ISLINGTON

Green Construction

ISLINGTON COUNCIL
Planning Division

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ISLINGTON'S UNITARY DEVELOPMENT PLAN

supplementary planning **guidance**

Supplementary Planning Guidance for Consultation

Green Construction

Contents

1 Introduction

1.1 This document is a non-statutory supplement to Islington's UDP 2002 - the technical name for this is 'supplementary planning guidance' (spg). The Council has prepared a wide range of spg, covering diverse topics such as parking standards and affordable housing. Some of the spg are particularly relevant to sustainability issues, including:

- Sustainability Assessments
- Green Travel Plans
- Car-Free Housing
- Use of Ground Water

1.2 The aim of supplementary planning guidance is to provide advice on how to implement the policies set out in the statutory UDP. The key UDP policy promoting the aims of sustainable development is Env 2, which states:

'The Council will examine all applications for development with a view to securing the objectives of sustainable development and will produce supplementary guidance to assist developers and others to assess all relevant design elements necessary to achieve sustainability'.

1.3 The supporting text to the policy explains that wherever possible buildings should be seen in a wide context that extends beyond the functional requirements of the immediate users, to include such matters as:

- the relationship with other buildings and uses;
- public accessibility;
- security and safety for users;
- energy efficiency;
- variety of uses and facilities;
- planting, landscaping and nature conservation;
- impact in terms of noise, traffic, wind turbulence and air pollution;
- use of environmentally friendly building materials.

1.4 Policy Env 3 and its supporting text are concerned with mechanisms to assess the impact, which a development might have on the environment. In some cases a formal Environmental Impact Statement may be required, but given the built-up nature of Islington, schemes where a formal EIA is required are likely to be few and far between. Instead the Council has promoted the concept of sustainability assessments. These will provide slightly more limited information and less technical information than an EIA, but will be extremely helpful to the Council, the public and indeed the applicant in assessing the environmental, social and economic aspects of a scheme. The spg on sustainability assessments includes a checklist of issues to be taken into account in preparing the assessment.

1.5 This spg on green construction is intended to provide more detailed advice to applicants on how to ensure greater environmental sustainability in developments, refurbishments and alterations to existing buildings. The intention is to use it in tandem with the spg on sustainability assessments. It looks initially at overall design, and then provides further details on five key aspects: materials, energy, waste, water and biodiversity. It then looks briefly at the operational phase of the building's life including environmental management systems and benchmarking. There is also an appendix giving sources of further information.

1.6 Anticipated outcomes from implementation of the guidance are better environmental performance *and* business efficiency for developers and construction firms operating in Islington - since reducing waste and improving resource use go hand-in-hand with reducing costs and increasing profits[1].

1.7 For example, in constructing the average development around 10% of the materials brought onto site are wasted. Average profit margins are 5%, so ample opportunity exists for improving profits *and* environmental performance[2].

1.8 In producing this spg on green construction, we aim to provide a framework for developers and construction firms so that they can then apply their creativity, technical knowledge, good-practice and innovation in developing better environmental solutions to the issues.

1.9 The contents page sets out the scope of the spg. It will *not* cover:

- Site appraisal;
- There will be general reference to some technological solutions to green construction, but these are limited as dynamic changes in technology will soon date the spg - and also for the reasons given in section 1.6 above.
- Many issues set out in the Spg are inter-linked. For example, waste minimisation has links with green procurement and specification. The spg recognises these links and cross-references where appropriate. However to make the guidance user-friendly, it adopts, with a couple of exceptions, an environmentally themed approach.
- This spg excludes those areas regulated by statutory agencies such as the Environment Agency. It is assumed that developers and construction companies are aware of these and are complying with the relevant statutes e.g. the Duty of Care to dispose of waste and their responsibilities under legislation affecting effluent.

1.10 According to 'Building a Better Quality of Life' [3], the UK development and construction industry, via its environmental impacts, accounts for:

- the extraction of 90% of minerals in the UK;
- use of 360 million tonnes of construction materials in the UK every year;

[1] Building a better quality of life: a strategy for more sustainable construction, DETR April 2000, p.8
[2] The Construction Industry, Entec newsletter, 2001
[3] See reference 1, p.10

- 70 million tonnes of demolition waste each year – 17% of total UK waste.

1.11 The environmental impacts of construction and development impact on our local and global environment in a number of ways. Resource use affects other parts of the UK and the world, through extraction and depletion of resources. Construction waste, like most waste, is disposed of in landfill sites. Inefficient and excessive use of energy increases our emissions of greenhouse gases, affecting climate change. Air quality is affected by emissions from transport during the construction and operational phases of developments.

1.12 Central government has introduced a number of market instruments relevant to the development and construction industry:

- Landfill Tax 1996 - waste disposed of in landfill costs £15 per tonne (as at 2004[4]);
- Climate Change Levy - applying from April 2001, this is a tax on energy that comes from carbon sources[5]. The levy is payable on the use of energy by all industrial, commercial and public sector customers throughout the UK. The rate for electricity is 0.43p/kWh. In 1999, 50% of the 556 million tonnes of carbon dioxide (the major greenhouse gas causing climate change) emitted in the UK came from energy use in buildings.
- Aggregates Levy - from April 2002 this tax addresses the environmental costs of aggregates extraction. It aims to encourage materials[6] re-use and recycling.

1.13 Key business drivers to better environmental performance include [7]:

- Costs savings from efficient resource use, less waste and efficient practices;
- Competitive advantage;
- Regulatory control;
- Risk and liability management;
- Increasing client demand;
- Public relations.

2 Design

2.1 The design stage is crucial for considering the environmental impacts of the development. It is also the key stage for considering 'long life-loose fit' in new developments, to enable the later conversion of buildings to new uses (without necessarily requiring demolition and re-build – see also Section 5: Waste).

2.2 Since the operational phase of the building will last many years, so will its ongoing environmental impacts. These impacts will last for far longer than those during the construction phase (see figure 4 in section 7). Therefore, consideration of better environmental processes, techniques and green materials specification

[4] Treasury pre-budget speech, November 2001
[5] Climate Change: The UK Programme, DETR 2000
[6] Finance Act 2001
[7] Construction Industry Environmental Forum

should take place at the outset. For example, the design stage should consider the storage space for recycling bins and / or the integration of recycling facilities into new developments or re-developments. (See UDP policies Env 36 and Env 37).

2.3 Development projects should be designed so that passive design elements (daylighting, natural ventilation and avoiding overheating), insulation, heating and ventilation systems and lighting all work together. Integrated design ensures that comfort and conditions are optimised at minimum cost and minimum energy consumption[8].

2.4 When designing a development it is important to think about the management and maintenance of the finished building from the start. Usage patterns should be fully considered and consideration should be given to the ability to control services independently in different zones[9].

2.5 The energy implications of the building site, location, form and orientation should all be considered at the planning stage. When selecting a site consider:

- Access to daylight
- Protection from winds
- Orientation for solar gain[10].

2.6 A number of design considerations can be integrated into site layout, the internal layouts of buildings and material specification in order to improve the environmental performance of the development. These include thermal mass heat absorption and passive solar gain.

Passive solar gain

2.7 Passive solar design[11] has been dubbed the 'best buy renewable',[12] since designing buildings for comfortable internal heating, lighting and air conditioning can reduce running costs without increasing construction costs.

The Queen's Building at De Montfort University Leicester has halved its energy costs by employing passive solar design methods[13].

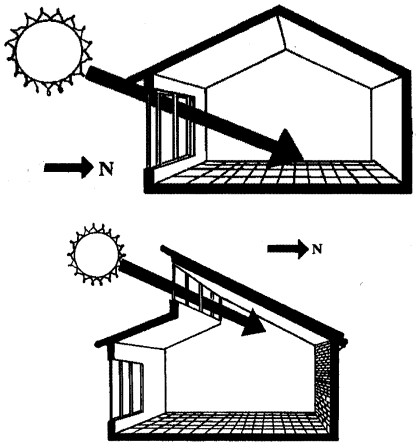
2.8 Passive solar gain techniques have the potential to reduce the energy requirements of the building, which in turn reduces carbon dioxide emissions (CO_2) that cause climate change. For example:

- designing with microclimate in mind can enhance solar gain, and therefore reduce energy use for lighting and heating;

[8] Good Practice Guide 192 Designing Energy Efficient Multi-Residential Buildings, Energy Efficiency Best Practice Programme, Action Energy, March 2003
[9] ditto
[10] ditto
[11] i.e. design and orientation of buildings (in relation to the angle and direction of the sun, to other buildings, trees etc.) to optimise the use of natural sunlight and warmth.
[12] Renewable Energy in London: An Overview of Current Projects and Future Prospects, London Research Associates / David Bartholomew Associates, March 2000.
[13] Planning for Passive Solar Design, Terence O'Rourke / BRESCU, undated.

- orienting the building within 30 degrees of the south can ensure passive solar gain;
- buildings that are designed facing south will benefit from passive solar gain, which can reduce heating requirements by 10%[14];
- using atria, glass and skylights brings light and warmth into buildings;
- designing with perimeter walls or other adjacent buildings in mind can bring light and warmth into buildings;
- employing passive solar design measures can reduce the CO_2 emissions of commercial buildings by 20-50%[15].

Figure 1: Alternative internal design can affect the amount of passive solar gain:



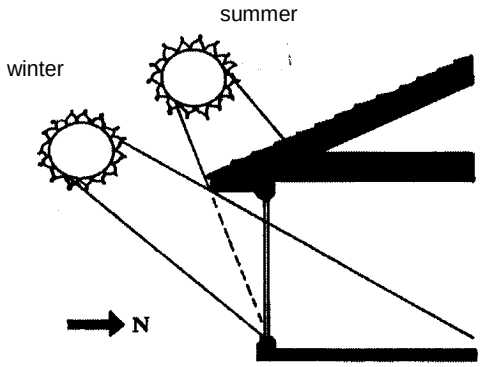
Reducing *excessive* passive solar gain

2.9 A balance needs to be struck between the benefits of passive solar gain, and excessive solar gain that can lead to over-heating in buildings. If a building becomes overheated, it will not be a comfortable environment and may require a cooling system. This balance can be achieved by:

- specifying high quality glazing to reduce unwanted solar gain;
- using solar glass;
- designing to make use of overshadowing from other buildings;
- shading / screening by trees which can reduce *excessive* solar gain and overheating, and reduce energy use on air conditioning (planting can also increasing the year round usability of outdoor spaces by providing wind breaks). [16]

[14] BedZED - a New Model for Sustainable Urban Living? Environmental Waste Management, Vol 3, pp 48-51, 2000
[15] See reference 1
[16] Good Practice Guidance note 192: Designing Energy Efficiency multi-residential buildings: Energy Efficiency Best Practice Programme, Action Energy, 2001.

Figure 2: Roof overhangs designed to influence solar gain.



2.10 Overhangs shade a house from excessive solar gain in the summer, and allow sufficient sunlight to enter the building during winter months when the sun is lower.

2.11 Building Form - Design first for minimal heat loss and then consider solar improvements. A long thin room with short exterior wall minimises heat loss, but a shallow plan room with wide external walls can enjoy more daylight. A compromise solution is to use the former shape - and locate areas requiring daylight, such as desk space, adjacent to the window.[17]

Thermal mass heat absorption

2.12 This is achieved via use of building materials that absorb and store heat. Concrete, brick and other masonry materials passively absorb heat during the day and then release it slowly at night. This technique also keeps buildings cooler in the summer, reducing the need for active cooling systems (which will become essential to combat the effects of climate change i.e. hotter, drier summers[18]). These are commonly and easily integrated into building design.

Saving energy: reducing costs at BedZED (Beddington Zero Emissions Development)
'By combining passive solar gain, thermal mass and super insulation, ZED design eliminates the need for a central heating system. Heating requirements of ZED homes are around 10% of that for a typical home of the same size. Residents' fuel bills reflect this saving.[19]' In other words, it is possible to reduce heating requirement by 90%. The design alone has reduced overall energy needs by 60%.

[17] General Information Report 53, Building a Sustainable Future, Energy Efficiency Best Practice Programme, Action Energy, 2000
[18] Climate Change and local communities: how prepared are you?: UK Climate Impacts Programme, 2003.
[19] www.bedzed.org.uk

Location and Land Use

2.13 See Islington's UDP for policies to encourage mixed use, to encourage development at accessible locations, to reduce the need for travel and to limit car-parking in commercial and residential schemes.

3 Materials

Aims

3.1 The aim of this section is to encourage developers and builders to:

- re-use existing elements of buildings and materials where possible;
- avoid environmentally damaging materials;
- purchase materials that have the best environmental performance i.e. the greenest products.

Re-using existing materials

3.2 Where possible existing materials should be salvaged and re-used. Section 5: Waste has details on undertaking waste audits and materials salvage in order to identify, collect and re-use materials.

Green purchasing

3.3 A green purchasing plan should be developed at the materials specification stage so that materials and installations used in the development are:

- the least quantity required to undertake the development, without compromising its quality;
- have the lowest environmental impact in terms of how they are constructed, through their operational phase to disposal (cradle to grave). An ambitious green purchasing plan could include life cycle assessment of materials;
- designed for low and easy maintenance that will mean, for example, lower maintenance costs, and therefore lower environmental impacts for the building (for example in the form of reduced quantities of cleaning agents in the future);
- are specified in terms of the actual performance requirements, rather than restrictive or default specifications, thereby giving suppliers / sub-contractors an incentive to reduce waste[20];
- sourced locally to minimise transport requirements, and reduce local air pollution and road congestion.

Developing a Green Purchasing Plan

[20] Reduction, Re-use and Recycling of Construction and Demolition Waste, Gallagher and Needham, Waste Management, July 2002, pp17-18.

3.4 Put simply, the aim of the green materials purchasing plan will be to select materials that are produced in the most environmentally friendly way. For example, products should be selected that are:

- made from recycled or recyclable components;
- that have low embodied energy values or resource intensities i.e. they were not produced using excessive amounts of energy or other resources;
- are not made from environmentally damaging materials or processes.

This can be difficult to achieve in practice. Looking out for materials that are environmentally rated with, for example, an eco-label will help.

Eco-Labels

3.5 Where possible choose materials from sustainable sources, local sources and / or locally produced. For example, select timber that is sourced from sustainably managed forests - look out for timber that carries the FSC (Forestry Stewardship Council) logo.

3.6 Use materials with an 'A' rating under the BRE (Building Research Establishment) Green Guide to Specification. See Appendix 1 for further information.

Avoiding environmentally damaging materials

3.7 Where possible:

- select non-toxic, water based building products e.g. paints, linseed oil based paints, sealants and flame retardants that do not contain VOCs (volatile organic compounds) or hazardous chemicals;
- minimise the use of chemical treatments for timber, for example, or use environmentally friendly alternatives (see the Appendix for information on ;
- avoid the use of products containing chemicals that have a damaging effect on the ozone layer e.g. CFCs and any other ozone depleting chemicals proscribed under the Montreal Protocol[21].

Contractors and suppliers

3.8 Through the contract tendering process, green purchasing principles can also be applied to the selection of contractors and suppliers. For example, do they have?

- an environmental policy;
- proven environmental performance on similar developments;
- an accredited environmental management system, or a commitment to working towards one;
- an informal environmental management system;

[21] Montreal Protocol 1996, an international framework addressing use of ozone depleting chemicals

- in the absence of a comprehensive environmental management system, have taken action on single-issues such as energy, waste etc?

Integrating the Green Purchasing Plan and Waste Audit

3.9 The Green Purchasing Plan should be developed in tandem with a 'Waste Audit' for the development (see section 5). Some demolition waste may be re-usable elsewhere in the scheme - e.g. for lower grade uses such as paths and access roads. Re-using waste in this way will result in fewer requirements for materials in the Green Purchasing Plan.

4 Energy

Aims

4.1 The aims of this section are to encourage developers and builders to:

- reduce energy use in developments (construction and operational phases);
- increase energy efficiency in buildings;
- reduce CO_2 emissions from developments;
- increase the use of renewable energy technologies in developments.

These aims relate directly to section 3.6 of the UDP which includes policies to encourage energy efficiency, the use of renewable energy and combined heat and power (policies Env 30 - 32).

Fifty percent of the UK's CO_2 emissions, a major climate change gas, come from buildings[22].

4.2 In addition to design considerations (section 2, above), there are two other ways in which energy issues for buildings and developments can be addressed:

- energy efficiency
- renewable energy.

Energy Efficiency

4.3 The aim here is to make more use of less energy, by undertaking an energy efficient design.

Energy efficient design

4.4 New developments must meet the relevant standards set out in Parts L1 and L2 of the Building Regulations[23]. These cover:

[22] Sustainable Construction: opportunities for change, DETR 1999
[23] Building (Amendment) Regulations 2001, DTLR

- General matters - such as improved thermal performance, U-values and energy / CO_2 conversion rates;
- Design - including limiting over-heating due to excessive solar gain, heating systems, carbon efficiencies for CHP (combined heat and power systems), lighting efficiency, and insulation;
- Construction - such as building fabric and insulation;
- Information - e.g. energy meters.

(See Appendix 1 for further Information).

Designs should go beyond what is required under these minimum standards.

4.5 Other relevant established best-practice design guidance documents include BREEAM (Building Research Establishment) guides (New Offices and Solar Shading of Buildings) and Chartered Institution of Building Services Engineers (CIBSE) guides (Guide F: Energy Efficiency in Buildings) - see Appendix 1 for details.

4.6 Other measures to increase energy efficiency include making use of natural ventilation and incorporating 'smart' controls such as:

- daylight sensors
- movement sensors.

Heating and boilers

4.7 Using energy efficient heating systems and boilers will improve energy efficiency and reduce the building's emissions of CO_2. Communal heating systems should be considered wherever possible, even for small-scale developments.

Central heating

4.8 Best practice specifications for the components for domestic water-based central heating systems have been prepared by the EST (Energy Saving Trust) and BRESCU (See Appendix 1 for contact details).

4.9 'CHeSS (Central Heating System Specifications): Best Practice Energy Efficiency Programme Number 59 (2002 Edition)' details good and best practice models for domestic water-based central heating systems and provides data on savings in fuel and costs. More information is available on the EST (Energy Savings Trust) website - see Appendix 1 for details.

Boilers

4.10 Condensing boilers operate at 85% efficiency compared to 65-72% for normal boilers. Grants may be available from the Energy Saving Trust (again, see Appendix 1 for contact details).

Renewable energy

4.11 Renewable energy sources such as solar power and wind power emit no climate change gases in generating electricity. Renewable energy generation is exempt from the Climate Change Levy. In an urban area like Islington, the most appropriate renewable energy technologies are solar.

Active solar

4.12 Active solar systems, compared to passive solar systems (as described in section 2), collect solar energy and transfer it in the form of heat to air, water or possibly another fluid. The technology does not require strong sunlight to work (i.e. they will work on cloudy days), and has been applied in many developments in the UK[24]. To work effectively solar panels should not be obstructed by adjacent buildings etc.

4.13 The two main applications of active solar systems of relevance to Islington are solar thermal systems and photovoltaic (PV).

Solar Thermal Systems

4.14 These solar energy systems are technically proven and can be used to provide hot water for domestic properties.

4.15 Solar energy is absorbed by the collector, usually placed on the roof, and the heated fluid is then piped to the pre-heat tank, which in turn is connected to the normal household hot water tank. Generally solar water heating systems are sized to provide approximately 50% of the users annual water heating requirements[25].

4.16 Collectors are usually located on the roof of the building at an angle of 30-35^{o} to the horizontal and facing between southeast and southwest. A collector of 3-5 sq. metres in size is adequate for a typical domestic heat load. This would collect approximately 1000 - 2000 kWh of useful heat per year.

Solar water heating collectors in a Leicester swimming pool save 7,500 kg CO_2 a year, as well as saving money.

[24] 'The Guide to Renewable Energy Centres in the UK', Energy 21 / DTI, July 2002 – see Appendix 1 for details

[25] Renewable Energy for Islington Council Office Buildings, Feasibility Study: Future Energy Solutions, August 2002

Photo-voltaic (PV)

4.17 PV cells use light energy from the sun to create electricity. PV cells can be integrated into the southerly facing, unshaded roofs and facades of buildings - generally at an angle of 30° to the horizontal axis[26]. Shadows from buildings, trees etc. will affect the efficiency of the PV array. These systems can supply power for appliances and lighting.

At Northumbria University, solar panels are integrated into conventional rain-screen over-cladding - creating one of the largest pv systems in Europe, saving 1,000 tonnes of CO_2 p.a.

Sainsbury's North Greenwich peninsula store has a PV panel that powers its neon store sign [27].

4.18 PV systems are technically proven, operate silently, require little maintenance and can last up to 25 years[28]. Over a year, a $1m^2$ panel will produce 800kWh of energy[29].

4.19 Solar energy can also be used in small-scale applications in development site infrastructure, such as external lighting for access roads.

Planning permission

4.20 PV roofs may sometimes require planning permission unless the building is listed or is in a conservation area. However you should always check with Islington Council's Planning Service first. For further advice see the section on 'Planning Implications of Photovoltaics' in the annex to 'PPG22: Renewable Energy', DTLR, March 2002.

Grants

4.21 The DTI (Department of Trade and Industry) Major Photovoltaics Demonstration Programme supports the application of photovoltaic technologies for buildings. The first tranche of £20m dispenses 50% grants (average) to individuals and organisations wishing to install solar electric (PV) systems on homes and other buildings over the next 3 years. See Appendix 1: Department of Trade and Industry for more details.

[26] Photovoltaics - Annex to PPG22: Renewable Energy, DTLR, March 2002
[27] Renewable Energy in London: An Overview of Current Projects and Future Prospects, London Research Associates / David Bartholomew Associates, March 2000
[28] See reference 3
[29] See above reference

Combined heat and power

4.22 A CHP plant is an installation where there is simultaneous generation of usable heat and power (usually electricity) for local use[30]. CHP plants use natural gas to generate energy at overall efficiencies of 80% (compared to combined cycle gas turbine stations at 45%)[31].

4.23 CHP can be utilised in both individually heated and communally heated (CH) developments, where there is an all year round constant heat demand (e.g. hospitals, swimming pools, residential homes). In CH developments, there is considerable advantage in linking buildings so that aggregate loads are met by a centralised plant. Individual-heating requirements can be met using Micro-CHP. Tenants benefit from CH and also CHP by:

- Affordability through bulk purchase and efficiency
- Controllability
- Abundant hot water
- Metered heat (pay what you use)
- Low cost electricity if sold directly to tenants.

Landlords will benefit through:

- Lower maintenance and management costs
- Attracting higher rents
- Reduced life cycle costs[32].

4.24 CHP can lead to substantial savings in total energy costs and reduced emissions of carbon dioxide (the main global warming gas)[33]. CHP plant comes in a wide range of sizes, from below 50 kW to many MW's of electrical output.

4.25 Good quality CHP is exempt from the Climate Change Levy. The government has established a CHP Quality Assurance Programme under which CHP can be assessed and certified. Exemptions to the Climate Change Levy and details of financial assistance for businesses such as enhanced capital allowances are highlighted [34]. See Action Energy and DTI entries in Appendix 1 for further information.

4.26 CHP plants can also use alternative fuels such as wood chips and biomass, which are, theoretically, carbon neutral. Where sources of alternative fuel can be found, they should be used.

[30] www.chpa.co.uk - Combined Heat and Power Association
[31] www.chp.bre.co.uk - Building Research Establishment
[32] Good Practice Guide 240 Community Heating: Energy Efficiency Best Practice Programme, Action Energy, Feb. 1999
[33] See reference 6
[34] Enhanced Capital Allowances provide 100% first year capital allowances for approved energy saving investments for businesses.

Lighting

4.27 Lighting - as outlined in Section 2: Design, the design should incorporate as much scope for natural daylight as possible. Where lighting is installed however, the following should be provided:

- Energy efficient lamps (compact or tubular florescent) and control gear electronic).
- Reflectors enhancing light output and direction
- Sensors - passive infra red (PIR) or motion.
- Independent switching for areas and zones[35].

Ventilation

4.28 Ventilation - ventilation is necessary to maintain a healthy and comfortable internal environment for occupants, to rapidly remove any airborne pollutants and moisture, and to provide an air supply to open flue appliances. Design and installation of natural ventilation may reduce the need for air-conditioning, which will also save energy and reduce electricity bills. Paragraph 3.6.4 of the UDP discourages the installation of air conditioning systems.

4.29 When installing an energy efficient ventilation system the following should be considered:

- Passive Stack Ventilation (PSV)
- Assisted Passive Stack Ventilation (aPSV)
- Heat Recovery Ventilation (HRV)[36].

Energy efficiency standards

4.30 Two relevant energy efficiency standards exist:

- Standard Assessment Procedure (SAP) – scale from 1-120 - looks at the fixed elements of the home. All homes built to the same design, irrespective of where the property is located in the UK, should have exactly the same SAP. Building Regulation Amendments require calculation of a SAP rating for all new dwellings, and those converted through material change of use.

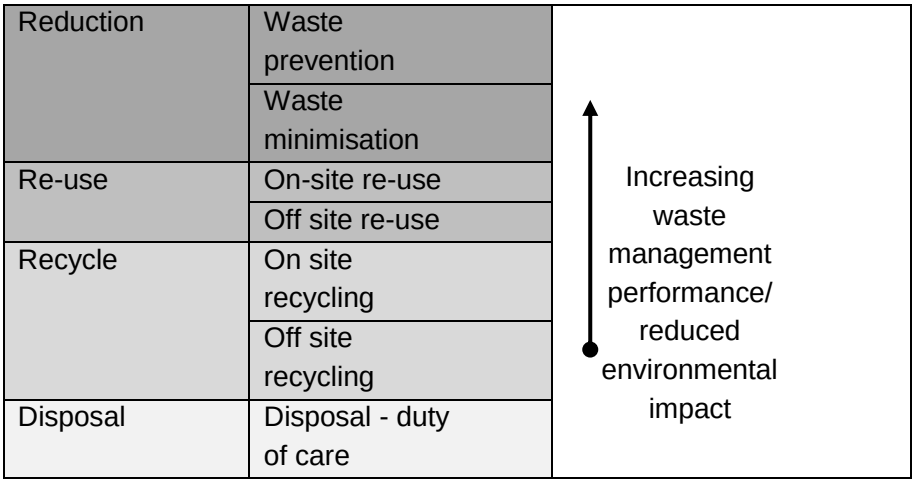
- National Home Energy Rating (NHER) - scale from 0 to 10. NHER includes various location-specific elements (including whether the home is South facing or sheltered from wind by other buildings) and so reflects actual running costs. If two homes have the same floor area but different NHERs, then the home with the better (higher) NHER should cost less to run. The standard's methodology also includes a carbon index and SAP rating. Homes should meet the NHER rating of 7-10.

[35] Good Practice Guide 287 Design Team Guide to environmentally smart buildings: Energy Efficiency Best Practice Programme, Action Energy, Feb. 2000.
[36] General Information Leaflet 72 Energy Efficiency Standards: Energy Efficiency Best Practice Programme, Action Energy, Sep. 2000.

5 Waste

5.1 Re-using buildings, by refurbishment, repair and conversion, is obviously the ideal solution to reducing waste in construction. In many cases, this will not be possible. Where this does not happen, the aim is to tackle the quantity of waste produced during developments - from the demolition phase to the construction phase. The Council's planning policies on waste are set out in section 3.7 of the UDP, and are based on the principle of the waste hierarchy shown below.

Figure 3: The waste hierarchy



Re-use of buildings

5.2 Re-using, refurbishing, repairing and converting buildings, rather than wholesale demolition, will help reduce construction waste. As well as reducing waste and reducing environmental impacts, this approach may also be required in Conservation Areas. Implementing non-destructive works can preserve buildings and reduce the need for environmentally damaging chemical treatments[37]. Advice can be sought from the Council's Conservation Team and English Heritage.

Tackling demolition waste

5.3 The aim here is for the re-use of existing buildings, and / or maximum re-use and recycling of demolition materials.

Deconstruction

5.4 Buildings should be designed with deconstruction in mind, so that components can be easily removed and re-used - see also section 2 on design.

[37] A guide to alterations and extensions, London Terrace Houses 1660-1880: English Heritage 1996

5.5 A 'Demolition Waste Audit' of the development site should be undertaken *before* demolition (there are methodologies for doing this, such as the BRE SMART Waste methodology - see Appendix 1 for contact details).

5.6 Employing off-site fabrication techniques can substantially reduce on-site waste, as well as reducing other environmental impacts such as transport use.

5.7 Demolition should incorporate a 'materials salvage phase', whereby construction and surplus materials are recovered from the site, including:

- brick, concrete, hardcore;
- subsoil, topsoil;
- timber, metal, steel frames, plastics;
- infrastructure e.g. granite kerbs, signs.

Some of these materials may be suitable for re-using for other similar uses.

5.8 Demolition wastes can be re-used for lower quality uses e.g. access roads and footpaths, or as a concrete aggregate. Around 30% of such wastes are currently re-used in this way as fill[38]. Excavating unnecessary spoil that can be left in-situ should be avoided. BS (British Standard) 8500 now permits the use of recycled concrete aggregate in certain applications including foundations, paving and concrete[39].

5.9 Demolition techniques should follow the Council's Code of Practice for Construction Sites 2002.

Tackling construction waste

5.10 A Construction Waste Management Plan will identify wastes arising from the construction process, find ways of minimising it and ways of re-using and recycling different waste streams. Wastes should be segregated into separate waste streams, e.g. timber waste, metal waste, concrete waste and general waste.

It is estimated that over 3,000 tonnes of reusable wood is thrown away or burnt from the demolition of old buildings in the UK every working day. ***Source: Good Wood Guide, Friends of the Earth.***

5.11 Markets should be identified for sale/donation of materials, such as the BRE Materials Information Exchange and Waste Alert North London's Waste Exchange Service. Islington Council is a member of the latter scheme which is locally available - see Appendix 1.

[38] Reduction, Re-use and Recycling of Construction and Demolition Waste, Gallagher and Needham: Waste Management July 2002 pp17-18

[39] Supply and Demand, Annual Report 2002/03, London ReMaDe

5.12 Sustainable working practices should be employed during the construction phase such that potential pollutants are contained so that they do not spill or leak and contaminate watercourse. Mitigation measures and emergency procedures should be drawn up to deal with any on-site environmental accidents. See also L.B. Islington's Code of Practice for Construction Sites, pages 9 and 12.

6 Water

6.1 The aim of this section is to highlight green construction methods that will:

- reduce the amount of water used in developments in their operational phases;
- re-use water that is usually wasted in the operational phase of developments; and
- avoid environmental damage from water that must be wasted.

6.2 UDP policy Env 31 is concerned with the use of ground water, as well as the need to reduce water use. There is also a separate 'spg' on the use of ground water. This can be downloaded free of charge from the Council's web-site.

Each person uses about 50 litres of water a day for flushing the wc *(source: Environment Agency).*

Reducing the amount of water used

6.3 Installing efficient appliances can reduce the amount of water used in developments once operational. For example:

- water flow reduction valves and shower roses;
- spray /aerated /push taps in basins. It is estimated that in an average office spray taps can save 1800 litres of water per year[40]. Spray taps are not recommended where the system will not be used regularly as they can harbour bacteria e.g. legionalla[41];
- low flush toilets (low flush < 6 litres per flush[42]) or dual-flush toilets (i.e. two flush settings according to use);
- auto shut off taps / tap controls / infra-red switches;
- supply restrictor valves;
- low flow showers (< 9 litres per minute) installed in all bathrooms;
- waterless urinals - a waterless urinal system does not use water due to its syphonic operation. Special fluid held in the trap of the waterless urinal allows urine to pass through but continuously seals the drainage from the

[40] Conserving Water in Buildings: Guidance Sheet 3: Greywater Recycling, Environment Agency
[41] Ditto
[42] See Water Supply (Fittings) Regulations 1999 for details.

atmosphere, preventing any odours from escaping. The absence of water flushing saves water while the design and lack of mechanical components cuts maintenance[43]. The costs of the special fluid must be offset against the savings in water (see British Standard BS3943 for specifications for siphon traps);

- passive infra-red sensor controls, infra-red door beams or magnetic door switches for urinals and basins
- Installation of water meters may be considered (although it should be noted that the need to conserve water/ save money might have public health implications for low-income families[44]).

Re-using water that is usually wasted in buildings

6.4 This requires the collection, storage and re-use of rain and grey water on site. Grey water is the water from washing hands, taking showers etc. and can be re-used for flushing toilets and other lower-grade uses. Grey water harvesting is mandatory for many types of buildings in Tokyo[45]. It is best to avoid setting up a system that will re-use water from kitchen sinks, washing machines and dishwashers as they collect grease and oil which is difficult to filter[46].

6.5 Greywater recycling systems need [47]:

- a mains back-up supply;
- a bypass system so that, if necessary, mains water only can be supplied to the toilet;
- a safety mechanism so that greywater is not stored for more than a day or two before use;
- a treatment system incorporating filtration or similar;
- a disinfectant or microbiological treatment - often chlorine or hypochlorite;
- pipe identification to indicate which water is not potable;
- an attachment so that stored water can be used for whatever purpose;
- an unrestricted overflow to prevent mains water contamination incorporating a type A air gap (25mm space) between the level of the lowest part of the inlet pipe and the spill-over level of the receiving vessel.

See Appendix 1 for details of the Environment Agency guide, which includes details of system suppliers.

6.6 Grey water can be re-used for watering any landscaped areas and gardens in the development. Similarly rainwater collected from roofs can be re-used for watering landscaped areas and gardens. Water re-used for these purposes should not need treatment, but for most other re-uses treatment will be needed. Using rainwater harvesting, a 110m^2 roof (the size of an average dwelling) can produce up to 1427 litres of water per week [48].

[43] www.ecoconstruct.com
[44] www.ofwat.gov.uk/watervoice
[45] Camden Green Buildings Guide, 2002
[46] Conserving Water in Buildings: Guidance Sheet 3: Greywater Recycling, Environment Agency
[47] Ditto
[48] www.freerain.co.uk

Avoiding environmental damage from water that must be wasted

6.7 Waste water from urban buildings causes environmental damage by running off hard surfaces and entering drainage systems. This may increase the risk of flooding to people and property.

6.8 A sustainable urban drainage system (SUDS) may be appropriate to the development subject to the existence of suitable geological conditions (see Appendix 1 for details of SUDS manuals and advice from the Environment Agency on SUDS).

A SUDS aims to reduce flooding by managing urban water run-off. It will look at minimising the quantity of water discharged from a building, e.g. by storage and slowing down run-off, and aims to improve the quality of water by treating or immobilising pollutants[49]. The Environment Agency's standard criteria is that surface water discharge from developed sites should include a 1 in 100 critical storm duration event.

Other benefits of SUDS are that they can provide attractive landscapes such as ponds, and support wildlife.

6.9 SUDS consist of flexible ways of managing urban run-off by designing a system best suited to the development. It may consist of:

- permeable hard surfacing, instead of hard non-permeable paved areas, that allows water to gradually soak through into the ground, instead of overloading the drainage system;
- directing surface and roof run-off for watering of landscaped areas, or for another use;
- rainwater collection and re-use - see above;
- outlining opportunities for green roof options to slow urban run-off (this may also improve the ecology of the development and its energy efficiency);
- use of source control techniques that treat water close to the source and minimise the quantity of water collected at source, e.g. infiltration trenches or basins, porous pavements;
- use of permeable systems that store, filter and dispose of some run-off before the water is discharged, e.g. filters / French drains, grass swales;
- installation of passive treatment systems that use natural processes to remove pollutants, e.g. detention ponds or reed bed technology;
- maintenance of paved areas and access roads.

See Appendix for details of SUDS best practice manuals from CIRIA and the Environment Agency.

6.10 In instances where SUDS are not viable, other source control techniques such as 'storm cells' and 'oversized pipes' may be used.

[49] Flooding: The Surveyor, February 2002

7 Biodiversity

7.1 The built environment can represent a significant potential habitat if managed in the correct way. New developments can provide a real opportunity to enhance biodiversity in an area where little was present before. This can be achieved through three principal methods:

- use of green roofs
- greening vertical habitats
- use of artificial nesting sites.

Green roofs

7.2 Green roofs are those that are intentionally vegetated to some degree. These can vary from full-blown roof gardens, through to grassy swards or sedum roofs. They fall into three main categories:

- extensive - using a relatively thin, lightweight substrate, which will support hardy plants, which require a low maintenance regime and no irrigation.
- semi-intensive - using a lightweight shallow soil structure to support a wider variety of plants including herbs (requiring minimal maintenance).
- intensive - designed to support a wide variety of plants, shrubs and trees. These are often designed to be accessible for recreational use. They require irrigation and regular maintenance.

7.3 Although all green roofs will benefit biodiversity more than a traditional roof, certain roof types will provide greater benefits than others. These will generally be the ‘extensive’ and ‘semi-intensive’ systems using a range of suitable wildflowers and grasses. The use of Sedum matting is not recommended as it has too shallow a substrate to support it properly and does not provide a diversity of plants.

Selected roofs in Deptford have been left bare and allowed to colonize naturally, helping to recreate the lost ‘brown field’ habitat which provides feeding grounds for endangered black redstarts[50].

Other Benefits

7.4 Green roofs can provide a whole range of sustainability and economic benefits in addition to the biodiversity gains.

- sustainable urban drainage - green roofs can potentially retain up to 90% of the rainfall within the substrate. This reduces run off helping to reduce

[50] www.blackredstarts.org.uk

flooding but also enables the outlets, down pipes, ground drains, sewer pipes etc. to be reduced in capacity, thereby reducing construction costs.

- reducing urban heat - green roofs act as 'mini air conditioners', cooling and humidifying the surrounding air with beneficial effects on the immediate area.
- reducing air pollution - the vegetation on green roofs helps to filter out dust and smog particles. Nitrates and other airborne pollutants are absorbed out of the air and rainfall and bound in the soil.
- protecting the roof – it is a common misconception that a green roof can damage the roof structure. In fact it can significantly increase the life span of the roof. Temperature ranges on a standard roof can be very wide with temperatures reaching 80^{o}C, whereas on a green roof they will reach about 25^{o}C [51].
- noise reduction - the sound insulation benefits of green roofs will vary depending on water levels, but they can reduce reflective sound by up to 3dB and improve sound insulation by up to 8dB.
- thermal insulation - green roofs provide thermal mass, which reduces both heating and cooling costs.
- recycling - it is possible to reuse demolition waste, crushed brick and concrete to provide the substrate base, reducing disposal costs and the cost of the roof.

Design and Construction

7.5 When considering the incorporation of a green roof into a building a number of layers need to be included and specified to ensure that the selected vegetation is given the appropriate conditions to thrive.

- root barrier - this is essential to protect the waterproof membrane from being pierced. The type and thickness will depend on the vegetation being grown.
- moisture mat - this will retain water and help prevent the roof drying out; it will also provide mechanical protection to the root barrier and waterproof membrane.
- drainage element - a plastic 'egg box' layer that retains some water and allows the excess to drain away, preventing water logging.
- filter membrane - to prevent soil particles being washed into the drainage layer and reducing its efficiency.
- growing medium - needs to have a well-balanced structure and low weight, it will usually be formed of a mix of crushed brick and fines.

Green Walls

7.6 There is potential to create significant habitat through the careful and appropriate use of climbing plants to green walls. These can serve to enhance

[51] www.alumasc-exterior-building-products.co.uk

good design and also to hide unattractive features. Green walls also provide a number of benefits:

- amenity benefits - plants provide significant visual enhancement to the built environment and they can also provide natural scents. Greening walls can also help to prevent graffiti, which can significantly detract from the visual environment.
- energy conservation - vegetation on walls will provide buildings with extra insulation in the winter and cooling in the summer.
- health - the leaves of climbing plants will help to filter out dust and pollutants. Larger areas of vegetation will also provide a cooling effect in the immediate environment reducing humidity levels.
- wildlife - green walls will provide resting, feeding and nesting places for birds, invertebrates and even small mammals. Wrens, blackbirds, sparrows and robins are some of the bird species that might use such habitat.
- protection - it is a common misconception that plants damage walls, in most cases the opposite is true [52]. Climbing plants will protect the wall from the elements and can extend its life.

Technical Considerations

7.7 Some plant species such as Ivy, Boston Ivy and Ivy-leaved Toadflax will root directly into the wall and will self-cling. Other species will require some sort of support structure to allow them to clamber up the wall. Growing the plants up a structure also has the added benefit of creating an extra thermal layer of insulation. Support structures can include timber batons, trellis-work, mesh grids, steel cables, or plastic ropes. They need to be secure enough to support what can be a considerable weight.

7.8 Plants should be planted in a suitable prepared planting pit and positioned at least 40cm away from the wall to reduce the rain shadow effect. Consideration should also be given to the species selected and the aspect of the wall in order to achieve the best effects. In some cases it would be appropriate to consider irrigation systems to ensure good growth, particularly for plants growing on a south facing aspect.

Artificial Nesting Sites

7.9 Nest boxes have been extensively used to provide nesting sites for a wide range of birds and bats. These can be retrofitted onto existing buildings but new buildings provide an excellent opportunity to incorporate a range of specially designed artificial nest sites. Buildings imitate the natural environment of cliffs and a number of birds can exploit this habitat if provided with some suitable sites. House martins, swifts, swallows, house sparrows and bats can all exploit spaces

[52] Building Green – J. Johnston and J. Newton.

provided by buildings. Other species such as kestrels and even peregrine falcons are now starting to nest on tall buildings in London.

Fig. 4: Alternative Nesting Sites

• **Open fronted boxes** (flycatchers, robins, wagtails, blackbirds)	- design in by replacing bricks with wooden boxes.
• **Hole-entrance boxes** (tits)	- design in.
• **Quarter sphere** (House martins)	- place under eaves.
• **Small cavities** (flycatchers, robins, wagtails, blackbirds)	- create suitable gap by removing brick from façade.
• **Gaps between roof** (swifts, bats)	- leave small gap or insert special roof tiles.
• **Purpose made bricks** (bats)	- replace ordinary brick.
• **Ledges** (kestrels, peregrines)	- design in at high level.

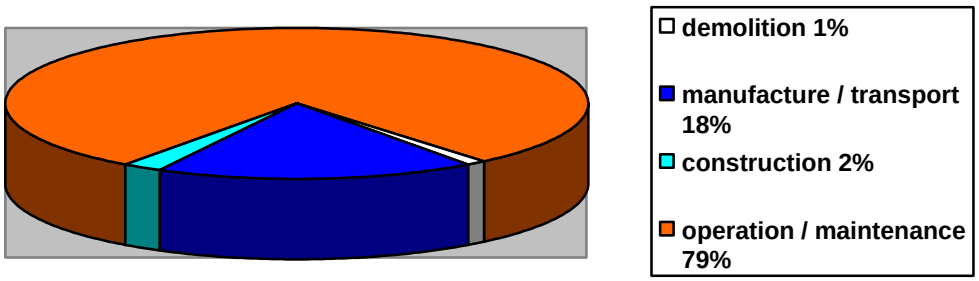
8 Operational Phase

8.1 Once the development phase has been completed, and the new buildings have been erected or re-furbished, the building is ready for its operational use.

Energy

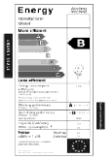
8.2 As figure 5 (overleaf) shows, the environmental impacts of energy use (such as carbon dioxide emissions which cause climate change), as well as running costs, are significant over the operational phase of a building.

Figure 5: Energy use over the life cycle of a typical commercial building



8.3 Opportunities to reduce the energy use of the building over its lifetime need to be taken at the design stage (see section 2: Design). In addition to designing for passive solar gain, where possible the design should include an energy load profile for the operational phase of the development incorporating:

- use of natural, rather than mechanical, ventilation systems;
- specification of energy efficient light fittings (the latest energy saving compact fluorescent lights use 80% less electricity and last 15 times longer than conventional lights) especially for areas of high occupancy;
- specification of smart lighting and heating controls e.g. infra-red light switches or individual area switches e.g. use best practice fittings in accordance with BREEAM (see section 8: Environmental Management and Benchmarking, for more information);
- specification of effective energy metering systems;
- condensing boilers operate at 85% efficiency compared to 65-72% for normal boilers (see section 4: Energy).
- specification of appliances (where feasible) that are “A” rated according to the UK Energy Efficiency and EU Energy Efficiency labels[53]:



- Where possible, procure electricity from a ‘green’ tariff, as LB Islington has done for its major buildings.

Waste

8.4 The design stage should incorporate waste minimisation principles and aim to integrate recycling practices into the operational phase of the development. This should include separation of waste and recyclables, and space for separate storage of recyclable materials e.g. for office premises BREEAM 98 have a standard of 2 - 10m^2 per 1000 m^2 of space. Islington UDP Policy Env 37 also requires provision in residential schemes.

8.5 Where appropriate a waste strategy can be devised for the operational phase of the building. This would include:

- provision of a full waste analysis of predicted waste streams;
- strategies for dealing with recycling;
- flexibility to account for changing waste practices in the future.

Water

8.6 Developers should seek to install water efficient kitchen appliances. E.g. washing machines that consume around 40-50 litres per cycle and dishwashers that consume around 15-20 litres per cycle[54].

9 Environmental Management and Benchmarking

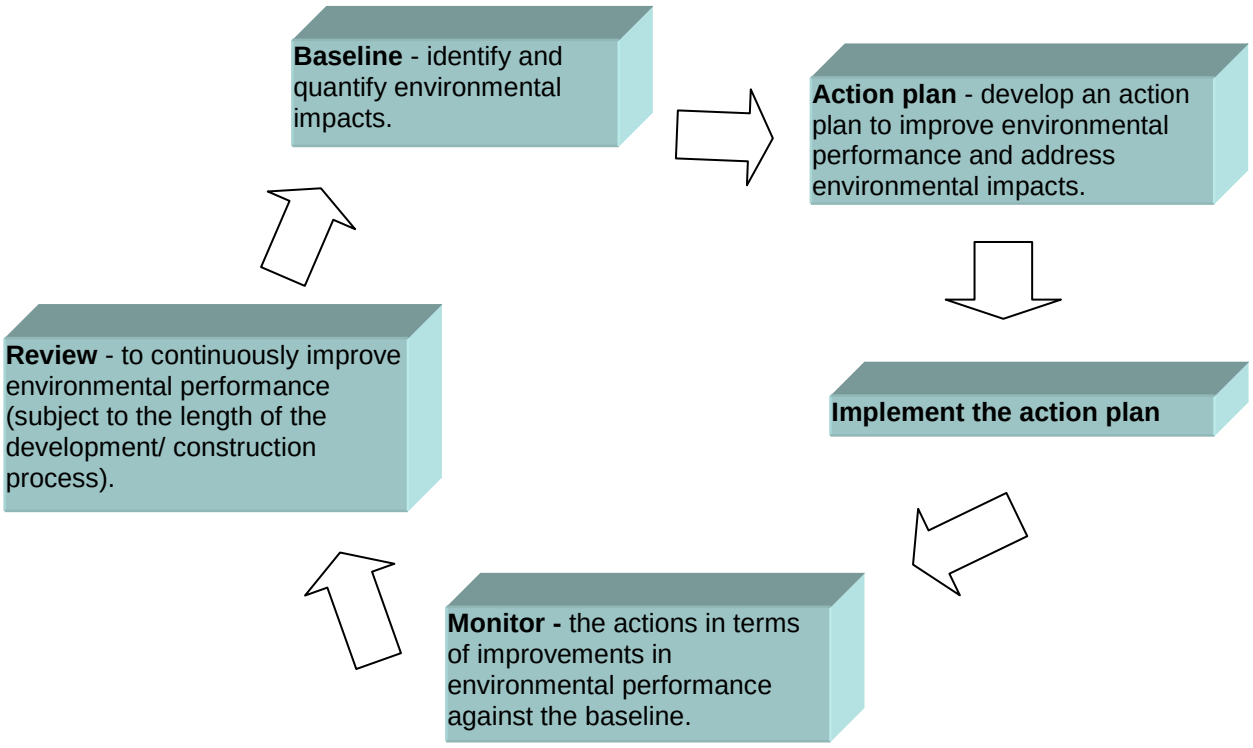
9.1 Drawing up and implementing an environmental management system is one way of achieving better environmental performance through the life of a development - from construction to completion.

9.2 An environmental management system will formally identify, assess and manage the environmental impacts of a development. Formal systems such as ISO14001 (International Standards Organisation) and EMAS (Environmental Management and Audit Scheme) can be adopted, especially if the development process is likely to take a long time. Such systems may be more appropriate to larger firms that have existing management systems in place to act as a starting point.

9.3 An environmental management system can save money for the developer as well as reducing the environmental impacts of the development. An Environmental Management System should have the following stages:

[53] For more information see: Energy Labels: Helping you make the right choice (DEFRA, 2003).
[54] www.thames-water.com/waterwise

Figure 6



Single-issue approaches

9.4 For smaller construction firms working on smaller developments, an informal environmental management system could be devised to identify, assess and manage the environmental impacts of the scheme.

9.5 Alternatively, for smaller construction firms working on smaller developments, or as sub-contractors on larger developments, concentrating on single-issues such as waste or recycling can be an effective approach to better environmental performance. For example:

- undertaking a waste audit;
- adding pollution issues to the Health and Safety policy[55];
- developing and applying green procurement policies and checklists to the selection of materials, services and sub-contractors.

Benchmarking

BREEAM assessments

9.6 The BRE (Building Research Establishment, an independent non-profit organisation) produces BREEAM (Building Research Establishment Environmental Assessment and Management) ratings for buildings.

9.7 BREEAM is a tool that allows the designers, owners and users of buildings to comprehensively review and improve environmental performance throughout the life of a building. It sets a benchmark for environmental performance. Ratings are set out for developments according to an environmental assessment tool and accreditation scheme. Buildings are assessed independently by BRE assessors. Ratings are given as: Excellent, Very Good, Good, Pass and Fail.

Case study: Wessex Water Operations Centre, Bath - winner of the RICS building of the year 2001

"As one of the most energy efficient buildings in the country, the centre used some unusual materials and design features to achieve high energy saving levels, while at the same time creating a pleasant working environment for their staff. The building scored the highest ever BREEAM rating for a commercial building.

Old concrete railway sleepers, recycled materials and as much locally sourced material as possible went into the construction of the centre.

The construction includes much attention to detail, including the collection of rainwater for use in irrigation and waste management. Porous pavoirs in the car park allow water to filter through to the ground instead of into the drains. Materials low in CO_2 emissions were specified in the construction and off-site fabrication reduced on-site waste to a minimum. Over 70% of waste material produced was recycled.

Locally sourced materials, from stone through to office furniture, were specified wherever possible to reduce transport emissions. This care for the environment extended to environmental awareness seminars for trade contractors."

Environment is the Winner in RICS Awards, CSM 3, 2002, p.12.

9.8 Different types of assessment are available for different types of building:

- BREEAM Offices - the assessment comprises three parts. A core assessment of the building fabric and services is carried out. Two optional parts deal with the quality of the design and procurement and management and operating procedures. In addition, the licensed assessors can provide pre-assessment design support.

- BREEAM 5-93 - for industrial units.

[55] Building a Better Quality of Life, p.23, DETR, April 2000

- BREEAM economies - is an environmental rating for new and renovated / converted homes. There are 7 categories[56]:

    1. energy: operational energy and carbon dioxide;
    2. transport;
    3. pollution: air and water pollution;
    4. materials: green purchasing and recycling;
    5. water consumption;
    6. ecology and land use: ecological value of the site, greenfield and brownfield issues;
    7. health and well-being.

TP/02/400 Miles Duckworth
November 2003

[56] Green Class of Home, BRE in Green Futures, June 2000.

APPENDIX 1: Further Information

Green Construction Generally

Action Energy
Action Energy provides a range of products and services for business and public sector organisations to help them reduce energy consumption. Their publications list includes the documents that were developed under the government backed Energy Efficiency Best Practice programme. Action Energy has a free helpline number for energy-saving information, publications and advice.

☎ 0800 58 57 94

💻 www.actionenergy.org.uk

Association of Environmentally Conscious Builders
The AECB is the leading independent environmental building trade organisation in the UK. It aims to encourage greater environmental awareness within the building construction industry. It produces publications such as the Green Building Press which provides information on environmentally conscious building. It also produces "The Green Building Book" which includes the full AECB membership for the UK.

☎ 01559 370 908

💻 admin@aecb.net
www.aecb.net

BedZED
BedZED (Beddington Zero Energy Development) is widely recognised as a best-practice development of an environmentally friendly, energy-efficient mix of housing and work space. It is located in Beddington, Sutton.

💻 www.bedzed.org.uk

Biodiversity
See:

- 'Building Green': Johnston J. and Newton J., London Ecology Unit (1995)
- Green Roofs - Existing Status and Potential for Conserving Biodiversity in Urban Areas: Grant G., Engleback L., Nicholson B., English Nature Research Report by Ecoschemes Ltd. (2002)

For information on green roofs contact:

Nature Conservation Team, Greenspace, LB Islington,
☎ 020 7354 5162

💻 islingtonecologycentre@btopenworld.com

www.cityoflondon.gov.uk/ourservices/development_planning/planning/pdf/A5_Green_roofs.pdf>

www.blackredstarts.org.uk

London Biodiversity Partnership
☎ 020 7921 5479
www.lbp.org.uk

London Wildlife Trust
☎ 020 7261 0447
www.wildlondon.org.uk

Bat Conservation Trust
☎ 020 7261 0447
www.bats.org.uk

English Nature
☎ 020 7340 4870
www.english-nature.org.uk

Royal Society for the Protection of Birds
☎ 01767 680551
www.rspb.org.uk

BRESCU - Building Research Establishment Sustainable Construction Unit
BRE is the UK's leading centre for construction, providing consultancy, testing, BREEAM accreditation and information services to customers worldwide. BREEAM best-practice design guidance includes New Offices and Solar Shading of Buildings.

☎ 01923 664 258
brescuenq@bre.co.uk
designadvice@bre.co.uk
www.bre.co.uk/brescu

Building Regulations
Building (Amendment) Regulations 2001, DTLR (Department of Transport, Local Government and the Regions). These amendments to the Building Regulations are in effect from April 2002. Building Regulations ensure the health and safety of people in and around buildings by providing functional requirements for building design and construction. They also promote energy efficiency in buildings.

Approved Document L1 - Conservation of fuel and power in dwellings (2002 Edition)

Approved Document L2 - Conservation of fuel and power in buildings other than dwellings (2002 Edition).

 www.odpm.gov.uk/buildingregulations

Building Control, L.B. Islington

☎ 020 7527 5999

 buildingcontrol@islington.gov.uk

Chartered Institution of Building Services Engineers (CIBSE)

Best-practice design guidance includes:
Guide A: Environmental Design
Guide F: Energy Efficiency in Buildings
Guide H: Building Control Systems
Code for Interior Lighting
Application Manual AM10: Natural Ventilation in non-Domestic Buildings

☎ 020 8675 5211

 enquiries@cibse.org
www.cibse.org

Construction Best Practice Programme

The Construction Best Practice Programme identifies, publicises and supports the use of improved business and management practices for the construction industry. It is funded by the Department of Trade and Industry and is steered by the Government and the Construction Industry.

☎ 0845 605 55 56

 helpdesk@cbpp.org.uk
www.cbpp.org.uk

Construction Industry Research Information Association (CIRIA)

CIRIA is a UK-based research association concerned with improving the performance of all involved in construction and the environment. Publications include:

- Sustainable Urban Drainage Systems - design manual for England and Wales (2000) (CIRIA C522);
- CIRIA / DTLR Recycled Construction Materials Handbook 1999 - Waste Minimisation in Construction, a Site Guide.

For information on recycling building materials see www.ciria.org.uk/recycling

☎ 020 7222 8891

 enquiries@ciria.org.uk
www.ciria.org.uk

Construction Resources Centre
Britain's first ecological builders' merchant and building centre promoting environmentally friendly design and materials is at 16 Great Guildford Street, London SE1 0HS.

☎ 020 7450 2211

 info@ecoconstruct.com
www.ecoconstruct.com

Department of Trade and Industry (DTI)
The DTI has a renewable energy grant scheme aimed at supporting the implementation of photovoltaics. The Major Photovoltaic Demonstration Programme has two sets of Guidance Notes and Scheme Conditions for:
- Medium and Large scale Photovoltaic Grant Applications, and;
- Small Scale Photovoltaic Grant Applications.

 www.dti.gov.uk/energy/renwables/support

 www.est.co.uk (Energy Savings Trust currently administers the programme)

 www.solarpvgrants.co.uk

☎ freephone 0800 298 3978.

DEFRA
DEFRA, plus the Carbon Trust and the Inland Revenue, offer grants (*Enhanced* Capital Allowances) enabling developers to claim 100% first year capital allowances on investments in energy saving technologies. Good quality CHP, for example, is covered by this scheme. For details of ECAs see:

 www.eca.gov.uk

Eco Solutions
Eco Solutions Ltd. develops water-based products for use in construction for example paint-strippers.

☎ 01934 844 484

 info@ecosolutions.co.uk

Environment Agency
See:
- 'Conserving Water in Buildings: Guidance sheets 1 – 14'
- 'Sustainable Drainage Systems, a Guide for Developers, March 2003'.
- 'Control of Runoff from New Developments: Interim Regional Guidance', Environment Agency September (1997)

☎ Environment Agency Helpdesk: 01903 832 073

 paula.wood@environment-agency.gov.uk

Housing Forum
The Housing Forum aims to bring together parties involved in the house-building supply industry chain who are committed and ready to become part of a movement for change and innovation in the construction industry.

 www.thehousingforum.org.uk

National Green Specification (NGS)
NGS specifies green products and methods of construction and is primarily for use by:

- Construction Industry's Design Professionals
- Architects, Interior and Furniture Designers
- Civil, Structural and Services Engineers
- Landscape Architects
- Manufacturers, Suppliers, Builder's Merchants, Factors, Agents, Importers
- Builders and Sub-contractors
- DIY home owners, Self-builders
- Building Commissioners, Owner/Financiers, Developers
- Owner/Occupiers, Facility Managers, Building Operators

 webmaster@greenspec.org.uk
www.greenspec.org.uk

RIBA (Royal Institute of British Architects)
RIBA has a database of architectural practices that specialise in environmental design.

☎ 020 7307 3700
 cs@inst.riba.org

RICS (Royal Institute of Chartered Surveyors)
RICS leaflets include:

- Supporting Sustainable Construction: Recycling through demolition
- Supporting Sustainable Construction: Minimising housing construction waste

☎ 0870 333 1600
 customerservice@rics.org.uk
www.rics.org

Recycled materials
Using recycled building materials can add / maintain the character of a building, as well as minimising the need too use new materials. For a list of dealers and yards for reclaimed materials contact the Architectural Salvage Index on:

☎ 01483 203 221

www.handr.co.uk

See also the CIRA details above.

SUDS
See - A Framework for Sustainable Drainage Systems (SUDS) in England and Wales: National SUDS Working Group, May 2003.

TRADA: Timber Research and Development Association
TRADA is the leading independent timber research, consultancy and information providers to the construction industry.

☎ 01494 569600

www.trada.co.uk

UK Rainwater Harvesting Association
C/o Gusto Homes.

www.gustohomes.com

ukrha@gusto-uk.com

Energy

Energy Savings Trust
The EST is a government-backed initiative promoting energy efficiency best practice in housing via information about appropriate technologies and techniques. Energy Efficiency Best Practice provides free best practice advice and publications.

☎ 0845 120 7799

www.est.org.uk/bestpractice

Future Energy Solutions - AEA Technology Environment
Future Energy Solutions have played a role in the growth of renewable energy technologies since the 1970s and have assisted in the development of national and regional strategies. Their knowledge extends across all types of renewable energy technologies.

☎ 01235 433 302

info@aeat.co.uk

www.future-energy-solutions.com

CHPA (Combined Heat and Power Association)
The Combined Heat and Power Association works to promote the wider use of combined heat and power and community heating.

☎ 020 7828 4077

info@chpa.co.uk

www.chpa.co.uk

www.chpqa.com – for details of the CHP quality assurance programme

Energy Saving Trust
'Practical Help' is a brand new initiative from the Energy Saving Trust. Though it is aimed at Local Authorities, it also provides practical help on sustainable energy and environmentally friendly transport policies that will be of use to a wider audience.

☎ 0870 241 2089

💻 info@practicalhelp.org.uk
www.practicalhelp.org.uk

Islington Energy Centre
Islington Energy Centre can advise developers, architects and individual householders on energy issues.

Drop in to their office at: 159 Upper Street
London N1 1RE

☎ 0800 512 012

💻 energyadvice@islington.gov.uk

Waste

Waste Alert North London
Waste Alert is a network of local waste minimisation clubs mainly for small and medium sized businesses, including construction firms and builders. The clubs provide ongoing support to help businesses to reduce costs and increase efficiency through improved waste management, exchange of materials, water and energy efficiency. Waste Alert Clubs demonstrate that improving business performance through environmental improvement goes hand in hand with regeneration and economic development.

☎ 020 7089 2118

💻 info@wastewatch.org.uk
www.wastewatch.org.uk/waste alert

London Borough of Islington

Relevant strategies and policies include:

Islington's Unitary Development Plan, June 2002
Supplementary Planning Guidance Sustainability Assessments, February 2002

Islington Code of Practice for Construction Sites, 2002
LBI's green procurement guidance.

For information on the UDP, and to download free documentation, please go to the Council's website. (See Environment and Conservation / Planning / UDP)

☎ Planning policy: 020 7527 2291

💻 www.islington.gov.uk
udp@islington.gov.uk

Other Publications

Sustainable Housing Schemes in the UK: A guide, Hockerton Housing Project, 2002 - includes features on 31 case studies including BedZED.

☎ 01636 816 902

💻 hhp@hockerton.demon.uk
www.hockerton.demon.co.uk

The Guide to Renewable Energy Centres in the UK, Energy 21 / DTI, July 2002 - guide to information about renewable energy in the UK and their applications in buildings etc.

☎ 01453 752 277

💻 info@energy21.org.uk

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