of Inundation >12hrs		Basements must be flood resistant, and must have an internal access to a higher floor (situated 300mm above the Q200 plus climate change flood level, assuming breach failure). Sleeping accommodation is not permitted at basement level.		
Buffer Zone			A minimum buffer zone must be provided to 'top of bank' within sites immediately adjoining the River Thames. A 8m buffer will be sought along the River Thames. Advice must be sought from the Environment Agency at an early stage.		

Policy Response			PPS25 Flood Zone 2 Medium Probability	PPS25 Flood Zone 1 Low Probability
Important Considerations			Future development within Zone 2 Medium Probability can only be considered following application of the Sequential Test	It is important to recognise that sites within Zone 1 may be susceptible to flooding from other sources. Development may contribute to an increase in flood risk elsewhere if not carefully mitigated
			Areas of Zone 2 and Zone 1 that may be surrounded by flooding in case of a breach (i.e. Rotherhithe) must ensure site specific emergency evacuation procedures are in place to ensure that the risk to life is minimised should a flood occur. Coordination with the emergency services will be required in the event of a flooding emergency.	
Floor Level (refer Section 6.6.2 of Southwark SFRA for more detail)	More Vulnerable Development	Rate of Inundation <6hrs	Flood resilient design techniques should be adopted to mitigate the potential damage to property in case of flooding.	No minimum level stipulated by PPS25
		6 to 12hrs		
		Rate of Inundation >12hrs		
	Less Vulnerable Development			
Site Access & Egress	More Vulnerable Development		Site specific emergency evacuation procedures must be in place to ensure that the risk to life is minimised should a breach of the River Thames defences occur. Coordination with the emergency services will be required in the event of a flooding emergency	No minimum level stipulated by PPS25
	Less Vulnerable Development			
Basements (refer Figure C)	Rate of Inundation <6hrs		Basements must be flood resistant, and must have an internal access to a higher floor (situated 300mm above the Q200 plus climate change flood level, assuming breach failure). Flood resilient design techniques must be used for all basements.	No restrictions
	6 to 12hrs			
	Rate of Inundation >12hrs			
Buffer Zone			A minimum buffer zone must be provided to 'top of bank' within sites immediately adjoining the River Thames. A 16m buffer will be sought along the River Thames. Advice must be sought from the Environment Agency at an early stage	

APPENDIX 6: Requirements for supporting assessments

Energy Demand and Carbon Dioxide Emissions Assessment Checklist

The assessment should cover the following issues:

- Provide an executive summary to describe the key energy efficiency measures proposed, any proposed CHP/CCHP/district heating and cooling technologies, and the renewable technologies which are incorporated in the development. Summarise the energy demand and carbon dioxide emissions generated by the development.
- Calculate the baseline energy use of the building and the corresponding carbon emissions arising from the development. This should include all energy uses (see note 1).
- Describe the passive design measures which are proposed to maximise the energy efficiency of the development.
- Describe the consideration that has been given to supplying energy efficiently and connecting to CHP/CCHP systems as set out in sections 3.3 and 3.4.
- Calculate the energy use of the building and the corresponding carbon emissions arising from the development having applied the energy hierarchy (see note 2).
- Describe the renewable technologies which have been assessed as part of the study.
- Calculate the contribution to carbon emissions reduction of each renewable technology included in the study.
- Calculate the costs of technically feasible renewable technologies included in the study. This is particularly important where cost is a factor in ruling out renewable technologies.
- Assess the benefits of technically feasible renewable technologies. Developers should consider the potential benefits of renewables to themselves and others, as part of the process of deciding which technologies to include in development proposals. This could include considering running costs reductions or other whole life benefits to the end users of the building. It should also take into account impacts on air quality.
- Calculate the carbon savings achieved through the use of renewable technologies as a percentage of the residual carbon emissions generated having applied energy efficiency measures and CHP/CCHP/district heating and cooling technologies

Note 1

- In the case of dwellings this includes: Space heating, Ventilation, Hot water, Cooking, Lights and appliances.
- In the case of commercial developments, the following end uses should be included in the baseline: Space heating and hot water, Gas and/or electric catering, Refrigeration/cooling, Air conditioning, Fans, pumps & controls, Humidification, Lighting and office equipment, Centralised IT (server room) and communications equipment, Other miscellaneous electricity.
- The baseline should include energy consumption for all elements of the proposal, including private infrastructure, such as flood and car park lighting, and heating and lighting of any communal areas, such as lobbies and car parks.
- It should be calculated using the Government's standard assessment procedure (SAP) which is required by the Building Regulations (which covers space heating and hot water) and BREDEM-12 for other end uses (note that the Building Regulations only regulate space heating and hot water; they do not assess appliances and cooking). A number of domestic software models implement the BREDEM-12 calculations, e.g. NHER Builder.
- The Low Carbon Designer toolkit may be used to help benchmark a scheme.

Note 2

- In calculating the CO2 generated by the proposal, applicants should use the carbon emissions factors set out in the current version of Building Regulations.
- However where developments will connect to the multi-utility services company (MUSCo) planned at the Elephant and Castle, the council will accept a lower carbon factor for heat supplied from CHP ie. 0.074 kgCO2/kWh. Developments which connect to the MUSCo may also adopt the following carbon intensity factor for electricity supplied by private wire network: 0.309 kgCO2/kWh.

You should present your information in a similar format to the following tables

Baseline Energy Table

Proposed residential dwellings							
Method for energy calculation:							
Floor area:							
	Baseline scheme			Energy demand and CO2 generated by proposed development after energy hierarchy has been applied.			
	Energy consumption (kWh/year	CO2 emissions per year (kgCO2/year	CO2 emissions per year per m2 (kgCO2/year/m2)	Energy consumption (kWh/year)	CO2 emissions per year (kgCO2/year)	CO2 emissions per year per m2 (kgCO2/year/m2)	CO2 reduction (%)
Gas consumption							
Space heating							
Water heating							
Cooking							
Add lines as necessary							
Total site gas demand							
Electricity consumption							
Lighting & appliances							
Electricity for cooling							
Add lines as necessary							
Total site electricity demand							
Total Residential							
Proposed non-residential development							
repeat as above							
Total Commercial							
Development total (residential and non residential combined)							

Summary Table

Energy and the Building Regulations	Energy	CO2 emissions	Percentage of CO2 reduction achieved
Notional emission rate (NER)	kWh/year	kgCO2/year	
Target emission rate (TER)	kWh/year	kgCO2/year	
Proposed building emission rate/dwelling emission rate (BER/DER)	kWh/year	kgCO2/year	%
Energy efficiency, clean supply of energy and renewable technologies	**Energy**	**CO2 emissions**	**Percentage of CO2 reduction achieved**
Baseline scheme	kWh/year	kgCO2/year	
Energy demand and CO2 generated by proposed development after energy efficiency measures have been applied.	kWh/year	kgCO2/year	%
Energy demand and CO2 generated by proposed development after CHP/CCHP/district heating and cooling technologies have been applied.	kWh/year	kgCO2/year	%
Savings needed to meet London Plan 20% renewables target.	kWh/year	kgCO2/year	
Proposed savings achieved through the inclusion of renewable technologies	kWh/year	kgCO2/year	%
Remaining demand after emergy efficiency measures, CHP/ CCHP/district heating and cooling technologies and renewable technologies have been applied.	kWh/year	kgCO2/year	

Renewable technologies

Type of renewable technology	Wind turbine/biomass boiler/etc.
Baseline scheme	kWh/year kgCO2/m2/year
Size of system	kW or m2 panel area
Manufacturer and model of system	
Energy generated	kWh/year
Total energy required to operate renewable technology (where applicable)	kWh/year
Type of energy displaced	Gas/electricity/other
Percentage of end use displaced	%
CO2 saved	kgCO2/year
Percentage of CO2 emissions saved	%
Estimated lifespan	years
Total capital cost	£
Financial savings per year	£/pa
Financial savings over lifespan	£
Financial payback period	years

Biomass Heating Supplementary Information

If biomass heating is proposed as a source of energy, the issues below should be addressed within the energy assessment:

Use

Specify if biomass heating will be the principal source of heating/hot water or supplementary

Plans

- Provide a site plan and elevations showing the location of the boiler plant room, exhaust stack, nearest open-able windows and any fan assisted intake air vents, fuel storage area and access and exit route for fuel delivery vehicles

Details of Combustion Appliance

- Specify the make, model, manufacturer, thermal capacity (kW/mW), efficiency, and compliance of the system with BS EN303-5
- Provide certification that the proposed system has been tested and is scheduled as an 'exempt appliance' under the Clean Air Act 1993
- Describe the fuel feed system, including details of whether it is manual or automatic, and the maximum rate of fuel consumption in kg/hr or m3/hr
- Describe the combustion system and grate design. Is the grate static or moving?
- Describe the method for handling variable heat loads and linkages to an accumulation tank
- Describe the method of controlling the air/fuel ratio
- Describe the method of optimising combustion to reduce NOx and particle pollution emission and/or other design or operational features to reduce emissions

Flue/Stack Details

- Indicate the heights of proposed development, proposed flue/stack, the calculation methodology, including the height and distance of adjacent buildings, the location of openable windows and fan assisted intakes
- Specify the internal diameter (m), exhaust gas efflux velocity (m/s), fan assistance/ adjustable speed control, thermal insulation and sound insulation
- Compare the maximum particulate matter and nitrogen oxides emission rates (mg/m3) to standard reference conditions. Provide evidence to demonstrate that predicted emission will not have a significant impact on the air quality objectives for NO2 and PM10

Fuel Details

- Describe the fuel specification including origin, type of wood (chips, pellet, briquettes), particle size, nitrogen, moisture, ash content (%) and mechanical durability. State whether the fuel complies with EU or equivalent fuel quality standards CEN/TS 335. Set out the control methodology that will be used to ensure a constant fuel quality from your supplier
- Provide evidence to demonstrate that the biomass boiler combustion system is applicable to the fuel specification
- Describe the fuel storage arrangements, including capacity, temperature, humidity control, frequency of delivery [peak] and methods of controlling particle emission during delivery
- Set out the location of origen of the fuel source

Maintenance & Management

- Provide details of the responsibility for operating and maintaining the combustion plant
- Describe the maintenance schedule associated with the boiler, abatement equipment and stack, including frequency of boiler inspection and servicing by a trained boiler engineer
- Set out the arrangements for cleaning and de-ashing the appliance
- Describe the method of operational failure detection and response for plant and abatement equipment

Air Quality Assessment

The issues below should be addressed in an air quality assessment. Further information on air quality in Southwark can be found in Southwark's Air Quality Strategy and Improvement Plan 2002-2005 (www.southwark.gov.uk/YourCouncil/CouncilDepartments/environmentandhousingdept/EnvironmentLeisurePublications.html)

Relevant details of the proposed development

- A description of the development containing information relevant to the air quality assessment should be provided. This should identify any on-site sources of pollutants arising from the proposed uses (including heating systems) and provide an overview of the expected traffic changes or the changes in emissions from the site for a specified year, e.g. the opening year or year the project is completed if phased, and/or an air quality objective year. Local receptors should be identified, including residential and other sensitive uses such as schools and hospitals close to and within the proposed development, and specific locations where people are likely to be exposed for the appropriate averaging time. Ecologically sensitive areas should also be identified.

Description of the relevant air quality standards and objectives

- Identify relevant air quality objectives. Confirm that permits required under environmental legislation, such as those regulated by local authorities and the Environment Agency, have been obtained.

Details of the assessment method

- Provide details of the methods and the input data used for the assessment and any assumptions that have been made. Where a commonly applied method is used, a detailed description of the model is not required. However, details should be provided on all local input data and assumptions, including:
  - Traffic data used in the assessment;
  - Emission data;
  - Meteorological data;
  - Baseline pollutant concentrations;
  - Choice of baseline year, and whether it is a high, typical or low pollution year;
  - NOx:NO2 relationship; and
  - Other relevant input parameters used.

Results of the modelling assessment

- Details of model verification should be supplied. Model verification includes a comparison of the predicted versus measured concentrations, and allows an adjustment to be made to account for systematic errors. Such errors may include traffic flow uncertainties, vehicle emission estimates and estimated background concentrations. Model verification will be important, especially where predicted concentrations are close to the objective. A more complete description of the approach to model verification is provided in the most recent edition of the Local Air Quality Management Technical Guidance (LAQMTG).

Summary of the assessment results

- This should include the information required to assess the significance of the impacts of the development. As a minimum requirement, this should include:
  - Impacts of the construction phase of the development (usually on dust and PM10), including plant exhaust emissions;
  - The impact that changes in emissions will have on ambient air quality concentrations;
  - Any exceedences of the air quality objectives or EU air quality limit values brought about as a result of the development, or any worsening of a current breach (including their geographical extent);
  - Assess whether any of the actions contained within Southwark's Air Quality Strategy and Improvemenmt Plan will be directly compromised or rendered inoperative by the development.

Air quality impacts addressed through: design measures

- Depending on the significance of air quality impacts, the developer should consider design related measures which may reduce impacts. These may include:
  - Avoid creating street canyons
  - Habitable rooms - Consider placing away from façade fronting pollution source

- Non-opening front windows - Consider this option for worst affected locations, e.g. very close to busy roads and for first and ground floor units. Dual aspect flats are preferred in these locations.
- Balconies - May be best avoided in locations of poor air quality, especially at ground and first floors
- The sensitive location of parking areas.
- The siting of fresh air intake.

Air quality impacts addressed through: reducing the impacts of heating systems

- The developer demonstrates that emissions generated by heating systems can be abated to a satisfactory standard, particularly with reference to biomass fuels. Where biomass heating is proposed, applicants should address the matters set out in the Biomass Energy Checklist in their eneregy assessment.

Air quality impacts addressed through: travel measures

- Depending on the significance of air quality impacts, developers should consider travel related measures which may reduce impacts. These may include:
  - Preparing a green travel plan
  - Reducing the amount of parking provision to the minimum standard necessary to allow the development to operate.
  - Providing adequate cycle parking

Air quality impacts addressed through: construction and demolition measures

- Depending on the significance of air quality impacts, developers should consider demolition and construction related measures which may reduce impacts. This will include:
  - Preparation of method statement prepared in accordance with London Councils/GLA best practice guidance, The Control of Dust and Emissions in Construction and Demolition, 2007
  - A financial contribution towards air quality or dust monitoring during the demolition and construction phase through a s106 planning obligation.

Air quality impacts addressed through: post construction measures

- Depending on the significance of air quality impacts, developers should consider post construction measures which may reduce impacts. These may include:
  - A financial contribution towards air quality or dust monitoring through a s106 planning obligation.

Operational Waste Management Plan

The following issues should be addressed in an operational waste management plan. Further information on these and other areas of waste management can be found in British Standard BS5906: 2005 (Waste Management in Buildings - Code of Practice).

Provide a schedule of accommodation (a key factor as this forms the basis on which to estimate the volume and nature of waste to be managed)
a) Residential - the number of units and bedrooms (eg 4 x 2 bed)
b) Commercial - the number of units and floor area
c) Restaurants - number of covers (dining space)
d) Other

Estimate the volume of waste generation (per week - based on the information in the previous checklist question)
a) By activity, e.g. residential, commercial units, hotels, restaurants, bistros, bars, conference centres, health club, etc.
b) Residual waste (that which is not recyclable – see below)
c) Recyclable waste (e.g. Glass, Paper, Card, Cardboard, Plastics, Cans, and garden and organic waste where appropriate)

Describe the waste segregation arrangements
a) Household, Commercial and Recyclable waste to be segregated where possible
b) (N.B. - The Council currently collects separated recyclables and therefore separate containment would be required for each of the following waste fractions, a) glass, b) paper & card, and c) cans & plastics.)

Describe provision made for waste containment and treatment (e.g. compaction)
a) Type, dimension and number of waste receptacles being proposed.
b) Type and compaction ratio for any onsite treatment

Describe waste storage areas (Dimension and location etc.) and show on plans. Applicants should take the following into account in designing waste storage areas:
a) Storage areas should be located within 10m of nearest stopping point for collection vehicle
b) Storage areas should be located be within 30m of all residential units, excluding any vertical distances
c) Design should allow good access to bins
d) Doorways and entrances should be of sufficient width
e) Bin storage area should be a dedicated area (eg, not shared with bike area)

Describe the collection arrangements (access etc.)
a) No excessive slopes to be negotiated (1:12 gradient max.)
b) Step and kerb free access from storage area to collection point
c) Services roads to be constructed to standard for weight and vibrations of vehicle
d) Responsibilities of building management company should be specified where applicable

Tree Report

The matters which are set out below should be included in a tree report. The information should be shown on a single drawing at an appropriate scale (generally 1:200 or 1:500)

A topographical survey showing:

- The location of all trees, shrubs, hedges etc
- Other relevant features such as streams, boundary fences, buildings etc
- Spot heights in ground level throughout the site
- The approximate location of trees on land adjacent to the development site that might influence the site or might be important as part of the local landscape character

A tree survey undertaken by a qualified arboriculturalist to include:

- All trees shown in the topographical survey
- The identification of trees forming groups and areas of woodland plotted on a plan with details of species, size, number etc listed in a schedule,
- The recording of the quality and value of each tree or group of trees on the plan and on a schedule
- The categorisation of trees by retention value as shown in Table 1 of BS5837: 2005

Tree constraints plan in accordance with section 5 of BS5837: 2005.

Tree protection plan identifying:

- Trees selected for retention
- Trees to be removed
- The precise location for the erection of protective barriers and any other relevant physical protection
- The construction exclusion zone (CEZ).

Arboricultural implications assessment (AIA) showing:

- Any TPOs or conservation area protection
- The effect that the proposals may have on the amenity value of trees both on and near the site
- The above and below ground constraints, the construction of the proposed development including the proximity of trees to structures
- Whether the development can be modified to accommodate the retention of trees that would otherwise be at risk or lost
- Tree surgery works
- Infrastructure requirements such as lighting, access roads, etc
- The proposed use of the space
- Whether tree loss resulting from development can be adequately mitigated by new tree planting

Flood Risk Assessment (FRA) Checklist

The issues below should be addressed in a flood risk assessment. Further information on flood risk assessments is set out in Southwark's Strategic Flood Risk Assessment (SFRA) and Southwark's guidance on the PPS25 sequential test and also on the Environment Agency's website: www.environment-agency.gov.uk/research/planning/33098.aspx

For development proposed in Flood Zone 3a

- Demonstrate that there are no reasonably available sites in areas with a lower probability of flooding, including on a site within same flood zone which has a lower level of hazard that would be appropriate for the type of development or land use proposed, (the sequential approach described in PPS25). Higher vulnerability uses should be located on parts of the site with the lowest probability of flooding.
- Consider the vulnerability of the development to flooding from tidal and/or fluvial flooding as well as flooding from other sources (e.g. surface water drainage, groundwater). This will involve discussion with the council and the Environment Agency to confirm whether a localised risk of flooding exists at the proposed site.
- Consider the vulnerability of the development to flooding over the lifetime of the development (including the potential impacts of climate change), i.e. maximum water levels, flow paths and flood extents within the property and surrounding area. Flood levels should be determined assuming a breach of the River Thames defences. Two dimensional hydraulic modelling by suitably qualified engineers will typically be required to determine the risk of flooding to the site. This should be discussed with the Environment Agency at the earliest possible stage.
- Consider the potential of the development to increase flood risk elsewhere through the addition of hard surfaces, the effect of the new development on surface water runoff, and the effect of the new development on depth and speed of flooding to adjacent and surrounding property. This will require a detailed assessment, to be carried out by a suitably qualified engineer.
- Demonstrate that residual risks of flooding (after existing and proposed flood management and mitigation measures are taken into account) are acceptable. Measures may include flood resistant and resilient design, escape/evacuation, effective flood warning and emergency planning.
- Provide details of existing site levels, proposed site levels and proposed ground floor levels. All levels should be stated relevant to Ordnance Datum.
- Provide details of proposed sustainable urban drainage systems (SuDS) that will be implemented to reduce runoff from the site. Any SUDS design must take account of groundwater and geological conditions.
- Provide a statement summarising how the proposed development has contributed to a positive reduction in flood risk within the borough and how a reduction in flood risk has been achieved.

For development proposed in Flood Zone 2

- Demonstrate that there are no reasonably available sites in areas with a lower probability of flooding that would be appropriate to the type of development or land use proposed (the sequential approach described in PPS25). Higher vulnerability uses should be located on parts of the site with the lowest probability of flooding.
- Provide a high level flood risk assessment commensurate with the level of risk posed to the site and based upon readily available existing flooding information, sourced from the EA. It will be necessary to demonstrate that the residual risk of flooding to the property is effectively managed in accordance with the requirements set out in section 7 of Southwark's Strategic Flood Risk Assessment. Flood levels (underpinning the design of a development) should be determined assuming a breach of the River Thames defences.
- Consider the risk of alternative sources of flooding (e.g. urban drainage and/or groundwater). Sustainable urban drainage techniques must be employed to ensure no worsening to existing flooding problems elsewhere within the area.
- Provide a statement summarising how the proposed development has contributed to a positive reduction in flood risk within the borough.
- Provide details of proposed sustainable urban drainage systems (SUDS) that will be implemented to reduce runoff from the site. Any SUDS design must take account of groundwater and geological conditions.

For development proposed in Flood Zone 1

- For all sites greater than 1ha in area, a Flood Risk Assessment must be prepared that focuses on the risk of flooding from urban drainage, surface water and/or groundwater. Details of proposed sustainable drainage systems (SUDS) that will be implemented should be provided to ensure that runoff from the site is reduced. Any SUDS design must take due account of groundwater and geological conditions.

APPENDIX 7: Glossary

Biofuel
Organic matter such as forestry/agricultural residues or purpose grown crops that can be used to produce energy.

Building Regulations (Part L)
The part of the Building Regulations that covers the conservation of energy and power within buildings. A revised version came into force in April 2006.

BREEAM
The Building Research Establishment Environmental Assessment Method (BREEAM) is an industry measure of energy and environmental performance of commercial buildings.

Carbon Dioxide
The burning of fossil fuels releases carbon dioxide (CO2). Although naturally occurring, its increasing concentration in the atmosphere is contributing to climate change.

Carbon Footprint
A measure of the amount of greenhouse gases (measured in terms of carbon dioxide) and individual, business or organization release into the atmosphere as a result of their actions over a given period of time, usually a year. This includes the greenhouse gases used to make and transport the food and goods we consume, to demolish, construct, heat and power the buildings and appliances we use, and to move around from one place to another.

Climate Change
A change in climate attributable directly or indirectly to human activity such as the burning of fossil fuels which alters the composition of the atmosphere and causes changes in weather patterns on a large scale. Commonly used interchangeably with "global warming" and "the greenhouse effect".

Combined Heat and Power (CHP)
The combined production of electricity and useable heat. Steam or hot water, which would otherwise be wasted if only electricity is produced, can be used for space or process heating.

Community Heating
Distribution of steam/hot water through a pipe network to heat a large area of commercial, industrial or residential buildings or for industrial processes. The steam/hot water is supplied from a central source (e.g. a combined heat and power plant).

Code for Sustainable Homes
This is a government produced standard for measuring the impact of new development on the environment. It is similar to a BREEAM assessment but has been prepared specifically for housing. It covers issues such as energy use, carbon emissions, water use and pollution.

Deficiency in Access to Nature
The Mayor of London defines areas of deficiency in access to nature as areas that are more than 1km from a public open space that has a high level of nature conservation importance (known as "Borough" or "Metropolitan" level of importance). The Mayor aims to improve the public's access to the natural environment.

EcoHomes
EcoHomes is the BREEAM version for homes, which aims to improve the overall environmental performance of new and existing homes. This has been replaced by the Code for Sustainable Homes for most housing development.

Ecology
This refers to the natural features of the environment, including the type of plants and animals, and their relationship with each other. See also Ecosystem.

Ecosystem
This refers to the way that different plants and animals and natural processes, such as rain and tides, link to each other to sustain life.

Embodied Energy
The total life cycle energy used in the collection, manufacture, transportation, assembly, recycling and disposal of a given material or product.

Energy Efficiency
Making the best or most efficient use of energy in order to achieve a given output of goods/services or comfort and convenience.

Energy Performance Certificate (EPC)
A certificate that outlines the costs of heating, hot water and lighting a particular home. They also need to provide advice on how to reduce these costs and reduce carbon emissions. From 1 July 2007 all homes up for sale must have an EPC.

Fossil Fuels
Coal, oil, and natural gas formed from the remains of ancient plant and animal life. Produces emissions of carbon dioxide and other pollutants when burned to produce energy.

Global Warming
See 'Climate Change'.

Green Roof
A roof of a building which is partially or completely covered with plants. It can be a properly tended garden or a more self-maintaining area of grass and mosses etc. Check www.livingroofs.org for more information.

Greenhouse Effect
See 'Climate Change'.

Greenhouse Gases
Atmospheric gases such as carbon dioxide, methane, chlorofluorocarbons (CFCs) etc that function like a "greenhouse" by trapping some of the sun's energy that reaches the earth, preventing it from being reflected back out of the earth's atmosphere, and thereby warming the earth's climate.

Geothermal energy
This refers to the natural heat energy created deep inside the earth. Natural processes transfer this heat to close to the surface where it can be used for heating and cooling or to generate electricity.

Grey water
This is water that has already been used once, for example to wash clothes or dishes. If treated properly, it can be collected and reused again for uses that do not require water that is at drinking standard, such as for flushing toilets.

Ground Source Heat Pump
A heat pump that removes heat from the earth or ground water in cold weather and transfers it to the house through an underground piping system. The process can be reversed in warm weather to transfer heat into the ground.

Living Roof
See 'Green Roof'.

Low Carbon Development
A low carbon development is one that achieves a high level of reduction in carbon emissions from energy efficiency measures and renewable energy use on site, on an annual basis (see also 'zero carbon development').

Major Development
Any residential or mixed use development creating 10 or more dwellings, if that is not known, where the site area is 0.5 hectares or more. For other types of development, a major site is one where the floorspace to be built is 1,000 square metres or more, or the site area is 1 hectare or more. This includes changes of use involving 1,000 square meters or more.

Micro-CHP
Small scale combined heat and power plant producing both electricity and useable heat.

Microclimate
This refers to differences in natural conditions such as temperature, humidity and the level of light that can occur on a very small scale as a result of the characteristics of a site or area – for example, reflected heat from a building, a plant or structure that provides protection from the wind, or a low spot that collects rainfall.

Microgeneration
Micro-generation is the generation of heat and power on a small scale by individuals, small businesses and communities to meet their own needs.

Minor Development
Any development that does not meet the definition of Major Development.

Passive Design
This refers to the use of solar energy and natural processes to control the heating and cooling of buildings. For example using deciduous trees to provide shading in summer and heating from the sun in winter. On a more general level it can also be used to refer to the way buildings can be built and designed to function efficiently on their own through simple choices on the type of material and fittings used and the building layout. This helps to reduce the need for mechanical controls.

Passive Ventilation
By utilising the design of the building, a passive ventilation system takes advantage of the natural passage of air without the need for high energy consuming equipment. Windcatchers can aid passive ventilation by directing air in and out of buildings.

Photovoltaic (PV) Cell
Converts solar energy into electricity. Interconnected cells are encapsulated into a sealed module that produces a voltage.

Raw materials
This refers to natural resources such as wood, coal and metal that have not yet been processed or transformed into something useable, such as building materials. Many natural resources are not naturally replaced and should be used carefully. Reusing natural materials that have already been used but are no longer needed helps to preserve natural resources.

Renewable Energy
Energy generated from sources that do not require the use of exhaustible materials - e.g. wind, wave, sun, water and energy from plant material, but not fossil fuels or nuclear energy.

Solar Water Heating
Solar water heating systems consist of a series of tubes inside an insulated box, typically mounted on the roof. The tubes absorb the sun's heat and transfer that heat to water or another liquid flowing through the tubes to heat water to be used in the home.

Standard Assessment Procedure
The Government's Standard Assessment Procedure (SAP) is used to generate the energy rating of dwellings on a scale from 0 to 120, based on the calculated annual energy requirement for space and water heating.

Sustainable Urban Drainage Systems (SUDS)
SUDS provide a variety of more natural ways of managing surface water run-off than traditional surface drainage systems. SUDS aims to mimic natural drainage processes and remove pollutants from urban run-off at the source. SUDS also provide amenity and biodiversity benefits. SUDS refers to a range of different techniques such as green roofs, permeable paving, rainwater harvesting, swales, detention basins, ponds and wetlands. A combination of techniques is often the most effective.

Thermal Mass
Thermal mass is a natural property that enables building materials to absorb, store, and later release heat. Materials with a high thermal mass are energy efficient.

Tri-generation (Combined Heating, Cooling and Power)
Tri-generation is the simultaneous production of power, heat and cooling, as opposed to CHP which produces only heat and power.

Zero Carbon Development
A development that has zero net carbon emissions. Typically these developments are highly energy efficient and generate their own power from renewable sources. Through exporting electricity to the supply grid when they are generating more than they need and importing from the grid at times when their renewables are not providing enough to meet demand, the balance as a whole across the year is designed to be at least zero non-renewable energy use, and therefore zero emissions of carbon dioxide.

Contact us

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Arabic

هذه الوثيقة أعدت من قبل فريق سياسة تخطيط بلدية ساوثارك.

هذه الوثيقة ستأثر على القرارات التي إتخذت حول تخطيط وتطوير إستعمال الأرض في ساوثارك.

إذا اردت أن تطلب المزيد من المعلومات أو من الأستشارة بلغتك يرجى القيام بزيارة دكان (وان ستوب شوب) واعلم الموظفين هناك باللغة التي تريدها. إن عناوين دكاكين (وان ستوب شوب) موجود في أسفل هذه الصفحة

Bengali

সাদার্ক কাউন্সিলের প্ল্যানিং পলিসি টিম এই দলিলটি প্রকাশ করেছেন। এই দলিলটি সাদার্কে জমি ব্যবহারের পরিকল্পনা ও উন্নয়ন সম্পর্কিত সিদ্ধান্তগুলির উপর প্রভাব রাখবে। আপনি যদি আপনার ভাষায় অতিরিক্ত তথ্য ও পরামর্শ চান তাহলে অনুগ্রহ করে ওয়ান স্টপ শপে যাবেন এবং কি ভাষায় এটা আপনার দরকার তা কর্মচারীদের জানাবেন। ওয়ান স্টপ শপগুলোর ঠিকানা এই পৃষ্ঠার নিচে দেয়া হল।

French

Ce document est produit par l'équipe de la politique du planning de la mairie de Southwark. Ce document affectera les décisions prises sur le planning de l'utilisation des terrains et du développement dans Southwark. Si vous avez besoin de plus de renseignements ou de conseils dans votre langue, veuillez vous présenter au One Stop Shop et faire savoir au personnel la langue dont vous avez besoin. Les adresses des One Stop Shops sont au bas de cette page.

Somali

Dukumeentigan waxa soo bandhigay kooxda Qorshaynta siyaasada Golahaasha Southwark. Dukumeentigani wuxuu saamaynayaa go'aanaddii lagu sameeyey isticmaalka dhuulka ee qorshaynta iyo horumarinta ee Southwark.Haddii aad u baahan tahay faahfaahin dheeraad ah ama talo ku saabsan luqadaada fadlan booqdo dukaanka loo yaqaan (One Stop Shop) xafiiska kaalmaynta kirada guryaha shaqaalaha u sheeg luqada aad u baahan tahay. Cinwaanada dukaamada loo yaqaan (One Stop Shops) xafiisyada kaalmaynta kirada guryaha waa kuwan ku qoran bogan hoosteedda.

Spanish

Este documento ha sido producido por el equipo de planificación de Southwark. Este documento afectará las decisiones que se tomarán sobre uso de terrenos, planificación y desarrollo en Southwark. Si usted requiere más información o consejos en su idioma por favor visite un One Stop Shop y diga a los empleados qué idioma usted requiere. Las direcciones de los One Stop Shops están al final de esta página.

Tigrinya

እዚ ሰንድ (ጽሑፍ) ብሳዘርክ ካውንስል (Southwark) ናይ ውሳነ መምርሒ ጉጅለ ዝተዳለወ እዩ ። እዚ ሰንድዚ ኣብ ሳዘርክ ናይ መሬት ኣጠቓቕማ መደብን ዕበየትን ኣብ ዝግበሩ ውሳኔታት ለውጢ ክምጽእ ይኽእል ኢዩ ። ተወሳኺ ሓበሬታን ምኽርን ብቋንቋኹም እንተደሊኹም ናብ ዋን ስቶፕ ሾፕ (one stop shop) ብምኻድ ንትረኽቡዎም ሰራሕተኛ ትደልዩዎ ቋንቋ ንገርዎ ። ናይ ዋን ስቶፕ ሾፕ ኣድራሻ ኣብ ታሕቲ ተጻሒፉ ይርከብ ።