Preface

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1 Introduction

1.1 This Supplementary Planning Document (SPD) expands on policies in Salford’s Unitary Development Plan (UDP) [adopted 21 June 2006] to provide additional guidance for planners and developers on the integration of sustainable design and construction measures in new and existing developments.

1.2 The SPD seeks to ensure that planners and developers actively assess the feasibility of incorporating new environmentally sympathetic techniques at the earliest possible stage in the planning process. Various techniques are detailed including, for example, techniques to improve energy efficiency, reduce water consumption and surface water run-off, reduce the impact of flood events, minimise waste and maximise the provision of waste recycling facilities. In this way, the SPD aims to reduce the environmental footprint of developments whilst ensuring that buildings are economical to run over their entire life cycle and fit well with the needs of the local community. In addition to providing details of these techniques and examples of best practice, a summary checklist has been included at the end of each chapter and in full in chapter 18 to ensure that key sustainable design and construction issues are considered when submitting planning applications. When submitting a planning application, evidence should be provided, for example, in the accompanying design and access statement, to justify that actions have been taken or to justify why they have not.

1.3 The SPD supplements the following policies of the UDP:

- ST5 Transport Networks
- ST13 Natural Environmental Assets
- ST14 Global Environment
- ST16 Sustainable Waste Management
- DES2 Circulation and Movement
- DES3 Design of Public Space
- DES9 Landscaping
- A1 Transport Assessments and Travel Plans
- A2 Cyclists, Pedestrians and the Disabled
- A10 Provision of Car, Cycle and Motorcycle Parking in New Developments
- EN17 Pollution Control
- EN18 Protection of Water Resources
- EN19 Flood Risk and Surface Water
- EN21 Renewable Energy
- EN22 Resource Conservation
- DEV7 Protection of Aviation Safety at Manchester Airport
- W1 Waste Management
- M1 Protection of Mineral Resources

1.4 The provisions of this SPD will be implemented primarily through the development control process and the determination of applications for planning permission.

1.5 The SPD forms part of Salford’s Local Development Framework and is an important material consideration in the determination of planning applications. It is intended to complement rather than duplicate other planning documents. Details of all planning documents that form part of Salford’s Local Development Framework that are currently in force within Salford, and a timetable for the production of new documents, are set out in the city council’s Local Development Scheme.
Introduction

1.6 Measures to improve the sustainability of buildings will affect all aspects of design. This SPD focuses on adapting to predicted climate change, minimising future contributions to climate change and securing a more efficient use of resources and reducing waste. The Core Strategy and the Design SPD will both provide guidance on other aspects of sustainability such as minimising the need to travel and delivering homes that are able to adapt to an ageing population. Furthermore, the rapidly evolving nature of sustainable design and construction will inevitably mean that new approaches and techniques will emerge during the lifetime of this SPD that will assist the design process and potentially further improve the sustainability of future developments. This SPD is therefore intended as an interim document that will need to be reviewed and updated in light of any new relevant legislation and guidance.

1.7 Sustainable design and construction issues are particularly pertinent in light of the recent publications of Planning Policy Statement: Planning and Climate Change: Supplement to Planning Policy Statement 1 (December 2007) and Planning Policy Statement 25: Development and Flood Risk (December 2006).
2 Process for Producing this Document

Overview

2.1 The SPD has been produced in accordance with the advice contained in PPS12: Local Development Frameworks, and the requirements of the Town and Country Planning (Local Development) (England) Regulations 2004.

Sustainability Appraisal

2.2 The document has been subject to a Sustainability Appraisal (SA) at all stages. The SA considers the implications of the SPD from social, economic and environmental perspectives, and by assessing the SPD and other reasonable and relevant options against available baseline data and sustainability objectives.

2.3 The SA Report can be viewed via the City Council’s website at www.salford.gov.uk/sustainable-design.

Consultations and Public Involvement

2.4 A series of events and workshops with stakeholders took place between February 2007 and March 2007, including workshops with major developers, architects, planning consultants and local community representatives. A questionnaire was also distributed to community representatives, organisations with an interest in sustainable design, and the list of people who registered an interest in the document.

2.5 All aspects of the consultation activity provided a significant amount of information that fed into the production of the draft SPD.

2.6 This was followed by a formal public consultation on the draft version of the SPD, which took place between 14th September 2007 and 25th October 2007. During this period a number of workshops were held with developers to discuss the content of the document. The City Council has had regard to all of the comments received during that consultation period, and amended the SPD as appropriate.

2.7 A Consultation Statement is available on the council’s website (www.salford.gov.uk/sustainable-design) which sets out who has been consulted in the preparation of this SPD, how they were consulted, a summary of the main issues raised, and how those issues have been addressed in the final version of the SPD.
Process for Producing this Document
3 Sustainable Design and Construction and the Need for this Document

3.1 The concept of sustainable development is at the heart of the Government’s approach to planning and regeneration. By the same token the planning system is central to the achievement of more sustainable patterns and forms of development.

3.2 Most discussions of sustainable development begin with the definition offered in the report ‘Our Common Future’ produced by the United Nations-sponsored World Commission on the Environment and Development (WCED). This defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

3.3 In practical terms, sustainable development is conventionally described in national planning policy (PPS1 Delivering Sustainable Development) as a process of achieving an appropriate balance between the three aims of:

- Environment - maintaining and enhancing the quality of the environment including urban, rural, built and natural environments, being prudent in the use of natural resources and protecting biodiversity;
- Society - encouraging a just, healthy and inclusive society; and
- Economy - maintaining high and stable levels of economic growth and development.

3.4 Sustainable design and construction has an integral role in the achievement of the wider aim of sustainable development. At the centre of sustainable design and construction is the aspiration of creating buildings that meet the needs of building users and the wider community whilst minimising effects on the environment.

3.5 The construction and use of buildings have a range of environmental impacts, for example through water use, energy consumption, waste generation and the use of polluting materials. Consequently, the buildings that are designed and built today will affect our ability to live in an environmentally sustainable way for years to come. In addition to delivering key environmental benefits, improving the sustainability of future buildings will also result in important social and economic benefits.

3.6 There are a number of drivers for the need to improve the sustainability of buildings; key issues include reducing future contributions to climate change, adapting to climate change and decreasing the amount of waste generated.

Reducing Contributions to Climate Change

3.7 As the Stern Review recently highlighted, there is now an overwhelming body of scientific evidence showing that climate change is a serious and urgent issue.

3.8 Combating future contributions to climate change is a key goal of the Government. This has been highlighted by the Government’s pledge to reduce carbon dioxide (CO2) emissions – a major cause of climate change – by at least 60 per cent by 2050, and achieve real progress by 2020. This commitment has also been demonstrated recently by the draft

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1 The Stern Review on the Economics of Climate Change
Climate Change Bill (published 13 March 2007), which proposes a series of legally binding targets for reducing carbon dioxide emissions, and by the recent announcement of an ambition that all new homes should be “zero carbon” by 2016.

3.9 The construction of buildings and the generation of energy to heat, light and cool them is responsible for approximately half of the total CO$_2$ emissions in the UK. Consequently, integrating measures to reduce the carbon emissions from buildings, for example by improving energy efficiency, can significantly reduce the adverse environmental impacts associated with new development.

3.10 Buildings built and operated in a sustainable way also have a number of economic and social benefits. The running costs of buildings can be significantly reduced, decreasing the incidence of fuel poverty for households and improving the competitiveness of businesses. Improvements can also be made to the internal conditions of buildings through natural daylighting and ventilation which can create comfortable, attractive and healthy places for people to live and work in.

Adapting to Climate Change

3.11 It is now accepted by the overwhelming majority of the world’s scientists, as represented on the Intergovernmental Panel on Climate Change, that climate change is already happening and that even with effective policies to reduce emissions, there will still be significant climate change over the coming decades due to the emissions of carbon dioxide and other greenhouse gases that have already been released.

3.12 Over the last century, the average global surface temperature rose by around 0.7°C. Predictions suggest that by 2080 summer temperatures will be between 1 and 5 degrees warmer in North West England and winter rainfall might increase by between 5 and 20 per cent in the same period. In the same time period, total summer rainfall is expected to decrease, however, the incidence of short-duration, high-intensity rainfall events are forecast to increase, which will have serious implications for flash flooding. Consequently, our built environment will need to adapt and also become more adaptable, in order to mitigate the potentially negative effects of these changes.

3.13 Predicted climate change may also have significant implications for the structural design of new buildings. As a consequence of climate change, the incidence of severe storms and higher wind speeds may increase during the lifetime of buildings built today. Furthermore, exceptionally dry periods interspersed with episodes of high intensity rainfall could also impact upon ground stability, particularly in areas with high clay sub-soils. It is important that these issues are considered when designing new buildings. However, it is also essential that developments do not ‘over compensate’, which may have a detrimental impact on resource use and the overall sustainability of the building.

3.14 It is vital that the effects of climate change are considered over the lifetime of a development, so that future building occupants, particularly the vulnerable, are not exposed to unnecessary risks. Designing in this adaptability can ensure that occupants do not have to...

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3 Chancellor of the Exchequer’s Pre-Budget Report (December 2006)
4 Climate Change Scenarios for the UK - The UK Climate Change Impacts Programme (2002)
rely on potentially expensive building services to maintain bearable internal temperatures, for example, energy-hungry air conditioning systems, and are not unduly exposed to risks, such as flash flooding.

**Resource Use and Waste Minimisation**

3.16 Sustainable waste management involves producing less waste, and dealing better with the waste that is produced. The UK currently produces domestic waste at a rate of over 500kg per person per year (an increase from 106kg in 1983/4). In Salford, it is estimated that 14.1% of waste was recycled and 6.25% composted in 2006/07 – a total recycling/composting rate of just over 20%. However, estimates suggest that up to 70% of collected household waste could be recycled or composted.

3.17 The design of new developments can support efforts to recycle waste created by building users. Good design and layout can secure opportunities for waste management, including for kerbside collection and community recycling facilities. By providing sufficient, accessible facilities the option of recycling waste can be made easier for the building occupants/users and the municipal collection of materials can be assisted.

3.18 At a national level, the construction industry is a major source of the waste being disposed at landfill sites, placing considerable pressure on a dwindling landfill capacity and creating a series of environmental problems. Around 13% of all the solid materials delivered to construction sites goes unused, and up to one third ends up in landfill. During the construction process, better site practices and the re-use of on-site materials can reduce both the need for new primary resources and also the need to dispose of the on-site waste.

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5 Construction sector plans will cut fly tipping and landfill – Defra News Release 2 April 2007
Sustainable Design and Construction and the Need for this Document
4 Policy Context and SPD Objectives

POLICY CONTEXT

The Planning and Compulsory Purchase Act

4.1 The Planning and Compulsory Purchase Act, 2004, sets out the responsibility of planning authorities towards sustainability. Chapter 39 places a statutory duty on local planning authorities when preparing local development documents to exercise their functions with the objective of contributing to the achievement of sustainable development.

National Policy

PPS1

4.2 Government guidance in Planning Policy Statement 1: Delivering Sustainable Development (2005) states that: "sustainable development is the core principle underpinning planning" [paragraph 3].

4.3 PPS1 aims to "ensure that sustainable development is pursued in an integrated manner, in line with the principles for sustainable development set out in the UK strategy" [paragraph 13(i)]. Planning authorities are obliged to "ensure that development plans contribute to global sustainability by addressing the causes and potential impacts of climate change through policies which reduce energy use, reduce emissions...promote the development of renewable energy resources and take climate change impacts into account in the location and design of development" [paragraph 13(ii)].

4.4 Planning authorities are encouraged to devise policies to promote high quality inclusive design in the layout of new developments and individual buildings in terms of function and impact, not just for the short term but also over the lifetime of the development. PPS1 requires planning authorities to prepare robust policies on design and access to ensure that developments are sustainable, durable and adaptable (including taking account of natural hazards such as flooding) and make efficient and prudent use of resources.

Planning Policy Statement: Planning and Climate Change

4.5 This supplement to PPS1 sets out how planning should contribute to reducing emissions and stabilising climate change and take into account the unavoidable consequences. Tackling climate change is a key Government priority for the planning system and applicants for planning permission should now consider how well their proposals for development contribute to the Government’s ambition of a low-carbon economy and how well they are adapted for the expected affects of climate change.

4.6 This supplement provides additional guidance on how spatial planning should contribute to reducing emissions of greenhouse gases (mitigation) and take into account the unavoidable consequences of climate change (adaptation). When considering the environmental performance of a proposed development, Planning and Climate Change encourages planning authorities to amongst other things:

- expect applicants to use landform, layout, building orientation and landscaping to minimise energy consumption, including maximising cooling and avoiding solar gain in the summer;
Policy Context and SPD Objectives

- expect substantial new development to gain a significant proportion of its energy supply on-site and using renewable technology;
- secure sustainable drainage systems;
- pay attention to the potential contribution to be gained from water harvesting from impermeable surfaces; and
- secure the provision of sustainable waste management.

4.7 Planning authorities, developers and other partners in the provision of new development are now required to engage constructively and imaginatively to encourage the delivery of sustainable buildings. Planning policies should support innovation and investment in sustainable buildings and should not, unless there are exceptional reasons, deter novel or cutting edge-development. The planning system needs to support the delivery of the timetable for reducing carbon emissions from domestic and non-domestic buildings. ‘Building a Greener Future’ sets out a progressive tightening of Building Regulations to require major reductions in carbon emissions for new homes to get to zero carbon by 2016.

4.8 This supplement places an obligation on local authorities to incorporate any policies relating to local requirements for decentralised energy supply to new development or for sustainable buildings into their Core Strategies or other DPD’s. The Council will therefore be taking forward the new requirements set out in this PPS as part of the Development Plan process.

PPS10

4.9 Planning Policy Statement 10: Sustainable Waste Management sets out the Government’s objective of breaking the link between economic growth and the environmental impact of waste through establishing more sustainable waste management, and moving the management of waste up the ‘waste hierarchy’ of reduction, reuse, recycling and composting, using waste as a source of energy, and only disposing as a last resort.

PPS22

4.10 Planning Policy Statement 22: Renewable Energy promotes the increased development of renewable energy sources in order to facilitate the delivery of the Government’s commitments on both climate change and renewable energy. PPS22 recognises that positive planning which facilitates renewable energy developments can contribute to sustainable development by: ensuring all homes are adequately and affordably heated; reducing emissions of greenhouse gases; decreasing reliance on ever diminishing supplies of fossil fuels; and creating jobs directly related to renewable energy developments and in the development of new technologies.

4.11 Consequently, PPS22 states that “local planning authorities and developers should consider the opportunity for incorporating renewable energy projects in all new developments” [paragraph 18]. In addition, the guidance states that local planning authorities may include policies in local development documents that require a percentage of the energy to be used in new residential, commercial or industrial development to come from on-site renewable developments.
PPS25

4.12 Planning Policy Statement 25: Development and Flood Risk aims to ensure that flood risk is taken into account at all stages of the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. In exceptional instances where new development is located in areas at risk of flooding, PPS25 aims to make the development safe without increasing flood risk elsewhere. PPS25 also recognises that climate change is likely to change current weather patterns in the United Kingdom and could increase the risks of flooding within the lifetime of planned developments.

Code for Sustainable Homes

4.13 The Code for Sustainable Homes has been prepared to actively promote the design and construction of more sustainable homes to meet the Government target of all new housing being carbon neutral by 2016. It is intended as a single national standard to guide the house building industry and provide a mechanism for driving continuous improvement, greater innovation and exemplary achievement in sustainable home building.

4.14 The Code measures the sustainability of a home against design categories, rating the ‘whole home’ as a complete package and assessing the performance of buildings based on a number of factors including energy, water efficiency, materials, ecology, surface water run-off and waste. The Code for Sustainable Homes attributes a star rating to the new homes, ranging between one and six stars. The star rating achieved will depend on the extent to which the development addresses each of the measures outlined above, with six stars reflecting exemplar development in sustainability terms.

4.15 Compliance with the Code for Sustainable Homes is currently voluntary. Nevertheless, it is anticipated that Building Regulations will be amended to make it mandatory for all new homes to meet certain Code standards. The council recognise that, as the requirements of the Code are integrated into Building Regulations, there may be a need to update this SPD.

Building a Greener Future: Towards Zero Carbon Development

4.16 Building A Greener Future: Towards Zero Carbon Development seeks to develop a zero carbon emissions approach for new housing development and to clearly establish the relationship between Planning Policies, Building Regulations and the Code for Sustainable Homes in delivering this zero carbon approach.

4.17 The document recognises that new and emerging technologies and building techniques can help to reduce carbon emissions; secure new sources of long term clean energy; and build a better quality of life for all. The need to substantially expand housing provision over the next 20 years provides a significant opportunity to cut carbon emissions from the residential sector. The ambition is to move towards zero carbon development in all new homes.

4.18 The document recognises that the planning system has a significant role to play in achieving this aspiration and outlines an expectation for all planning authorities to prepare spatial strategies that secure the highest viable standards of resource and energy efficiency in new developments, encourage patterns of growth that secure sustainable transport, secure
new development and shape places that are resilient to the effects of climate change, sustain biodiversity, and enable communities to contribute effectively to tackling climate change.

Report on carbon reductions in new non-domestic buildings

4.19 The Government’s recent report on carbon reductions in new non-domestic buildings seeks to improve the carbon performance of commercial buildings. In terms of planning, the report stresses the need for the cost implications of solutions for zero carbon new non-domestic buildings to be fully understood and recommends that the planning system sets the parameters for development to ensure that the available resources and space are used in a sustainable manner. The report acknowledges that renewable energy resources are limited in capacity and recommends that local resources be used as a priority. The document goes on to state that energy planning, heat mapping and community renewable potential, need to be fed into local authority planning decisions and Section 106 agreements, in order to obtain the best near-site solution in terms of carbon reduction and maximising the use of resources.

Regional Planning Policy and Guidance

Regional Spatial Strategy for the North West (RSS13)

4.20 As part of the Development Plan for Salford, the Regional Spatial Strategy for the North West (RSS)(RSS13) should be given due consideration when assessing planning applications. It includes amongst its core development principles in Policy DP3, a requirement for good design quality in new development. It requires planning authorities to set out guidance to encourage more innovative design in order to create a high-quality living and working environment which incorporates more efficient use of energy and materials, more eco-friendly and adaptable buildings and sustainable drainage systems.

4.21 The RSS also encourages planning authorities to work in partnership with other regional agencies to manage demand for, conserve supplies of, reduce wastage of and promote local recycling of water; promote the use of Sustainable Drainage Systems (SUDS) in all new developments and take account of the longer-term impacts of climate change.

Draft Regional Spatial Strategy for the North West (Draft RSS or The North West Plan)

4.22 The submitted Draft Regional Spatial Strategy has been the subject of an Examination in Public and the Report of the Panel was published in March 2007. The Secretary of State is considering the Panel’s recommendations and is expected to publish Proposed Changes to RSS for consultation in February 2008. When finalised, it will replace the existing RSS for the North West. The draft RSS and the associated Report of the Panel, therefore, should be given some consideration in assessing planning applications but clearly may be subject to change in the final version.

4.23 The need for excellent design quality, sustainable construction, efficiency in resource use and respect for a proposal’s physical and natural setting are highlighted in Policy DP1 of draft RSS. The Panel Report recommendations reaffirm the importance of these principles (albeit in a new structure) and also include a new policy [DP8] which outlines measures to reduce emissions and adapt to Climate Change, in order to give prominence to an issue which they felt was given insufficient emphasis in the draft RSS.
Policy EM16, which addresses Energy Conservation and Efficiency, requires plans and strategies to actively facilitate reductions in energy requirements and improvements in energy efficiency. The Panel has recommended changes to make this policy more robust by referring to ‘the promotion of minimum energy efficiency standards for new homes equivalent to Level 3 of the Code for Sustainable Homes by 2010, Level 4 by 2013 and Level 6 ‘zero carbon’ by 2016’. It is also recommended that all other buildings should meet the BREEAM rating of ‘very good’ or, where possible in urban areas, ‘excellent’.

Policy EM17 requires all proposals for non-residential sites above a threshold of 1000sq.m and all housing developments of 10 units or above to incorporate renewable energy production of at least 10% of the development’s predicted energy requirements on site. The Panel recommend that this should become Policy EM18 and that the site size thresholds should be set at the more challenging levels of 500sq.m and 5 or more units. The Panel have also endorsed policy targets, in line with the North West Sustainable Energy Strategy that by 2010 at least 10% (rising to at least 15% by 2015 and at least 20% by 2020) of electricity supplied in the North West should be provided from renewable energy sources.

North West Best Practise Design Guide

4.26 This guide provides broad advice on design issues and more specific guidance on topics such as biodiversity, design and security, EcoHomes, energy efficiency and use of renewable energy.

Draft North West Green Infrastructure Guide

4.27 This draft document explains how the natural environment should be conserved, improved and sustainably utilized to contribute to the delivery of regional social, economic and environmental objectives.

North West Integrated Appraisal Toolkit

4.28 The toolkit aims to ensure that integrated plans and projects create sustainable developments within the North West.

Local Policy

4.29 The Sustainable Design and Construction SPD supplements a number of policies of the City of Salford Unitary Development Plan, which collectively seek to minimise the environmental impact of new developments and ensure that they provide an appropriate level of amenity for the future users/occupiers. The SPD also complements guidance provided in a number of other local policies. Of particular relevance to the Sustainable Design and Construction SPD is the Design SPD, as it is important that measures to improve sustainability are not at the expense of the overall design quality of the development. Other relevant SPDs include the Nature Conservation and Biodiversity SPD and the Flood Risk Planning Guidance. All of these SPDs can be viewed at www.salford.gov.uk.
Policy Context and SPD Objectives

SPD OBJECTIVES

4.30 In light of the issues highlighted above, eight key objectives have been identified for the SPD:

1. To promote the highest practicable standard of resource and energy efficiency in new developments.
2. To provide clear guidance for developers about adapting to or mitigating the harmful impacts of climate change.
3. To improve construction techniques to reduce waste and adverse environmental impacts.
4. To encourage the use of renewable energy and reduce the dependency on non-renewable energy sources.
5. To reduce the proportion of waste that goes to landfill.
6. To enhance the biodiversity and nature conservation interest of Salford.
7. To maximise the benefits for the occupiers of new developments.
8. To promote sustainable forms of travel by encouraging the provision of high quality cycling facilities and the provision of a convenient and safe walking environment in new developments.
5 Planning Policies

Policy SDC 1

Sustainable Design and Construction in New Developments

Major new development will only be permitted where the applicant has clearly demonstrated that all practicable measures have been taken in order to:

1. Minimise Energy Consumption
2. Maximise the Provision of On-Site Renewable Energy Supply and/or Connections to a Decentralised Low–Carbon Energy Supply
3. Incorporate public and private open spaces that offer shade and shelter from increasing temperatures and/or protection from wind, rain and increasing likelihood of extreme weather events
4. Minimise the impacts of ambient air and noise pollution
5. Minimise water consumption
6. Minimise the speed and quantity of surface water run-off
7. Minimise the impact of flood events
8. Maximise the use of responsibly sourced and/or recycled building materials
9. Minimise construction waste
10. Incorporate adequate waste recycling facilities
11. Maximise the provision of wildlife habitats
12. Incorporate appropriate facilities for cyclists and pedestrians

Applicants for smaller developments are encouraged to submit similar information for their developments.

Reasoned Justification

5.1 Very significant levels of development are proposed in Salford over the next few decades. In order to minimise the potentially negative impacts of new development on the local and global environments, and maximise the benefits for occupiers/users of buildings and spaces, it is vital that such development incorporates sustainable design and construction measures wherever possible. It is recognised that the degree to which this can be achieved will vary between developments. However, it will be important that applicants, through their Design and Access Statements, demonstrate that they have given full consideration to how such measures can be incorporated within their proposals, and have amended their proposals accordingly as far as practicable, taking into account all relevant material considerations including the overall viability of the development.

5.2 The potential for incorporating sustainable design and construction measures will be greatest in larger developments, and therefore, in accordance with national guidance and development plan policies, the policy focuses primarily on major developments. However, a similar approach is encouraged in smaller developments, as incrementally these also have a significant impact on the environment.

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1 As defined by chapter 8(7) of the General Development Procedure Order (GDPO) as the provision of 10 or more dwellinghouses, the provision of a building or buildings with a floor space in excess of 1,000m², or development carried out on a site having an area of 1 hectare or above.
5.3 Policy SDC1 is designed to guide decisions on planning applications and reflects what will be a rapidly changing set of circumstances in the coming years. A checklist is provided in chapter 18 of this SPD to ensure that key sustainable design and construction issues are considered when submitting planning applications, in accordance with this policy.

5.4 It is considered realistic that the majority of new dwellings should be able to meet Code Level 3 in the Code for Sustainable Homes. Where the developer is able to demonstrate that their proposed residential development would meet at least Code Level 3 it will help to minimise the information required to demonstrate compliance with the provisions of this SPD other than on the issue of flood risk (which is required to comply fully with UDP Policy EN19) and any non-residential elements of their scheme. The Code for Sustainable Homes, together with technical guidance, can be found on the Communities and Local Government website 2.

5.5 This policy supplements Policies ST5, ST13, ST14, ST16, DES2, DES3, DES9, A1, A2, A10, EN17, EN18, EN19, EN21, EN22, DEV7, W1 and M1 of the UDP, which inter alia specifically require developments to minimise greenhouse gas emissions, provide an appropriate level of amenity, mitigate the impacts of pollution, deliver sustainable waste management, cater for the needs of pedestrians and cyclists, and minimise the risks and impacts of flooding.

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2 www.communities.gov.uk/planningandbuilding/buildingregulations/legislation/englandwales/codesustainable/
6 Minimising Energy Consumption

Background

6.1 Chapter 6 ‘Minimising Energy Consumption’ and chapter 7 ‘Maximising the Provision of On Site Renewable Energy Supply and/or Connections to a Decentralised Low-Carbon Energy Supply’ seek to establish an overall principle of reducing the demand for energy, and should therefore be read in conjunction with each other in order to consider the aspirational target set out below. There are two principal methods of reducing the demand for energy over the lifetime of a development:

- the use of energy conservation measures; and
- the introduction of low or zero carbon technologies (chapter 7).

6.2 Both these chapters provide guidance on a range of measures that can be incorporated in new developments to achieve this aspirational target, although the list is not exhaustive. Whilst the two issues need to be considered together, it may be the case that truly exceptional levels of energy efficiency could justify little or no renewable energy provision.

6.3 Overall, the council will welcome applications that meet the Energy Saving Trust Best Practice Guidance. In accordance with this guidance, it is considered that it should be practicable in the vast majority of cases for new dwellings to achieve energy demand reductions, from both energy conservation measures and the introduction of renewable technologies, that are at least 25% more efficient than the Target Emission Rate as defined by the 2006 Building Regulation Standards.

6.4 Where a lower standard is proposed, it should be demonstrated that full consideration has been given to the availability and potential incorporation of more energy efficient alternatives for each relevant element of the building fabric and that proper consideration has been given to the potential to utilise all relevant sources of renewable energy, including solar panels, photovoltaic panels, wind turbines and geothermal energy, and that existing decentralised energy supplies within the locality have been identified and assessed.

Figure 6.1 Climate Change Action Plan for England’s Northwest 2007-09 (Source: www.nwda.co.uk)
Minimising Energy Consumption

Reducing the need to consume energy

6.5 The generation of energy to heat, light and cool buildings is responsible for approximately half of the total CO2 emissions in the UK. Part L of the Building Regulations requires a minimum standard of energy efficiency in new development. Nevertheless, with a number of measures it should be practicable to improve upon these minimum standards and significantly reduce energy consumption, and therefore contributions to climate change.

6.6 Delivering energy-efficient homes and buildings is central to the Government’s goal of achieving CO2 emission reductions of at least 60 per cent by 2050, and securing real progress towards that longer term goal by 2020. This commitment is being pursued by the government and has been demonstrated again recently in the review of the draft Climate Change Bill after consultation, which proposes a series of legally binding targets for reducing carbon dioxide emissions, and also by the recent announcement of an ambition that all new homes should be “zero carbon” by 2016. In addition, energy efficient homes are integral in helping the council to secure its affordable warmth strategy target of no household having to spend more than 10% of its disposable income on fuel to keep comfortably warm.

6.7 It is recognised that some of the energy conservation measures suggested below would need to be applied before the Target Emission rate of a building is calculated. These aspects are therefore included only as additional guidance although they also serve as a reminder that to fully incorporate sustainability principles, they must be considered at the earliest possible stage in the design process.

Orientation and Layout

6.8 The siting, design, layout and orientation of buildings can have a significant impact on their sustainability in terms of resource consumption and the comfort of the occupiers. One of the simplest methods of reducing energy demand is to use passive solar design to provide light and heat through natural sunlight and solar heat gain, therefore reducing the need for artificial light and heat. Not only does this significantly reduce overall energy consumption but it can also offer occupants a pleasant living and working environment.

6.9 The particular approach used in order to minimise energy consumption will depend upon to some extent the size and use of buildings and the characteristics of the site. However all development should consider how the principles of passive solar gain could be applied.

6.10 The orientation of a building has a significant impact on the amount of passive solar gain available. Keeping the main glazed orientation of the building within 30° of south will maximise the potential for the radiation of the sun to heat the building. This orientation also increases the potential for using natural daylight to light the building and use of solar energy and water heating technology. South-easterly orientation is generally preferable to south westerly as this maximises early morning gains and reduces the likelihood of overheating in the afternoons.

6.11 Further considerations include: minimising over shading in mixed-height developments by locating taller buildings to the north of the site, locating car parking, open spaces, amenity areas and garages to the north of housing and using land over-shadowed by tall trees for parking (where the shading may be beneficial in summer).

1 Chancellor of the Exchequer’s Pre-Budget Report (December 2006)
Building Design Principles

Residential Buildings

6.12 Designing the internal layout of residential buildings to ensure that the most frequently used rooms are on the south side of buildings will make the best use of solar gain. Incorporating a larger proportion of glazed area in the south facing façade can enable a building to take maximum advantage of the light and heat from the sun and significantly reduce energy consumption and the impact on the local and global environment. Care is required in the design process with techniques such as thermal modelling where appropriate, to optimise building performance without overheating.

6.13 The north side of the building should be taken up with rooms that are used less frequently such as toilets, cloakrooms and storage space that require less heating. These rooms should also have smaller windows to minimise heat loss. However, if the windows on the north, east and west facing elevations are too small to achieve reasonable internal light, occupants will resort to daytime use of artificial lighting, eroding the energy savings from passive solar energy.

6.14 Flexible internal design can play an important role in improving the sustainability of buildings by increasing choice and longevity of tenure. Lifetime Homes incorporate sixteen design features that together create a flexible blueprint for accessible and adaptable housing. Further information on Lifetime Homes can be found on the Lifetime Homes website at www.lifetimehomes.org.uk.

Non-Residential Buildings

6.15 In relation to non-residential buildings, although achieving good levels of daylight and natural ventilation are still desirable goals, over-glazing combined with internal heat gains from lighting, higher occupancy levels and equipment can lead to over heating. As such, north orientations can be very good at maximising daylight in non-residential buildings without solar gain. Generally non-residential buildings will be thermally modelled and internal temperatures predicted in the design stages to minimise carbon dioxide outputs and maintain satisfactory and healthy internal working conditions.

6.16 Clearly sustainability measures cannot be considered in isolation from all other design considerations. In order to deliver a successful development, the opportunities for designing and orientating a building to consider solar gain and daylight will need to be balanced with the need to protect the existing character of the area and local amenity. Further guidance on achieving high standards of design is provided within the Design Supplementary Planning Document. In addition, it is recognised that certain sites will have constraints that reduce the opportunities for improving the efficiency with which energy is used through the appropriate siting, design, layout, orientation and screening of buildings. These considerations must also be balanced with the need for good surveillance of public areas. Further guidance on the design and layout of the physical environment so as to reduce the risk of crime is available in the City Council’s Design and Crime Supplementary Planning Document.
Landscape

6.17 Existing trees and new landscape planting should be taken into account when planning for passive solar energy. If poorly positioned in relation to buildings, tall vegetation will reduce solar gain by overshadowing, and obstructing sunlight. Care should be taken when planting trees within 300 of the southerly aspect of the building as they can significantly reduce passive solar gain. Trees that will grow above the shadow line should be deciduous to allow sunlight to pass through when at a low angle in winter and provide beneficial shading and protection from glare and overheating in summer. Small-scale tree and shrub planting can be used to provide privacy for ground floor south-facing living room windows.

6.18 When choosing plant species for new landscaping, consideration should be given to the use of locally native and/or wildlife friendly species in order to maximise the benefits for biodiversity. It is also important to ensure that any planting can obtain maturity without impinging or affecting neighbouring development. Wherever possible new landscaping should be linked to areas of existing landscaping, open space and any semi natural habitats. The potential impact of future climate change should also be considered when choosing plant species for new landscaping. Further guidance on the retention and protection of trees is provided within the council’s Trees and Development Supplementary Planning Document. The Nature Conservation and Biodiversity Supplementary Planning Document contains information in relation to protecting and enhancing green spaces.

Natural Ventilation and Preventing Excessive Solar Gain

6.19 With predicted climate change expected to result in higher summer temperatures, it is likely that buildings will also need greater protection from overheating to prevent uncomfortable internal temperatures.

6.20 As summers become warmer it will be important to ensure that measures to prevent excessive solar gain are incorporated into a design. The potential for incorporating spaces that provide shade and shelter from higher summer temperatures should be identified and the potential benefits of suitable landscaping on microclimate should be explored. Natural ventilation should also be incorporated to aid in the cooling of buildings. This can eradicate the need for mechanical ventilation and air conditioning systems, which generate high energy demands and in some cases rely on refrigerants that are far more harmful to climate change than CO2.

Using Energy Efficiently

6.21 Once the demand for energy has reduced, measures to make the best or most efficient use of energy should be considered. The energy efficiency of a building is influenced by the use of space, insulation and materials within a building.

6.22 Heat loss from the building should be minimised in order to maximise the efficiency with which energy is used. A range of measures can be incorporated into a development to deliver the requisite improvements in energy efficiency. High levels of insulation can be integrated into the main building fabric. Developers could also consider utilising materials with a high thermal mass. These have the capacity to store heat, helping to reduce variations in temperature within a building, and therefore ameliorating the impact of both high and low outdoor temperatures on the occupants/users of a development. More detailed guidance on materials is provided in chapter 13.
6.23 Building Regulations require that all new windows achieve a minimum standard of insulation, which effectively means they must be fitted with double-glazing with a wide air-gap (at least 12mm). However, to further reduce heat loss from windows, consideration should be given to the use of windows with higher levels of insulation or the incorporation of triple glazing. Green roofs could also be integrated to provide buildings with greater thermal mass, prevent heat loss in winter, keep buildings cool in summer and reduce the 'heat island effect’. Further guidance on green roofs is provided in chapter 16.

Energy efficient appliances

6.24 Heating and lighting and other appliances are essential to the occupiers/users of buildings. Nevertheless, they are major consumers of energy. Consequently, the careful choice of systems and appliances can reduce energy demand and therefore costs significantly. Where developments will include some appliances, developers are encouraged to use the most energy efficient available. Specification of high standards of energy efficiency for appliances (for example A rated white goods), and the use of energy saving light bulbs, which consume a quarter of the electricity of ordinary bulbs to generate the same amount of light, can make a substantial contribution to the efficiency with which energy is used.

Case Study - Beddington Zero Energy Development (BedZED)

The BedZED development is constructed on a former sewage works in Hackbridge in the London Borough of Sutton. The development comprises of 82 mixed tenure homes, 1500m2 of office space, a café and a childcare facility.

All the buildings are constructed with high thermal mass materials that store heat when the temperature is high and discharge it at cooler times. The new housing is arranged in five terraces, all of which face south and have triple storey conservatories to maximise light and warmth from the sun. BedZED’s outer walls and roofs are insulated with 300mm thick insulation and the windows are triple glazed. This results in the heating requirements of BedZED homes being around 10% of that of a typical home. Offices, which are normally prone to overheating due to the heat emitted from people and equipment, are situated on the north facing elements of the buildings, eliminating the need for mechanical ventilation.

The guidance in this chapter supports UDP Policies ST14 (Global Environment) and EN22 (Resource Conservation).
Summary checklist for maximising the provision of on-site renewable energy supply and/or connections to a decentralised low-carbon energy supply

(This checklist is also incorporated in full in chapter 18)

<table>
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<tr>
<th>Aim</th>
<th>Questions for developers to consider</th>
<th>Action Taken</th>
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<tbody>
<tr>
<td>Minimising Energy Consumption</td>
<td>Does the layout and orientation of the development maximise the use of passive solar gain whilst minimising the potential for overheating?</td>
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<tr>
<td></td>
<td>Does the development deliver high insulation standards?</td>
<td></td>
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<td></td>
<td>Does the development utilise energy efficient goods?</td>
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7 Maximising the Provision of On Site Renewable Energy Supply and/or Connections to a Decentralised Low-Carbon Energy Supply

7.1 Energy underpins virtually every aspect of our economy and day-to-day lives. However, the use of fossil fuels, which currently provide the bulk of our energy, releases greenhouse gases (such as carbon dioxide) into the atmosphere. There is now an overwhelming body of scientific evidence showing that these emissions are beginning to affect our climate and pose a real and significant threat to the world we live in.

7.2 Renewable energy is an integral part of the Government’s longer-term aim of reducing CO2 emissions by 60% by 2050. As part of its goal to reduce emissions, the Government has set a target of sourcing 10% of electricity supply to be from renewable energy by 2010 and an aspiration to double this by 2020. Incorporating small-scale renewable energy projects in new developments can make a significant impact on greenhouse gas emissions. In addition, increasing the use of renewable sources of energy can reduce dependence on dwindling supplies of fossil fuels and bring greater diversity and security to Salford’s energy supply.

7.3 Renewable energy installations are likely to be affected by the physical nature of the development such as aspect, building height and the amount of on-site open space. Consequently, each application will be assessed on its own merits.

7.4 The benefits of incorporating renewable energy technology will be assessed, while having regard to the potential degree of adverse impact on the existing character of the area and local amenity. Where the technology would have an adverse visual or amenity impact that would clearly outweigh the benefits of the technology, the development would not be expected to incorporate renewable energy production equipment. Off-site provision could also be considered but this would normally constitute development in its own right and would be subject to existing planning controls and specifically UDP policy EN21 [Renewable Energy].

Solar Power

7.5 Solar Photovoltaic (PV) technology uses energy from the sun to generate electricity by using cells to convert sunlight into electricity. The PV cell consists of one or two layers of a semi-conducting material, usually silicon. When light shines on the cell it creates an electric field across the layers causing electricity to flow. The greater the intensity of the light, the greater the flow of electricity.

7.6 PV cells can be connected together to form panels that can be installed onto buildings (normally the roof). Such an installation may not be suitable for all building types or areas, as the visual impact on listed buildings or in conservation areas may not be acceptable. Solar panels can be effectively integrated to buildings with large surface areas, for example office blocks, or on the roofs of more small-scale developments. Furthermore, solar power does not have to be restricted to buildings; for example, solar lighting could be used in external areas to reduce the carbon footprint of a new development. Overshadowing will reduce the energy production of photovoltaics. Nevertheless, photovoltaic technology requires only daylight, not direct sunlight, to generate electricity and so can still operate throughout the year and on cloudy days. PV cells do not generate any noise, have no moving parts and in general have a long life with low maintenance levels.
Solar Water Heating

7.7 Solar water heating systems use energy from the sun to work alongside conventional water heating systems. Domestic solar hot water systems consist of solar panels or collectors, a heat transfer system and a hot water cylinder. Solar panels or collectors can be fitted to the roof and collect heat from the sun’s radiation. A heat transfer system uses the collected heat to heat water during the day and stores it in the hot water cylinder for later use.

7.8 Although solar water heating systems tend to require little maintenance, a range of factors need to be considered, for example, the area of south facing roof, the existing water heating system and whether there is sufficient space for an additional water cylinder if required.

Ground Source Heat Pumps

7.9 In the UK, several metres below the surface, the ground maintains a constant temperature of 11 to 13°C, which, in winter will be warmer than the surface air temperature. These stable ground temperatures make it possible to use a ground source heat pump (GSHP) to harness the heat from the ground during the winter months to provide for the heating needs of a building. Conversely in the summer it is also possible to cool buildings using relatively low ground temperatures.

7.10 A typical GSHP system consists of three elements: a ground to water heat exchanger (often called the ground loop or ground coil), a heat pump and a distribution system.

7.11 There are two different types of ground to water heat exchanger. The first comprises of a borehole, where long pipes are driven deep into the ground. The second is a trench system, in which the loop or coil is laid out horizontally and operates at a shallower depth. The pipes are filled with a mixture of water and antifreeze which is pumped around the system in order to absorb heat from the ground and transfer it into the building to provide space heating and, in some cases, to pre-heat domestic hot water. The captured heat is transferred to a heat pump, which uses a compressor to raise it to a usable higher temperature. The heat can then be distributed around the building using either under floor heating or radiators for space heating.

7.12 The system is designed to heat a whole building. The compressor in a ground source heat pump system is powered by electricity, however for every unit of electricity they consume, three to four units of heat are generated. Consequently, net savings can be made in terms of energy consumed and, as a result, CO2 emitted. Furthermore, if the source of electricity itself is low or zero carbon, either provided on or off-site, the heat provided by these units will be towards zero carbon.

7.13 Before installing a GSHP system into a potentially contaminated site, an assessment should be undertaken to ensure that the system would not introduce new pathways for contaminants to move around or off site.
Air Source Heat Pumps

7.14 An air source heat pump (ASHP) system works by converting the temperature of the outside air into heat for the building and supplying energy for the hot water system. The system consists of three elements: an external air handling unit, an internal heat pump and a pressurized water tank. The only outside space required is an outside wall, making ASHP systems ideal for apartments or homes with limited outdoor space. Installation costs are relatively low as no ground works are required.

7.15 ASHP systems are designed to work in combination with other heating systems rather than acting as the sole energy source and buildings must be sufficiently well insulated to maximise results.

Wind Power

7.16 Wind turbines convert the power in the wind into electrical energy using rotating blades to drive a generator. To be effective the turbines must be sited where they will benefit from adequate supplies of wind and be free from turbulence and obstruction. Turbines do not necessarily need high wind speeds to operate, but to be efficient they do need to be located where there will be a relatively constant wind. Turbines have a cut-in (around 3 metres per second) and shut down (around 25 metres per second which equals approximately 56 miles per hour) wind speed, between which the turbine is able to generate power. The optimum output is at around 12–15 metres per second (approximately 26 mph). Such conditions may not be widespread in urban settings, but sites such as industrial or leisure sites with some open space can be suitable for ground-based systems. Turbines should be free standing, rather than attached to walls and chimneys as this can create potential structural problems.

7.17 The power output of turbines covers a broad range depending on the size and number of turbines employed, but could provide all electricity needs for a small development, or just a part of the overall energy demand. The DTI website \(^1\) contains a wind speed database, which gives an estimate, determined from postcode or map co-ordinates. As with solar PV panels, if surplus energy is generated, arrangements can be made for this to be sold into the general supply grid.

7.18 Turbines can be effectively integrated into the form and design of buildings. However, because of their size and appearance, consideration must be given to their visual impact. Further constraints on the integration of wind turbines may include the impact of noise on neighbouring properties particularly if these are residential, landscape designations, listed

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1 www.dti.gov.uk/energy/sources/renewables/explained/wind/windspeed-database/page27708.html
buildings, conservation areas, wildlife areas or bird migration corridors. Policy DEV7 of the UDP also stipulates that developments must not have an unacceptable impact on the operational integrity or safety of Manchester Airport.

Combined Heat and Power

7.19 Combined Heat and Power (CHP) is the simultaneous production of electricity and usable heat from a single plant. It is a highly fuel-efficient energy technology, which puts to use the waste heat produced as a by-product of the electricity generation process.

7.20 Conventional electricity generation is extremely inefficient as only a small part of the input energy is converted into electricity (typically 25-35%), with the remainder lost via cooling towers and waste heat. By comparison, CHP is not only more efficient through the utilisation of heat, but it also avoids the distribution losses that are a further inefficiency of centralised power stations.

7.21 CHP is applicable on a variety of scales from district to individual buildings. In a CHP system energy is produced in the same way as conventional electricity but the heat is retained for heating, hot water and cooling and is distributed to customers via highly insulated pipes. This improves overall efficiency of energy conversion to around 85% (compared to 25-35% in centralised power stations).

7.22 A conventional CHP system uses natural gas to drive the internal combustion engine. Consequently, it cannot be regarded as a renewable or carbon-neutral source of energy. Nevertheless, due to its greater efficiency, CHP systems can make significant savings in CO2 emissions compared to conventionally generated electricity. A significant proportion of CHP schemes burn alternative, renewable fuels, such as bio-fuels or wood chips, which are virtually carbon neutral because the amount of CO2 released upon conversion to energy is equivalent to the amount that is absorbed by the growing plant or tree in its lifetime.

Biomass

7.23 Biomass is a generic term that describes the use of organic matter to produce energy. It can be burnt directly to provide heat in buildings or processed to produce either solid or liquid energy. Biomass fuels are essentially carbon-neutral since the CO2 released upon their conversion to energy is equivalent to the amount absorbed by the growing plant during its lifetime.

7.24 The most common source of biomass is wood from forests, urban tree pruning, farmed coppices or farm, construction and factory waste that is usually processed to form wood chips or pellets. Biomass heating is theoretically applicable to any building requiring heat, however practical constraints suggest that it is currently most applicable to lower density situations due to fuel storage issues. It is essential that there is a local and adequate supply of appropriate biomass fuel in order to reduce the distance that fuel has to travel and therefore the contributions to climate change and congestion.
Energy from Waste

7.25 Harnessing the energy in waste can deliver dual benefits of reducing both carbon emissions and the pressure on landfill sites and sewage treatment plants.

Case Study – CIS Tower, Manchester

Work began in 2005 on fitting photovoltaic panels on three sides of the 25-storey CIS Tower in Manchester.

Over 7000 solar photovoltaic panels have been installed on the building, creating the largest commercial solar façade in Europe, and also one of the largest solar power systems in the UK. The scheme will generate 180,000 units of renewable electricity each year (equivalent to the energy needed to power 55 homes for a year), creating annual savings of 100 tonnes of CO2 emissions.

Figure 7.2 CIS Tower, Manchester (Source: www.e-architect.co.uk)
Case Study – National Assembly for Wales

The National Assembly of Wales building has been awarded the Building Research Establishment’s (BRE) award for ‘the low environmental impact that the building has achieved through careful use of renewable and low energy solutions to construct, heat and maintain the building.’ A number of sustainability solutions are incorporated to produce a building that achieves high environmental standards.

Ground source heat pumps served by twenty-seven 100m deep boreholes in the ground provide cooling and heating to the building. In order to further reduce the CO2 emissions for heating the building will also utilise locally procured biomass as a combustion fuel source. These features, coupled with a rotating wind cowl which ventilates the chamber via a funnel hanging from the roof, enabled the building to achieve Wales’ highest ever BREEAM environmental rating.

![Figure 7.3 The National Assembly for Wales (Source: www.e-architect.co.uk)](image-url)
Case Study – Bo01 District, Malmö, Sweden

The Bo01 Housing Estate in Malmö is the first phase of a long-term development plan for the area. A derelict industrial zone in the western harbour of Malmö has been redeveloped into a mixed-use urban quarter with approximately 1000 dwellings, shops, offices and other services. The development has achieved a high-density layout, making it efficient in its use of land.

The new district will be served exclusively by locally generated energy from renewable sources. The development has incorporated 120m² of photovoltaic panels and 1400m² of solar collectors to form Sweden’s largest urban solar energy project. The development also includes a 2MW wind turbine and a ground source heat pump to harness geothermal energy. The energy systems of Bo01 are also coordinated with waste systems in order to generate biogas to provide power for community energy systems for heating, cooling and electricity.

Figure 7.4 Bo01 District, Malmö Sweden (Source: www.scandinaviandesign.com)

The guidance in this chapter supports UDP Policies ST14 (Global Environment), EN21 (Renewable Energy) and EN22 (Resource Conservation).
Summary checklist for maximising the provision of on-site renewable energy supply and/or connections to a decentralised low-carbon energy supply

(This checklist is also incorporated in full in chapter 18)

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<tr>
<td><strong>Maximise the provision of on-site renewable energy supply and/or connections to a decentralised low-carbon energy supply</strong></td>
<td>Does the development incorporate low or zero carbon technologies? If not, has full consideration been given to their use?</td>
</tr>
</tbody>
</table>

**Action Taken**

| Yes | No |
Incorporating public and private open spaces that offer shade and shelter from extreme weather events

8 Incorporating public and private open spaces that offer shade and shelter from extreme weather events

8.1 The occupiers of new developments should have easy access to both public and private open space that provides shade and shelter from the more extreme weather expected as a result of climate change, particularly higher summer temperatures and more extreme variations in precipitation. In identifying the potential for the incorporation of such spaces into new developments, regard may be had to the availability of such existing spaces within the immediate locality. If there is evidence that the absence of such spaces may result in a greater need for air conditioning for example, then this should be offset by a proportionate increase in energy efficiency and/or use of renewable energy supplies, or by evidence that the building has been designed to maximise cooling and minimise solar gain in the summer.

8.2 Buildings that are constructed today generally have a design life of up to 100 years, with the urban form having an even greater longevity. Accordingly, it is imperative that predicted climate change informs the design and layout of new developments.

8.3 Predictions suggest that by 2080 summer temperatures will be between 1 and 5 degrees warmer in North West England and extreme weather events, such as very hot days, are expected to become an increasingly frequent occurrence. The impact of these higher temperatures is expected to be particularly severe in urban areas, which experience a ‘heat island’ effect. The urban heat island effect is principally the result of the materials of the urban landscape absorbing a higher proportion of solar radiation than rural areas, combined with anthropogenic heat emissions and less green space to provide a cooling influence. This phenomenon has been found to have an adverse impact on morbidity in vulnerable groups such as the very young and the elderly, people with long term limiting illness, the disabled and people with mental health problems.

8.4 It is also anticipated that levels of precipitation will become more extreme. Winters are expected to become wetter and, although total summer rainfall is expected to decrease, the incidence of short-duration, high intensity rainfall is expected to increase. These changing patterns of rainfall are likely to have serious implications for levels of surface water run-off and, in turn, the likelihood of flooding. Consequently, sustainable drainage solutions, such as porous pavements, should be used where possible to reduce levels of surface water run-off and flooding. These techniques can also have added landscape and biodiversity benefits (more details are provided on sustainable drainage solutions and minimising flood risk within chapters 11 and 12).

8.5 An adapted and sustainable urban environment makes use of well-designed public and private open space that offers an accessible choice of shade and shelter and has beneficial impacts on the microclimate of urban areas. Cities that are not designed to cope with hotter, drier summers for example will require increased use of mechanical air conditioning, which not only contributes further to climate change, but has social implications too.

8.6 Open spaces should be designed to provide a comfortable environment for users and should incorporate shade and shelter wherever possible. The use of deciduous trees and man-made features can offer shading in summer whilst allowing sunlight to pass through in winter and provide shelter from heavy precipitation and high winds.

1 Climate Change Scenarios for the UK - The UK Climate Change Impacts Programme (2002)
When choosing plant species for new landscaping, consideration should be given to the use of locally native and/or wildlife friendly species in order to maximise the benefits for biodiversity. The choice of species should also have regard to the potential impacts of climate change, particularly the occurrence of hotter summers, reduced levels of rainfall in summer and increased occurrences of heavy rainfall in winter. Wherever possible new landscaping and green spaces should be linked to areas of existing landscaping, open space and any semi natural habitats. Further guidance on natural environments and wildlife is available in the Nature Conservation and Biodiversity Supplementary Planning Guidance. The Trees and Development Supplementary Planning Guidance contains information relating to protecting and retaining trees.

Integrating water features such as ponds and fountains into open spaces can provide additional cooling.

However, it is essential that consideration be given to the demand for water that these create. Wherever possible they should be run from local sources of water, such as harvested rainwater, and the water running through them should be recycled or reused, for example for watering vegetation.

It is recognised that integrating outdoor natural spaces into new developments is more difficult to achieve at higher densities. Developers should consider the feasibility for including roof gardens or green links to nearby greenspaces where gardens cannot be provided. Further information on the provision of high quality, well-designed and accessible public open space is provided in the Greenspace Strategy SPD, which is available at www.salford.gov.uk/greenspaces.

Proposals also need to be mindful not to create visual obstacles and places of concealment that adversely affect natural surveillance and, as a result, vulnerability to criminal activity. Additional guidance on designing developments to reduce crime and anti-social behaviour is available in the Design and Crime SPD that is available at www.salford.gov.uk/designandcrimespd.
Case Study - Stratford City Masterplan

In April 2003, the Stratford City development partners submitted an application for the development of Stratford Rail Lands. This development represented one of the most ambitious building schemes ever proposed in London, and incorporated key elements including, shopping and leisure, commercial, hotels, residential, community facilities, open and ecological space, and transport issues.

Through the Masterplan exercise Stratford City utilised design solutions and passive systems to provide comfortable working and living environments. This design approach aimed to create a comfortable, safe microclimate that contributes to the delivery of successful outdoor spaces. The site-wide strategy for microclimate recognises the need to counteract the urban heat island effect through the use of façade materials that absorb less solar heat, plants in open areas to provide shade and open water features to cool the air.

The guidance in this chapter supports UDP Policies DES3 (Design of Public Space) and DES9 (Landscaping).
Incorporating public and private open spaces that offer shade and shelter from extreme weather events

Summary checklist for incorporating public and private open spaces that offer shade and shelter from extreme weather events.

(This checklist is also incorporated in full in chapter 18)

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<td>Incorporate public and private open spaces that offer shade and shelter from extreme weather events</td>
<td>Does the layout and orientation of the buildings enable provision to public spaces within the development?</td>
</tr>
<tr>
<td></td>
<td>Do any open spaces formed provide shade and shelter?</td>
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<td></td>
<td>Has the potential for the inclusion of roof gardens or green links to nearby greenspaces been considered?</td>
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Action Taken

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<tr>
<th>Yes</th>
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9 Minimising the Impacts of Ambient Air and Noise Pollution

9.1 Proposals to site housing and other sensitive uses in proximity to sources of ambient air and noise pollution will be required to demonstrate that appropriate measures have been incorporated to ensure a satisfactory level of amenity for the future occupiers/users of the development. Where the impact of ambient air or noise pollution is likely to restrict the provision of natural ventilation and result in a greater need for mechanical ventilation, then this should be offset by a proportionate increase in energy efficiency and/or use of renewable energy supplies, or by evidence that the building has been designed to maximise cooling and minimise solar gain in the summer.

9.2 Planning policies at all levels are constantly trying to balance the need to provide ever-increasing demand for land for development with the protection of ever-decreasing environmental assets. This has led to higher density developments, the construction of buildings close to major roads, the need to utilise previously developed land and, to improve accessibility. As a consequence, in some cases developments have been built in close proximity to neighbours that are less compatible than would have previously been expected.

9.3 The mitigation of noise, especially in housing and other sensitive uses, needs to be carefully designed into new development, particularly where it is located near to busy roads, railway lines or other noise generating activity. Similarly, although a number of measures are proposed in this SPD and elsewhere to try to reduce car use, through promotion of public transport use, cycling and walking, it is essential that the impact of ambient air pollution, from vehicular emissions and other sources, be considered when looking at proposed locations for new developments. The affects of poor air quality on health increase gradually as pollution levels rise. However for those with lung or heart conditions such as bronchitis or emphysema the effects of poor air quality can be serious.

9.4 New buildings need to be constructed in line with Building Regulations Approved Document E ‘Resistance to the Passage of Sound’ to ensure levels of sound insulation are acceptable internally and to reduce external noise. Features such as acoustic glazing, acoustic barrier fencing and landscaping belts can also be used to significantly decrease the impact of noise on the occupiers/users of new developments.

9.5 Natural ventilation systems, which rely on opening windows, can make it difficult for developments to provide an adequate level of protection from ambient air and noise pollution whilst maintaining a comfortable internal temperature during the summer. However, air conditioning and/or mechanical ventilation systems generate high-energy demands and in some cases rely on refrigerants that are far more harmful to climate change than CO2. Consequently, where housing and other sensitive uses have to rely on air conditioning and/or mechanical ventilation systems owing to their proximity to sources of noise and/or ambient air pollution, the development should achieve a proportionate increase in energy efficiency and/or use of renewable energy supplies.
9.6 The construction process itself can also generate significant amounts of noise and air pollution. Consequently, the Council will welcome development proposals that are accompanied by proposals to minimise the impact of construction activities on the amenity of neighbours. The Considerate Constructors Scheme is a voluntary scheme designed to promote and encourage safe, considerate, clean and responsible builders and building sites and includes information on environmental issues such as the minimisation of waste and the consumption of energy. Further guidance on the Considerate Constructors Scheme is available from www.considerateconstructorsscheme.org.uk. Guidance on best practice on noise and air pollution can be found at www.quiet.org.uk, www.noisenet.org and www.constructingexcellence.org.uk. Green Travel Plans can also be put in place to encourage the use of low carbon transport to site for operatives and the better planning of deliveries to limit the overall generation of carbon in the construction industry.

Case Study – Hammersmith Doctors Surgery

The Hammersmith Doctors Surgery provides an example of how the fabric and layout of a building can control the impact of noise on the users of the building.

The surgery is built on a former disused car park, situated at a noisy junction on one of London’s busiest roundabouts and in close proximity to a flyover. Through using a series of white walls, curved in two dimensions and extending beyond the building in both length and height noise levels from the roundabout and flyover have been reduced. Steps in the wall create tall, thin windows that light the corridor down to the consulting rooms and create views along the footpath.

The other side of the building is orientated towards a secluded courtyard. The use of a glazed, concave curtain wall around the courtyard results in an environment in which noise is much reduced.

The guidance in this chapter supports UDP Policy EN17 (Pollution Control).
Summary checklist for minimising the impacts of ambient air and noise pollution

(This checklist is also incorporated in full in chapter 18)

<table>
<thead>
<tr>
<th>Aim</th>
<th>Questions for developers to consider</th>
<th>Action Taken</th>
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<tr>
<td></td>
<td></td>
<td>Yes</td>
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<tr>
<td>Minimise the impacts of ambient air and noise pollution</td>
<td>What measures have been incorporated to ensure that noise pollution will be minimised using measures at source or between source and receptor? For example through the use of layout, screening and sound absorption</td>
<td></td>
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<tr>
<td></td>
<td>Has the development been designed to reduce exposure to air pollution?</td>
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</table>
Minimising the Impacts of Ambient Air and Noise Pollution
10 Minimising Water Consumption

10.1 The Council will expect applications for major development to incorporate a range of water conservation measures designed to reduce mains water usage. In most circumstances it should be practicable to include measures to achieve a minimum standard of internal potable water consumption of no more than 120 litres per day per person in all residential developments.

10.2 In office developments it should be practicable to include measures to ensure that water consumption is reduced to an average of 3m³ per person/year.

10.3 Where this cannot be achieved, evidence will be required to demonstrate that full consideration has been given to the potential for the use of water saving measures including the use of reclaimed water through the inclusion of rainwater collection and greywater recycling systems.

10.4 Due to climate change, summer rainfall is expected to decrease significantly and the frequency of exceptionally ‘dry’ summers is forecast to increase. However, demand for water is predicted to rise as a result of hotter summers, growth in the number of households and increased demand for consumer durables like dishwashers. This strain on national water supplies is augmented by the pollution and depletion of existing water resources.

10.5 United Utilities estimate that by 2023 water demand in North West England will outstrip supply by approximately 50 mega litres a day. To cope with this increased demand for water and the reduced, less predictable summer rainfall patterns, new developments should seek to use water more efficiently. In addition, although it is not usually factored into the carbon footprint for a building, the amount of energy used to purify water is predicted to increase due to more exacting environmental standards being introduced, with the resulting CO2 emissions also contributing to climate change.

10.6 National planning policy guidance in PPS1 and the Government’s sustainable development strategy “A Better Quality of Life – A Strategy for Sustainable Development for the UK” encourages planning authorities to promote the efficient and sustainable use of water resources. The prudent use of natural resources means ensuring that we use them wisely and efficiently in a way that respects the needs of future generations. Planning policies should seek to minimise the need to consume new resources over the lifetime of the development by making more efficient use of existing resources, rather than making new demands on the environment, this should include policies relating to the sustainable use of water resources.

10.7 A number of measures can be incorporated into developments in order to minimise water consumption, including:

- 6/4 Dual flush WC systems;
- Flow reducing / aerating taps throughout;
- 6-9 litres per minute shower (average electric shower uses 6/7 litres per minute);
- Water meters;
- 18 litre maximum volume dishwasher; and
- 60 litre maximum volume washing machine.
Minimising Water Consumption

Rainwater harvesting

10.8 On average around 200 litres of rainwater fall on the roof of a 100m² house each day in the UK. In residential developments, the provision of water butts and/or community storage facilities to collect rainwater is a simple and low cost measure.

10.9 On all major developments where collecting and reusing water is feasible, the council will welcome applications that include water-saving facilities in the proposed development. These may include:

- Water Butts to all downspouts where appropriate, including any outbuildings such as garages or garden buildings where designed in to a scheme. Water butts can become blocked with slime / debris and should be cleaned at least annually;
- Underground water storage tanks for rainwater collection that could be used for many greywater uses in the development; and
- Retention ponds as a rainwater storage facility.

10.10 Further information on rainwater harvesting and the use of grey water is provided within chapter 11.

Reclaimed Water

10.11 Reclaimed water refers to the use of rainwater and greywater for non-potable uses such as the flushing of toilets and outdoor water use such as watering the garden. To facilitate the best use of reclaimed water the introduction of a separate or dual supply system is encouraged where these are feasible. The public has a general expectation of a single supply of drinking quality water. Changing perceptions to accept the use of dual systems with a separate supply of much lower quality water will not be easy. However, although this is key to the success of the full use of reclaimed water, there are still some issues in relation to control and maintenance, as some grey water may contain contaminants. For example, there can be blockage problems reusing bath water and kitchen water should never be reused due to detergents, food particles and grease. Furthermore, at the current time greywater and rainwater recycling systems are expensive to purchase. The council does not therefore expect to see full dual use systems, but there are a number of much easier quick-win systems that will be expected.
Case Study – Gusto Homes

Gusto Homes won the Environment Agency Water Efficiency Award 2003 for their innovative rainwater harvesting and integrated SUDS developments. For the Company’s Millennium Green project in Nottinghamshire, 24 homes and the company’s own office was fitted with ‘Freerain’, an advanced rainwater harvesting system developed by Gusto. The rainwater collection system uses underground tanks that are big enough to provide non-potable water to the home for 18 days. The harvested water is used for toilet flushing, washing machines and gardening purposes. Detailed analysis has been carried out and has shown that the harvested water accounted for 50% of the water consumption in the houses.

The system has proven so successful that it is now being sold by Gusto to other developers. The Panel of Judges reported, “Not only has Gusto helped its householders save water, but it has also raised general awareness of the potential for building water efficiency measures into new homes and demonstrated the business case for so doing – an outstanding example to others.”

Figure 10.1 Gusto Construction: Millennium Green Nottingham, Source: www.constructingexcellence.org.uk

The guidance in this chapter supports UDP Policy EN18 (Protection of Water Resources).

Summary checklist for minimising water consumption

(This checklist is also incorporated in full in chapter 18)

<table>
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<tr>
<th>Aim</th>
<th>Questions for developers to consider</th>
<th>Action Taken</th>
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<td></td>
<td></td>
<td>Yes</td>
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<tr>
<td>Minimise water consumption</td>
<td>Does the development incorporate water saving devices, such as low flush toilets and showers?</td>
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<td></td>
<td>Will the development include water meters?</td>
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<tr>
<td></td>
<td>Has the use of greywater for all non-potable purposes been considered?</td>
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</table>
Minimising Water Consumption
11 Minimising the Speed and Quantity of Surface Water Run Off

11.1 Developers are encouraged to reduce run-off rates from previously developed sites as much as is reasonably practicable. The council will expect that in most instances it should be possible for developments to ensure that there is no net increase in the speed or volume of surface water run-off. The maximum greenfield run off allowed to watercourse / public sewer should be limited to 7 litres per second per hectare (current requirement) and subject to Salford City Council, the Environment Agency and United Utilities approval. For all developments, surface water run off should be minimal, and on brownfield sites run off should be less than the original discharge where possible.

11.2 Where this cannot be achieved, evidence will be required to demonstrate that full consideration has been given to the potential for the use of sustainable drainage systems and for maximising the area of permeable surfaces within the site. Water attenuation measures are not always desirable in developments located within a flood plain. Accordingly, if developments are located within a floodplain the advice of the Environment Agency should be sought to establish the surface water drainage requirements for new development.

11.3 Conventional approaches to surface water drainage use underground piped systems designed to remove rainwater from the point at which it has fallen as quickly as possible. However, the rise in run-off associated with intense rainfall places considerable pressure on the network, augmenting the risk of flooding from watercourses and surface water drains. Predicted climate change is expected to increase the frequency of heavy rainfall events and therefore exacerbate this risk of flooding. Furthermore, conventional drainage systems also impede the natural recharge of groundwater levels and may also create a direct pathway for pollutants from urban areas to pass into watercourses and groundwater.

11.4 The effect of development is generally to reduce the permeability of at least part of the site, markedly changing the site’s response to rainfall. Without specific measures, the volume and speed of peak run-off is likely to increase, burdening the local sewer system and increasing pollution and the risk of flooding for both the development itself and others.

11.5 The term Sustainable Drainage Systems (SUDS) is frequently used to refer to a whole range of approaches to surface water drainage management. SUDS are an alternative to traditional drainage systems, and attempt to reduce the total amount, flow and rate of surface water run-off. SUDS fall into three main groups:

- Source Control Techniques, which aim to reduce the quantity of run-off at source;
- Permeable Conveyance Systems, which slow the velocity of the run-off to allow settlement, filtering and infiltration; and
- Passive Treatment Systems, which are end-of-pipe systems and provide passive treatment to collected surface water before discharge into a storm sewer or watercourse.

11.6 Not all SUDS techniques will be appropriate for individual development sites. However, a sustainable drainage approach should be possible on any site. The effectiveness of SUDS type systems will depend on many factors, including run-off rates, ground conditions and topography in relation to size, type and density of the development. It is therefore important that SUDS are designed to match local geological and hydrological conditions. It is also essential that the ownership and responsibility for maintenance of every sustainable drainage element is clear and that durable, long-term accountable arrangements are made.
Pervious Pavements

11.7 Most of our contemporary streets, pavements and hard standings have been built using impermeable surfaces. Consequently, the need for surface water drains and off-site sewers can be reduced where run-off is encouraged to permeate through pavements. Constructing pavements and other areas of hard standing from permeable concrete blocks, crushed stone, asphalt or other similar surfacing allows water to infiltrate directly into the subsoil, or be stored in an underground reservoir before slowly soaking into the ground. In addition, during the process pollutant removal occurs either within the surfacing material itself or by the filtering action of the reservoir or subsoil.

Infiltration Trenches and Filter Drains

11.8 Infiltration trenches comprise stone filled reservoirs to which stormwater run-off is diverted, and from which the water gradually infiltrates the ground. Their longevity is enhanced through the incorporation of a filter strip, gully or sump pit to remove excessive solids at the inflow. A filter drain filters water through soil into an underground pipe, providing more storage and some infiltration. The underground pipe is perforated to allow filtering and some infiltration of the water passing from the source to the discharge point.

11.9 In both systems pollutant removal is by absorption, filtering and microbial decomposition in the surrounding soil.

Figure 11.1 Infiltration Trench (Source: CIRIA)

11.10 Approval needs to be sought from the Environment Agency for large soakaways and drainage proposals for adopted roads should be agreed in advance.

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1 www.environment-agency.gov.uk/commondata/acrobat/a5 suds v3.pdf
Swales and Basins

11.11 Swales and basins are simple grassed depressions leading run-off to a channel that provides temporary storage for storm water; therefore reducing peak flows to receiving waters. The grass and other vegetation, which needs very little management, filter the runoff by trapping organic and mineral particles that are then incorporated into the soil, while the vegetation takes up any nutrients. Swales and basins are often installed as part of a drainage network connecting to a pond or wetland prior to discharge to a natural watercourse. Due to the filtration process the discharged water has a much lower pollutant load than if the run-off had gone straight to the watercourse.

11.12 Swales and basins may be installed alongside roads to replace conventional kerbs, therefore saving construction and maintenance costs. They can also be created as features within the landscaped areas of a site or incorporated into ornamental, amenity and screen planted areas where they would be maintained as a part of the normal maintenance contract. However, care must be taken in the choice of vegetation as tussocks create local eddies that augment the potential for erosion on slopes. Shrubs and trees can be planted but the vegetated area will need to be wider and have a gentler slope. When choosing the plant species, consideration should also be given to the use of locally native and/or wildlife friendly species in order to maximise the benefits for biodiversity. Further information on using locally native and/or wildlife friendly species can be found in the council’s Nature Conservation and Biodiversity Supplementary Planning Document.

11.13 Swales and basins will not normally be adopted by Salford City Council, nor the sewerage undertaker as they often require long-term maintenance. If developers chose to consider incorporating swales and basins, they would therefore be responsible for providing long-term management and maintenance arrangements themselves.

Ponds and Wetlands

11.14 Ponds and Wetlands can be designed specifically as part of the wider infrastructure of SUDS to provide an enhanced flood storage capacity. Ponds and wetlands can be fed by swales, filter drains or piped systems. Where practical, storm water run-off from a development can feed a pond, which overflows into a vegetated wetland area to act as a natural soakaway. By allowing adequate detention time, the level of solids removal can be
significant. Furthermore, the algae and plants of wetlands provide an effective filtering and nutrient removal system. Consequently, ponds and wetlands can significantly improve water quality.

11.15 Ponds or wetlands can be designed to accommodate considerable variations in water levels during storms. Although these can be designed as wet or dry ponds, or wetlands, they are most likely to contribute to visual amenity and biodiversity where they include a permanent water body. Ponds and wetlands should be designed to promote safety. The use of shallow side slopes, shallow shelving edges and strategically placed vegetation barriers can ensure that these features are as safe as any natural watercourse.

11.16 When developing ponds and wetlands, it may be useful to introduce a surface water management train to change the flow and quality of the runoff in stages. Further information on surface water management trains can be found at www.ciria.org/suds.

Green Roofs

11.17 A green roof is essentially the growing of plants on a rooftop. The plants and their growing medium (substrate) provide temporary storage of storm water and can reduce both the speed and volume of run-off. In terms of hydraulic performance any rainfall can be taken up by the soil substrate and removed by evapotranspiration. Only when the soil is fully saturated will water percolate through to the underlying drainage layer at significant volumes. A green roof will also provide a degree of attenuation.

11.18 Deeper substrates offer greater attenuation performance and support greater plant diversity, thus improving the energy efficiency and biodiversity potential benefits. Useful independent advice and guidance on the wide range of options green roofs can offer for small or large scale developments can be obtained from (www.livingroofs.org/).

11.19 Further guidance on the incorporation of green roofs in new developments is available in chapter 16.

Grey Water

11.20 Correctly collected and stored, rainwater can meet a significant proportion of a building’s water requirement. Using rainwater before it goes down the drain can also help to relieve the pressures on the drainage system but will not in itself normally attenuate all storm water. Instead of using water from the mains, the collected rainwater can be used for toilet flushing, clothes washing and outdoor uses where this is feasible. Further guidance on rainwater recycling systems is provided within chapter 10.
Case Study – Salford Sports Village

At the Salford Sports Village in Kersal, SUDS techniques were incorporated in order to reduce the risk of flooding.

A balanced infiltration and attenuation SUDS pavement, capable of handling a one in 100 year storm event, has been installed to provide a slow release soak away (permavoid) under the main car park to manage the speed and quantity of surface water runoff. The installed system also incorporates petrol interception into the design of the infiltration systems in order to minimise contamination.

The installed permavoid is mostly as a single 150mm deep layer although additional units were used to create a local 300mm deep layer for draining runoff from the roof of the nearby amenity building.

Figure 11.2 Salford Sports Village (Source: www.gjseddon.co.uk)
Case Study – Buckshaw Village

Buckshaw Village, near Chorley, is a mixed-use development on a 324ha brownfield site. SUDS have been fully integrated into the development in order to ensure that surface water runoff from the site is restricted to existing rates and that the development does not contribute to an increased risk of flooding.

Swales have been installed adjacent to the highway. Rainwater retention ponds are also being incorporated and a number of previously culverted watercourses on the site are to be opened up and developed as landscape features. The surface water runoff from each group of residential properties will be filtered by a reedbed system prior to its discharge to the watercourse in order to remove pollutants and safeguard against the contamination of watercourse.

The guidance in this chapter supports UDP Policy EN19 (Flood Risk and Surface Water)

Checklist for minimising the speed and quantity of surface water run-off

(This checklist is also incorporated in full in chapter 18)

<table>
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<tr>
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<th>Questions for developers to consider</th>
<th>Action Taken</th>
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<tr>
<td></td>
<td></td>
<td>Yes No</td>
</tr>
<tr>
<td>Minimise the speed and quantity of surface water run-off</td>
<td>Have SUDS been incorporated into landscaping, driveways and any hard surfacing?</td>
<td></td>
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<tr>
<td></td>
<td>Could the development support the inclusion of ponds and wetlands as part of a SUDS system?</td>
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Minimising the Impact of Flood Events

12.1 Approximately 12,250 properties across Salford are at a risk of flooding. Most of these properties are located in the floodplain of the River Irwell. However, properties in the floodplains of Worsley Brook, Platts Brook, Salteye Brook, Folly Brook and Shaw Brook are also considered to be at risk. In addition, there are also approximately 1,000 properties across the city that are affected by sewer and surface water runoff flooding after heavy rainfall.

12.2 Even with effective policies to reduce greenhouse gas emissions to the atmosphere, experts believe that there will still be significant climate change over the coming decades due to the emissions of greenhouse gases that have already been released into the atmosphere. As a consequence of this climate change, winter rainfall is predicted to rise in North West England and, although total summer rainfall is expected to diminish, incidence of short-duration, high-intensity rainfall is forecast to increase. Consequently, flood events are expected to occur with increasing frequency and magnitude.

12.3 Although flooding cannot be wholly prevented, many measures to reduce the impact of flood events can be delivered through careful building design and the use of certain construction materials. New development proposed in areas at risk of flooding will need to comply with Adopted Unitary Development Plan (UDP) Policy EN19: Flood Risk and Surface water, which seeks to ensure that proposals for new development demonstrate that the risk of flooding has been minimised to an acceptable level and that adequate provision has been made for the disposal of surface water.

12.4 In order to satisfy Policy EN19, developers should make reference to the city council’s Flood Risk and Development Planning Guidance which offers advice on the requirements for flood risk assessments (FRAs) and flood risk mitigation measures that new development should incorporate to manage flood risk to an acceptable level, for example by raising floor levels, providing compensatory flood storage and emergency access and egress routes. Drainage arrangements and flood risk should be discussed with the council’s Group Engineer (Strategy) in the Engineering and Highways department at the earliest opportunity.


The guidance in this chapter supports UDP Policy EN19 (Flood Risk and Surface Water).

Checklist for minimising the speed and quantity of surface water run-off

(This checklist is also incorporated in full in chapter 18)

<table>
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<th>Aim</th>
<th>Questions for developers to consider</th>
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<tr>
<td>Minimise the impact of</td>
<td>Has the development taken into consideration the issues raised in the Flood Risk and Development Planning Guidance?</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Minimising the Impact of Flood Events
13 Maximising the Use of Responsibly Sourced and/or Recycled Building Materials

13.1 The council is keen to ensure that materials to be used in construction projects are responsibly sourced (including making use of recycled building products where appropriate) and, wherever practicable, come from local suppliers to minimise transport costs (financially and environmentally beneficial).

13.2 Using a selection of responsibly sourced materials can make a major contribution to sustainable development, ensuring non-renewable resources are maximised and minimising the need for new materials. In the long term, the benefits are numerous such as slowing down the demand for non-renewable resources such as mineral extraction, less energy use in manufacturing products from raw materials and less damage done to the natural environment. Sustainable design and construction principles can also have far reaching impacts on biodiversity at a local, national and international level, for example, by using timber from sustainably managed forests or avoiding use of peat bogs.

13.3 Construction materials should be chosen which are environmentally friendly, of low embodied energy and which can be recycled or reclaimed when the building comes to the end of its life. As a consequence, to assess fully the position of materials in a sustainability context requires consideration of a complex set of environmental, social and economic factors across their whole life-cycle. The use of life-cycle assessments of materials and products has advanced in recent years alongside improvements in life-cycle methodologies. Several standards are already well known throughout the construction industry, such as the Forest Stewardship Council (FSC), which certifies that timber is derived from a sustainable source and The Energy Star rating scheme that demonstrates the energy efficiency of electrical products. There are many sources of information including:

- www.ethicalconsumer.org
- www.fsc-uk.org
- www.defra.gov.uk/environment/consumerprod/ecolabel/index.htm
- www.wrap.org.uk/construction

13.4 In construction terms there is considerable help available from WRAP (the Waste and Resources Action Programme), to enable assessment with minimum effort. There are also many labels and logos available to assist purchasers in making an assessment of the life cycle of a product, such as low energy, 100 per cent recycled, non-toxic, and ‘From a Sustainable Source’.

13.5 The council will require applications to ensure that at least 3 of the 5 key elements of construction are specified to achieve a BRE Green Guide 2006 Rating from A* to D to demonstrate that the environmental impact of chosen materials has been considered.

13.6 The incorporation of any recovered or recycled demolition materials in the new build phase can be counted towards the overall target for recycled and re-used content. In particular applicants should refer to the ICE Demolition Protocol as a framework for quantifying the recovery potential.

13.7 The council will welcome applications for development that can demonstrate that the selection of locally sourced materials has been maximised where appropriate.

1 The 5 key elements of construction are as follows - Roof structure and finishes, External Walls, Upper floor, Internal walls, and Windows and doors.
13.8 The selection of locally sourced materials has a number of benefits:

- It reduces the distance of transportation and associated energy costs;
- It often contributes to the local character of the area and helps to maintain local identity and distinctiveness.
- It may contribute to maintaining jobs in the local, sub-regional and regional markets in relation to mineral extraction industries, manufacture of building products and in the supply industries.
- It may enhance the prospects of generating new technology industries to meet the increasing demand for new and innovative solutions.

The guidance in this chapter supports UDP Policies EN22 (Resource Conservation) and M1 (Protection of Mineral Resources).

**Checklist for maximising the use of responsibly sourced and/or recycled building materials**

(This checklist is also incorporated in full in chapter 18)

<table>
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<tr>
<th>Aim</th>
<th>Questions for developers to consider</th>
<th>Action Taken</th>
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<tbody>
<tr>
<td>Maximise the use of responsibly sourced and/or recycled building materials</td>
<td>Does the development make use of locally sourced materials?</td>
<td>Yes</td>
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<tr>
<td></td>
<td>Have you considered the relative benefits of different construction techniques and materials?</td>
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<tr>
<td></td>
<td>Does your development proposal achieve a BRE Green Guide 2006 Rating of D or above?</td>
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</tbody>
</table>
14 Minimising Construction Waste

14.1 The Government signalled the importance of construction waste in its new Waste Strategy for England 2007. Construction and demolition produce around 90 million tonnes of waste each year. At a national level, building and demolition waste accounts for over 40% of the waste being disposed at landfill sites, placing considerable pressure on a dwindling landfill capacity and creating a series of environmental problems. National guidance encourages planning authorities to devise policies that take account of the management of waste in ways that protect the environment and human health, including producing less waste and using it as a resource wherever possible.

14.2 RSS sets out a Regional Approach to Waste Management in Policy EM10. This states that “plans, strategies, proposals and schemes should promote and require the provision of sustainable new waste management infrastructure, facilities and systems that contribute to the development of the North West by reducing harm to the environment (including reducing impacts on climate change), improving the efficiency of resources, stimulating investment and maximising economic opportunities”. In paragraph 11.20 the importance of recycling and reusing recycled materials is emphasised.

14.3 The recycling or re-use of existing buildings and construction materials can play an important role in minimising construction waste. Developers should seek to minimise construction, demolition and excavation waste. In order to demonstrate this, all major developments should be accompanied by a Site Waste Management Plan (SWMP). SWMP’s should:

- Assign responsibility for producing the plan;
- Identify the types and quantities of waste;
- Identify waste management options;
- Identify waste management sites and contractors;
- Identify the possible use of recycled materials;
- Identify any necessary training;
- Set out a plan for efficient materials and waste handling;
- Include measures to monitor how much waste and what types of waste will be produced;
- Include measures to ensure the recycling of waste generated during construction will be maximised;
- Incorporate measures to ensure that implementation of the plan is monitored; and
- Include mechanisms to review how the plan worked at the end of the project.

14.4 Where it is not feasible for developers to produce a SWMP, for example, where most of the requirements of a SWMP are contained within other plans or documents, it may be acceptable for these other plans or documents to be submitted instead.

14.5 SWPMs provide a means to identify the volume and type of material to be demolished and/or excavated, opportunities for the reuse and recovery of materials and to demonstrate how off-site disposal of waste will be minimised and managed. SWPMs provide an important tool for improving the environmental performance of the construction process and they can also deliver financial benefits to the developer. Approximately 13% of all the solid materials delivered to construction sites go unused. Consequently, by providing a system to manage material supply and waste, a SWMP can significantly diminish development costs by reducing the likelihood that materials will be over-ordered and decreasing the volume of waste that needs to be disposed.
SWMPs are identified in PPS 10 as a measure to encourage more sustainable practices in the construction industry. The requirement for a SWMP is also embodied within The Clean Neighbourhoods and Environment Act 2005 for all construction projects of over £250,000. Implementation of this requirement is shortly to be consulted upon by the Government.

Further guidance on minimising the waste generated during the construction process is available from the following sources:

- The ICE Report on Demolition Protocol www.ice.org.uk
- Recycled content toolkit, and Choosing Construction Products, WRAP www.wrap.org.uk
- BRE Green Guide to specification www.bre.co.uk
- CIRIA – Construction Waste and Resources: Planning Policies, model policy 2
- To calculate the amount of carbon dioxide in building materials and the amount associated with their transportation refer to www.info4local.gov.uk/documents/related-links/519303.

“Proposed new development should be supported by site waste management plans of the type encouraged by the code of practice published by the DTI.” (PPS10: paragraph 34)
Case Study - Cardiff International Sports Village

The Cardiff International Sports Village, developed by Taylor Woodrow, will be a landmark sporting facility in the Cardiff Bay area, comprising residential use, a casino, hotel, snow dome, ice rink and a sports stadium element. The site had a history of contamination issues relating to previous land uses including oil storage facilities, licensed and unlicensed landfill, coal storage and loading facilities, and mechanical workshops and scrap yards.

In terms of resource efficiency and design issues, the development has taken into consideration a number of on site waste construction techniques. Taylor Woodrow in advance of development on the site developed a Site Waste Management Plan. This plan was continually updated throughout the development and was used to identify waste streams and associated strategies for disposal/re-use.

In particular, a dynamic compaction process was adopted. This process enabled the re-use of 50,000m$^3$ of material for use as a dynamic compaction mat. A further 15,000m$^3$ of site-won crushed hardcore rubble was salvaged from the site and reused, screened and re-laid as the construction works progressed. In addition to this, it also prevented 3805 vehicle movements that would have occurred to and from the site.

The guidance in this chapter supports UDP Policies ST16 [Sustainable Waste Management] and W1 [Waste Management].

**Checklist for minimising construction waste**

(This checklist is also incorporated in full in chapter 18)

<table>
<thead>
<tr>
<th>Aim</th>
<th>Questions for developers to consider</th>
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<tbody>
<tr>
<td>Minimise construction waste</td>
<td>Has a Site Waste Management Plan been prepared to demonstrate how the waste hierarchy will be applied during the construction process?</td>
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<tr>
<td></td>
<td>Does the development utilise materials from the demolition of existing buildings on the site or other recycled materials?</td>
</tr>
</tbody>
</table>

Figure 14.1 Cardiff International Sports Village (Source: www.rh-architects.com)
Minimising Construction Waste
15 Incorporating Adequate Waste Recycling Facilities

15.1 PPS10 ‘Planning for Sustainable Waste Management’ encourages the integration of recycling facilities into new developments. Applicants should therefore consider design and layout when submitting planning applications to secure opportunities for sustainable waste management facilities.

15.2 Each year every household in Salford generates nearly a tonne of waste that needs to be disposed of. In Salford, it is estimated that 14.1% of waste was recycled and 6.25% composted in 2006/07 – a total recycling/composting rate of just over 20%. This is still less than the average for England but the council is working hard to achieve the targets set by the Government of achieving 40% by 2010 and 50% by 2020. However, it is generally accepted that over 70% of collected household waste is recyclable or compostable. Apart from squandering resources, landfill disposal and/or incineration create a range of other environmental problems.

15.3 To meet its targets, the council will expect all new major developments to incorporate adequate waste recycling facilities, which will need to be designed to incorporate uncomplicated collection and storage facilities. All new developments will be expected to provide dedicated space for the storage and collection of recyclable materials. The type of facility proposed will vary according to the scale and type of development, but by providing sufficient, accessible recycling facilities occupiers of new developments will have greater opportunities to contribute to the recycling targets. Further advice and information can be obtained at an early stage in the consideration of development proposals from the Liveability Division of the Council’s Environment Directorate, who are able to provide help and advice on the containers and services to be provided.

15.4 As the actual detail of recycling collection services may change from time to time, for example due to improvements in collection methods or additional collections to meet recycling targets, developers should aspire to the current best practice with regard to recycling and waste management standards for the storage of household waste. Recycling facilities must be designed to permit convenient and safe access for waste producers, including the elderly and persons with disabilities, and those who collect the waste. The impact the facilities will have on an area should also be considered as, when poorly sited, wheelie bins and refuse storage facilities can have an adverse impact on the street scene, obstruct access and detract from residential amenity.

15.5 Collection services and methods are subject to change and reference should be made to the note on the provision of waste, storage, recycling and collection facilities issued by the Liveability Division of the Council’s Environment Directorate.

15.6 The following list provides a breakdown of considerations that should be given to certain types of development. It should however be noted that this list is neither prescriptive nor exhaustive and each development will be assessed on its own merits.

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1 The Waste Collection Authority can be contacted using the Call Centre telephone number: 0161 909 6500
2 BS 5906: 2005 - Code of practice for storage and on-site treatment of solid waste from buildings
Incorporating Adequate Waste Recycling Facilities

HOUSES

15.7 The council currently operates a kerbside scheme for approximately 46,000 homes in the borough for the collection of numerous types of recyclable materials. This includes:

- All food and drink cans (aluminium and steel);
- Brown cardboard, grey board and paper products;
- All glass bottles and jars;
- All plastic drinks bottles, detergent and shampoo bottles;
- Plastic carrier bags; and
- All office paper, junk mail, newspapers and catalogues.

15.8 Consideration should therefore be given to the following issues:

**Internal Storage Capacity**

- Provision of sufficient space in the kitchen or another convenient location within each house for the storage of recyclables and residual waste, including compostable waste.

**External Storage Capacity**

- Provision of sufficient space within houses with gardens for the storage of up to four 240 litre wheeled bins, for the collection of the full range of recyclable materials being collected by the authority;
- Provision of sufficient space on houses without gardens for the storage of up to three 240 litre wheeled bins, for the collection of the full range of recyclable materials being collected by the authority. It is recognised that where there is no rear garden, bins can have an adverse impact on the street scene and it may therefore be practicable to have a smaller number of external storage containers or to have containers of a smaller size;
- Provision of an accessible area within the curtilage for collection and return. Wherever possible, steps should be avoided between the container store and collection point. If steps cannot be avoided there should be no more than three steps in any single flight.

**Frequency of Collection**

15.9 It is recognised that the frequency the material is collected can be an influencing factor in incorporating adequate waste collection facilities.

**Composting**

15.10 Treatment of waste at source is recognised as the most sustainable method of treatment therefore home composting areas should be designed in to all new housing developments. This should also include sites where management contracts will be put in place. These should use on-site composting of garden waste.

15.11 Space should be provided for the storage and collection of organic kitchen waste (excluding cooked foods) and all types of garden waste. In houses with gardens, an area with composting bins should be provided for organic kitchen waste and less bulky garden waste.
waste. Compost bins should be located away from the house in a shaded area and should normally sit on the soil to allow access for worms and microbes and to ensure drainage. Where composting is not feasible, the council operate a garden waste collection service.

Apartments

15.12 Kerbside recycling schemes are often more difficult to facilitate in apartment developments. In these types of development the Council will welcome proposals that seek to provide appropriate recycling facilities and would welcome early negotiation with the waste collection authority to facilitate this. Consideration should be given to the following issues:

Internal Storage Space

- Provision of sufficient space in the kitchen or another convenient location within each apartment for the storage of recyclables and residual waste, including compostable waste.
- It may be more appropriate on some developments to provide communal storage areas on each floor. These areas will need to be secure and well contained in order to prevent the indiscriminate disposal of general waste.

External Storage Space

15.13 Communal chute systems could be provided internally on each floor for different dry recyclables connected to a shared waste compound. Where communal chutes are provided then these will need to incorporate effective noise prevention measures to protect residential amenities.

15.14 Where it is not feasible for communal chute systems to be installed, for example, where there is inadequate space, internal recycling bins can be placed in each apartment kitchen with larger communal recycling bins, such as those with a 240 litre capacity, being provided in an appropriate communal bin store. The occupier can then take the separated materials to the communal facility on a regular basis.

15.15 The management company should ensure no contamination of residual waste in the recycling bins / containers provided. In addition to the above it would also be useful to consider the following points:

- Shared waste compounds with sufficient space to accommodate at least four wheeled containers for different types of waste including recyclables, numbers to be determined based on the number of dwellings;
- Space should be provided for the storage and collection of organic kitchen waste (excluding cooked foods) and all types of garden waste;
- Where developments exceed twenty dwellings the provision of a ‘bring’ facility including containers and recycling banks may be more appropriate than shared waste compounds;
- All shared waste compounds, communal storage areas and composting bins should be maintained on a regular basis, and if management contracts are in place these should cover these matters;

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3 BS 5906: 2005 - Code of practice for storage and on-site treatment of solid waste from buildings
4 The Waste Collection Authority can be contacted using the Call Centre telephone number: 0161 909 6500.
Incorporating Adequate Waste Recycling Facilities

- Appropriate space should be provided to facilitate access and egress for waste collection vehicles; and
- If there is no management company, the residents are solely responsible for maintaining the bin areas, for the maintenance of the bins themselves and placing of the bins ready for collection on the appropriate day and their return, the same day, back to the bin areas.

Composting

15.16 As stated previously, home composting areas should be incorporated in all new housing developments including the communal gardens space in apartment developments, as treatment of waste at source is recognised as the most sustainable method of treatment. This should include sites where management contracts are in place and these should use on-site composting of garden waste. Where composting is not feasible, the Council operate a garden waste collection service.

Non-Residential Developments

15.17 Kerbside recycling schemes are also often more difficult to facilitate in non-residential developments. In these types of development the Council will welcome proposals that seek to provide appropriate recycling facilities and would welcome early negotiation with the waste collection authority to facilitate this.

15.18 The following list outlines some considerations that should be taken into account when submitting an application for non-residential developments with a floor area of over 1,000m².

- Provision of purpose-built storage areas for both waste materials and the storage of recyclables such as packaging, organic waste (excluding cooked food) and textiles that can be used and jointly services by all occupiers of the development;
- In the case of storage facilities for organic wastes these must be designed to ensure that the risk of odour and vermin is minimised;
- Provision of deposit points within premises (inside and outside of buildings) for workers and if appropriate visitors/customers to deposit recyclables;
- Storage areas will need to be secure and well contained to avoid the indiscriminate deposit of general waste; and
- Appropriate space should be provided to facilitate access and egress for waste collection vehicles.

15.19 Further information on waste recycling facilities in Salford can be found in the Salford City Council Advice Note on the Provision of Waste Storage, Recycling & Collection Facilities, which can be requested from the Waste Collection Authority.

The guidance in this chapter supports UDP Policies ST16 (Sustainable Waste Management) and W1 (Waste Management).

5 The Waste Collection Authority can be contacted using the Call Centre telephone number: 0161 909 6500
### Checklist for incorporating adequate waste recycling facilities

(This checklist is also incorporated in full in chapter 18)

<table>
<thead>
<tr>
<th>Action Taken</th>
<th>Questions for developers to consider</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td><strong>Incorporate adequate waste recycling facilities</strong></td>
</tr>
<tr>
<td></td>
<td>Has there been consideration for the provision of internal and external facilities to recycle household waste?</td>
</tr>
<tr>
<td></td>
<td>Has the development taken into consideration Salford City Council’s kerbside collection scheme?</td>
</tr>
<tr>
<td></td>
<td>Are the recycling facilities designed to allow convenient and safe access for the elderly and people with disabilities?</td>
</tr>
</tbody>
</table>
Incorporating Adequate Waste Recycling Facilities
16 Maximising the Provision of Wildlife Habitats

16.1 It should be practicable for all major developments to at least maintain the overall level of biodiversity, either through the provision of on-site habitats, or the improvement of off-site habitats and in many cases secure enhancements.

16.2 Recent legislative changes now impose a duty on planning authorities to conserve biodiversity (1). New developments offer opportunities to create habitats and incorporate beneficial biodiversity features as part of good design. However, developments also have the potential to result in significant damage to or loss of habitats, both temporary and permanent. Consequently, it is imperative that the indirect as well as direct impacts of development activity on biodiversity are taken into consideration. There are opportunities within many development proposals to create, manage and enhance wildlife habitat and the natural landscape. In many instances, it will be possible to achieve targets of habitat creation and enhancement as set out in the Greater Manchester Biodiversity Action Plans (2).

16.3 Existing on-site valuable trees and vegetation should be retained wherever possible and linkages into the existing network of semi-natural and other open spaces should be maintained or enhanced in order to provide ‘buffer’ habitats, ‘stepping stones’ and ‘corridors’ for wildlife.

16.4 Further guidance on the retention, enhancement and provision of habitats is provided in the Nature Conservation and Biodiversity SPD and the Trees and Development SPD, which are available at www.salford.gov.uk/naturebioversityspd and www.salford.gov.uk/treesdevelopmentspd respectively.

16.5 Opportunities for integrating on-site habitats into new buildings should be considered at the earliest stage in the design of new development. The specific measures incorporated will depend on local conditions. However, measures on buildings could include: green roofs, bird and bat boxes, and wall/façade planting. Measures within new landscaping could include the use of locally native and/or wildlife friendly species.

Green Roofs

16.6 A green, or living, roof is essentially the growing of plants on a rooftop. In order for plants to grow on roof tops, natural environmental conditions have to be created. This can be achieved by installing a series of functioning layers that, while retaining the necessary water to support the plants, allow excess water to drain off and protect the roof surface from plant roots and mechanical damage.

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1 The Natural Environment and Rural Communities Act 2006 states that “Every public authority must, in exercising its functions, have regard so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.” (Part 3, Chapter 40).

2 The Natural Environment and Rural Communities Act 2006 states that “Every public authority must, in exercising its functions, have regard so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.” (Part 3, Chapter 40).
16.7 There are three main types of green roof:

- **Extensive** - normally consisting of mosses, succulents, herbs or grasses. They are intended to be self-sustaining, with no need for irrigation and minimal maintenance requirements. This form of green roof is the least demanding on the building structure. However, the biodiversity contribution of this kind of roof is restricted and it also has the lowest capacity for water retention.

- **Simple intensive** - slightly greater depth than extensive systems, they allow for a greater diversity of plants to be grown and local habitats recreated.

- **Intensive** - effectively roof gardens, similar to gardens at ground level, which consist of a thick layer of soil (150mm+) in which a variety of plants, vegetables, shrubs and trees can be grown. This type of roof has the potential to make the greatest contribution to water retention and biodiversity. They are often accessible and can even be used for recreational spaces. However, they require frequent maintenance (comparable to that of a normal garden) and place significant weight on the building structure.

16.8 Green roofs not only provide a useful wildlife habitat but can also deliver a wide range of economic, environmental and social benefits. They reduce the rate and volume of rainwater run-off, thereby decreasing the risk of flash flooding following high-intensity rainfall. The insulative properties of a green roof also improve the thermal efficiency of the building by diminishing heat loss during the winter and preventing overheating during summer, therefore decreasing the need to consume energy in order to heat or cool the building. Furthermore, the vegetation on a green roof can augment the acoustic performance of a building, enhance air quality by absorbing carbon dioxide and other pollutants, and alleviate the urban heat island effect by lowering temperatures around the building through evapotranspiration.

16.9 In addition to cutting energy costs, green roofs can lessen the drainage infrastructure requirements on site, further decreasing costs for the developer. Green roofs can also provide a public amenity of value to local residents and workers, and can even be used for recreational purposes. The on-going maintenance associated with a green roof should be carefully considered before a decision is taken to incorporate one.
Brown Roofs

16.10 Brown Roofs are intended to reduce the adverse affects associated with the loss of wildlife sites from development. A brown roof involves covering the roofs of new developments with a thin layer of crushed rubble and gravel, ideally obtained from the development itself. They are intended to be gradually colonised by spiders and insects and provide a feeding site for insectivorous birds.

Case Study – Unicorn Grocery, Chorlton, Manchester

Organic grocery Unicorn installed a green roof to improve the thermal performance of the building and create a wildlife habitat. Unicorn worked with the Greater Manchester Bio-Diversity Project to devise a scheme to create a brown and green roof on the existing Unicorn Grocery to achieve these twin aims.

The roof is part of a Manchester wide project called ‘Make Room for Black Redstarts’, which aims to create habitat ‘stepping stones’ for this bird species. Most of the 520m² space on top of the Unicorn building is a brown roof, which differs from a green roof in that it does not have any sedum. This is partly due to the weight limit that the building can take, but it is also the best habitat for the bird, which likes poor vegetation.

The roof is believed to be the first in the UK to incorporate a pond. The 50m² area of water attracts midges, which provides a food source for birds and attract bats. By diverting rain water coming off a higher roof from going straight down the drain it also helps prevents flooding.
Maximising the Provision of Wildlife Habitats

Nest Boxes and Bat Boxes

16.11 Installation of nest boxes for birds and bats at suitable locations around a development can provide valuable habitats and maintain/increase the nature value of the site. Consideration should be given to the landscaping in the vicinity of nest boxes. Further information on the provision of bird and bat boxes can be found at www.rspb.org.uk and www.bats.org.uk respectively.

Green Façades

16.12 Planting on flanking/façade walls has a number of biodiversity benefits including providing additional wildlife habitat. As with green roofs, planting on flanking/façade walls can deliver a number of additional benefits, such as reducing heat loss during the winter and maintaining a comfortable internal temperature during the summer.

16.13 A range of species may be suitable for green facades, including lichens, grasses, flowering and climbing plants. Locally native species should be used as far as practicable. Planting should be planned so that safe access to the wall surface and particularly any services (such as downpipes, gutters or flues) are maintained.

Landscaping

16.14 High quality on-site landscaping can create attractive environments that improve the setting of a development. Landscape schemes should also be seen as an opportunity to retain, enhance or create habitats.

16.15 When choosing plant species for new landscaping, consideration should be given to the use of locally native and/or wildlife friendly species in order to maximise the benefits for biodiversity. Wherever possible new landscaping should be linked to areas of existing landscaping, open space and any semi-natural habitats. Further guidance is provided in the city council’s Nature Conservation and Biodiversity SPD that can be viewed at www.salford.gov.uk/naturebioversitiespd.

Case Study - Churchill Place, London, Barclays HQ

This development at Barclays Bank HQ in the Isle of Dogs incorporated the use of a 400m² green roof, based on Swiss design principles. The green roof is a pre-grown mat constructed of light substrates and planted with drought- and wind-tolerant plants. The development utilised recycled crushed brick and concrete. The substrate had a small amount of soil added to it and was seeded with a wildflower mix. The composition of the green roof creates bare areas for rare insects that thrive in dry exposed conditions. The location of the development means that it is in close proximity to a known black redstart nesting habitat, which it is hoped will use the roof to nest and potentially breed.

The guidance in this chapter supports UDP Policies ST13 (Natural Environmental Assets).
Checklist for maximising the provision of wildlife habitats

(This checklist is also incorporated in full in chapter 18)

<table>
<thead>
<tr>
<th>Aim</th>
<th>Questions for developers to consider</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximise the provision of wildlife habitats</td>
<td>Does the development retain, protect or enhance wildlife habitats and natural features of the site?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Has the potential for incorporating a green or brown roof been considered?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If any unavoidable losses of biodiversity are incurred, are mitigation measures in place and what are they?</td>
<td></td>
</tr>
</tbody>
</table>
Maximising the Provision of Wildlife Habitats
17 Incorporating Appropriate Facilities for Cyclists

17.1 The transport sector currently accounts for over a quarter of the UK’s CO2 emissions. It is the only sector of the economy from which emissions have been rising consistently since 1990, largely due to increased car ownership, longer distances being travelled and a greater proportion of local trips being undertaken by car. Some 80% of CO2 emissions from the transport sector emanate from road transport (1). Road transport is also responsible for a significant proportion of the pollutants that reduce air quality and are a major cause of respiratory problems.

17.2 By encouraging the uptake of more sustainable forms of transport, such as cycling and walking, reliance on the private car can be reduced, which in turn can make a positive contribution to greenhouse gas emissions, improve air quality, ameliorate congestion and address social exclusion. In addition, the average life expectancy in Salford for men is 3.1 years below the national average, and for women it is 2.6 years below the national average (2002-2004). Physical activity is a key influence on general health. Consequently, promoting cycling and walking could also deliver improvements to the health and well-being of the residents of the city.

17.3 Cycling accounts for less than 2% of trips made in the UK, compared with up to 20% in other European countries (2). The most recent census, undertaken in 2001, revealed that the proportion of the working population who travel to work by bicycle in Salford was 2.3%, slightly below the national average of 2.8%. Salford City Council has developed a cycling strategy to promote and develop cycling in order to maximise its role as a safe, quick, efficient, convenient, healthy and environmentally friendly form of travel. This guidance is available at www.salford.gov.uk/encouraging-cycling-in-salford-strategy.pdf.

17.4 The proportion of trips undertaken by foot is also low and walking trips – other than for purely recreational purposes – have been in steady decline over the last 20 years (3). If cycling and walking are to become convenient and viable alternatives to other forms of transport it is essential that development proposals make adequate provisions for safe and convenient access for both cyclists and pedestrians.

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1 Action in the UK: Transport and climate change - Defra
2 Encouraging Cycling in Salford: Salford City Council’s Local Cycling Strategy
3 Walking and Cycling: an action plan – Defra
Facilities for Cyclists

17.5 Provision for cycle parking is essential to support the development of cycling as a practical transport choice. In most circumstances, it should be practicable for major trip generating developments and residential developments with communal parking areas to incorporate secure cycle parking. The minimum standards for the provision of cycle parking in new developments are set out in Appendix B of the Unitary Development Plan.

17.6 When a cycle parking area is being provided it should normally:

- incorporate Sheffield stands or wall mounted bars. Wheel slots or butterfly racks are not usually acceptable;
- be protected from the weather with a roof over the stands;
- be positioned where it would be overlooked by the public or staff; or at least CCTV, in order to maximise the actual and perceived level of security; and
- be positioned where it can be easily reached from access routes and where its use would not conflict with pedestrians; and
- be appropriately lit in order to discourage crime and improve visibility for users.

17.7 If the cycle parking is intended for long stay use, the applicant should consider providing shelters with lockable gates in order to provide greater security for the bicycles.

17.8 In major employment developments it should also be practicable to incorporate showers, changing facilities and lockers to enable employees to travel to work by bicycle.

17.9 It should be possible to provide one locker for every cycle parking space. One shower cubicle should be incorporated for every ten cycle parking spaces, with a minimum of one cubicle.

Cycle Lanes

17.10 Cycle lanes or tracks are an important part of the overall traffic management toolkit, because they help to raise awareness of cycling as a form of traffic, and promote cycling as an effective and viable alternative travel mode. To develop a safe, convenient, efficient and attractive transport infrastructure that encourages and facilitates cycling, developers should consider the incorporation of facilities for cyclists where changes to the highway network are made as a result of new developments. The possibility of incorporating links to existing routes and cycle lanes should be explored. Where space permits the cycleway should be separated from the road carriageway in order to provide a safer environment for cyclists.

17.11 Where cycleways are being provided care should be taken to ensure that such routes are designed so as to minimise opportunities for crime and anti-social behaviour. Further guidance on designing cycle routes to reduce the likelihood of criminal activity is provided in the Design and Crime SPD, which is available at www.salford.gov.uk/designandcrimespd.

17.12 Guidance on the design of cycle lanes is available on the Department of Transport website www.dft.gov.uk and in the design manual TD 90/05 which can be viewed on the Highways Agency website www.highways.gov.uk.
Facilities for Pedestrian

17.13 Planning Policy Guidance note 13 (Transport) recognises that patterns of development and the location, scale, density, design and mix of land uses is a key influence upon the need to travel and the convenience of walking as a viable alternative to travel by private car.

17.14 Facilitating movement to/from and around developments includes, for example, providing pedestrian routes to/from the public highway, pedestrian improvements to the local highway, incorporating pedestrian crossings and ensuring that pedestrian environments are safe, accessible, free from barriers and attractive. This is particularly relevant where journeys are made by public transport, since walking is always the first and last element of such journeys.

17.15 The Department for Transport’s guide “Manual for Streets” provides guidance on the planning and design of new residential streets, and modifications to existing ones. It aims to increase the quality of life through good design and create more people-orientated streets. The “Manual for Streets” guidance is available on the Department for Transport’s website.

Case Study - Staithes South Bank Phase 1, Gateshead

This development comprised of 697 units, including flats and houses. The first phase was completed in 2006, with completion of all phases expected to be 2010.

A national cycle route runs along the river, and this is linked through the site by two local cycle routes. This development incorporates cycle parking into the homes and apartment blocks of the residents, but also makes provision within the scheme for visitor cycle parking.

Figure 17.2 Staithes South Bank, Gateshead (Source: www.cabe.org.uk)
The guidance in this chapter supports UDP Policies ST5 (Transport Networks), A1 (Transport Assessments and Travel Plans), A2 (Cyclists, Pedestrians and the Disabled), A10 (Provision of Car, Cycle and Motorcycle Parking in New Developments) and DES2 (Circulation and Movement).

**Checklist for incorporating appropriate facilities for cyclists and pedestrians**

(This checklist is also incorporated in full in chapter 18)

<table>
<thead>
<tr>
<th>Aim</th>
<th>Questions for developers to consider</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incorporate appropriate facilities for cyclists and pedestrians</strong></td>
<td>Does the development encourage cycling through the provision of appropriately designed, secure cycle parking facilities?</td>
<td>Yes</td>
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<tr>
<td></td>
<td>Is the development integrated to safe cycling routes around the site?</td>
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<tr>
<td></td>
<td>Does the development contribute to the provision of a convenient and safe walking environment?</td>
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</tbody>
</table>
## 18 Summary Checklist

Evidence should be provided when submitting a planning application, for example, in the accompanying design and access statement, to demonstrate that actions have been taken or to justify why they have not.

<table>
<thead>
<tr>
<th>Aim</th>
<th>Questions for developers to consider</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes  No</td>
</tr>
<tr>
<td>Minimise energy consumption</td>
<td>Does the layout and orientation of the development maximise the use of passive solar gain whilst minimising the potential for overheating?</td>
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<tr>
<td></td>
<td>Does the development deliver high insulation standards?</td>
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<td></td>
<td>Does the development utilise energy efficient goods?</td>
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<tr>
<td>Maximise the provision of on-site renewable energy supply and/or connections to a decentralised low-carbon energy supply</td>
<td>Does the development incorporate low or zero carbon technologies.</td>
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<td></td>
<td>If not, has full consideration been given to their use?</td>
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<tr>
<td>Incorporate public and private open spaces that offer shade and shelter from extreme weather events</td>
<td>Does the layout and orientation of the buildings enable provision to public spaces within the development?</td>
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<tr>
<td></td>
<td>Do any open spaces formed provide shade and shelter?</td>
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<td></td>
<td>Has the potential for the inclusion of roof gardens or green links to nearby greenspaces been considered?</td>
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<tr>
<td>Minimise the impacts of ambient air and noise pollution</td>
<td>What measures have been incorporated to ensure that noise pollution will be minimised using measures at source or between source and receptor? For example through the use of layout, screening and sound absorption</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
<td></td>
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<tr>
<td>Has the development been designed to reduce exposure to air pollution?</td>
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<tr>
<td>Minimise water consumption</td>
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<tr>
<td>Does the development incorporate water saving devices, such as low flush toilets, showers?</td>
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<tr>
<td>Will the development include water meters?</td>
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<tr>
<td>Has the use of greywater for all non potable purposes been considered?</td>
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<tr>
<td>Minimise the speed and quantity of surface water run-off</td>
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<td>Have SUDS been incorporated into landscaping, driveways and any hard surfacing?</td>
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<tr>
<td>Could the development support the inclusion of ponds and wetlands as part of a SUDS system?</td>
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<tr>
<td>Minimise the impact of flood events</td>
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<tr>
<td>Has the development taken into consideration the issues raised in the Flood Risk and Development Planning Guidance?</td>
<td></td>
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</tr>
<tr>
<td>Maximise the use of responsibly sourced and/or recycled building materials</td>
<td></td>
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<tr>
<td>Does the development make use of locally sourced materials?</td>
<td></td>
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<tr>
<td>Have you considered the relative benefits of different construction techniques and materials?</td>
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<tr>
<td>Does your development proposal achieve a BRE Green Guide 2006 Rating of D or above?</td>
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<tr>
<td>Minimise construction waste</td>
<td></td>
<td></td>
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<tr>
<td>Has a Site Waste Management Plan been prepared to demonstrate how the waste hierarchy will be applied during the construction process?</td>
<td></td>
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<tr>
<td>Does the development utilise materials from the demolition of existing buildings on the site or other recycled materials?</td>
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</tr>
<tr>
<td>Incorporate adequate waste recycling facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has there been consideration for the provision of internal and external facilities to recycle household waste?</td>
<td></td>
<td></td>
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<tr>
<td>Has the development taken into consideration Salford City Council’s kerbside collection scheme?</td>
<td></td>
<td></td>
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<tr>
<td>Are the recycling facilities designed to allow convenient and safe access for the elderly and people with disabilities?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maximise the provision of wildlife habitats</strong></td>
<td>Does the development retain, protect or enhance wildlife habitats and natural features of the site?</td>
<td></td>
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<td>---</td>
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<tr>
<td></td>
<td>Has the potential for incorporating a green or brown roof been considered?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If any unavoidable losses of biodiversity are incurred, are mitigation measures in place and what are they?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Incorporate appropriate facilities for cyclists and pedestrians</strong></th>
<th>Does the development encourage cycling through the provision of appropriately designed, secure cycle parking facilities?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Is the development integrated to safe cycling routes around the site?</td>
</tr>
<tr>
<td></td>
<td>Does the development contribute to the provision of a convenient and safe walking environment?</td>
</tr>
</tbody>
</table>
19 Implementation, Monitoring and Review

Implementation

19.1 The provisions of this SPD will be implemented primarily through the development control process and the determination of applications for planning permission or prior approval. The SPD does not have the status of the development plan (for the purposes of Chapter 38 of the Planning and Compulsory Purchase Act 2004), but will be an important material consideration in determining applications for planning permission.

Monitoring

19.2 The effectiveness of the SPD will be assessed each year in Salford’s Annual Monitoring Report. This will identify whether there have been any problems in implementing the SPD, and assess whether it is having its intended effects. The key indicators will be:

- “% of people who like the neighbourhood they live in” to act as a proxy.
- % of major development proposals that provide at least 10% of its energy supply from on-site renewable energy sources or through connections to a renewable or low-carbon decentralised energy supply.
- % of new major residential developments that incorporate measures to achieve an internal potable water consumption of no more than 120 litres per person per day
- % of waste that is turned into compost or recycled.
- % of new residential developments within 30 minutes public transport travel time of various key facilities.

Review

19.3 The assessment of the SPD’s performance in the Annual Monitoring Report will help to identify whether there is a need for the SPD to be reviewed. If a need for review is identified, then a timetable for this process will be included in Salford’s Local Development Scheme as resources permit.
Implementation, Monitoring and Review
Appendix 1 - The Sustainability of Existing Buildings

The DCLG produced a “Review of Sustainability of Existing Buildings” in November 2006 considering the energy efficiency of dwellings. This states that 152 million tonnes of carbon were produced by the UK in 2004. Emissions from domestic building stock were responsible for 27% of total UK carbon emissions, and non-domestic buildings 18%.

Despite the Government commitment to increase housing supply, around two-thirds of homes standing in 2050 are likely to have been built before 2005. New build represents only approximately 1% of the total stock each year, highlighting the importance of addressing the sustainability of the existing stock. There are a number of existing technologies that can help reduce carbon emissions from the existing domestic stock. As the majority of carbon emissions are generated by space and water heating (73%), an effective way to tackle emissions without changing behaviour or the carbon content of the mainstream energy supply is to improve the thermal efficiency of the building, so that less energy is needed to heat the property.

Improving efficiency involves a combination of improving insulation and using the most efficient heating systems. Cavity wall insulation currently offers the largest potential carbon saving per dwelling and across the whole stock within a 3-year payback period. Other cost effective measures generally offer lower carbon savings. Other measures, such as micro Combined Heat and Power (CHP), solid wall insulation and ground source heat pumps, has the potential to achieve relatively large potential carbon savings. However, a high up-front installation cost means that these have longer payback periods and, therefore, are not particularly cost-effective for households without additional support or incentives.

Many initiatives are already operating in an effort to improve energy efficiency in existing housing stock such as the Home Energy Conservation Act, the Decent Homes scheme and Warm Front. Energy Performance Certificates may be required soon in relation to the sale or rent of houses.

The government is also encouraging the development of renewable energy sources and has announced its intention to introduce permitted development rights for the following types of micro-generation: solar panels, wind turbines, heat pumps, biomass and combined heat and power, subject to specific conditions and limits that will ensure that any adverse impact on others is not significant. It is anticipated that the amendments to legislation required to implement these changes for householder micro-generation will be brought forward in Spring 2008. The installation of some schemes may still require planning permission. If you are in doubt as to whether you require planning permission, then you should contact Urban Vision on 0161 909 6545.

Building Regulations are constantly changing to ensure increasing energy efficiency in new developments. If building work is being carried out on existing buildings, the Building Regulations are still likely to apply. This covers work from building an extension to replacing windows or the boiler. Part L of the Building Regulations sets standards related to the conservation of fuel and power.

Advice

The Government has established a sustainable development web site to provide advice on a wide range of sustainability matters. The website includes a householders page that provides advice on energy and water conservation, waste minimisation, and travel, amongst other things: www.sustainable-development.gov.uk/advice/householders.htm

1 Permitted Development Rights for Householder Microgeneration – Government response to consultation replies
The Carbon Trust was launched in 2001 and is a government funded independent company set up to help businesses and the public sector to cut carbon emissions and to help to capture the opportunities presented by low carbon technologies. Considerable information is provided on their website: www.carbontrust.co.uk

The Government Department for Food and Rural Affairs also provides water conservation advice for existing houses as well as new developments and their website contains links to other agencies that provide advice, such as the Environment Agency:
www.defra.gov.uk/environment/water/conserve/save.htm
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Salford Civic Centre
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Swinton
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M27 5BY

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Adopted 19th March 2008