Stockport Metropolitan Borough Council
Local Development Framework

Sustainable Design and Construction

Supplementary Planning Document

April 2012

STOCKPORT
METROPOLITAN BOROUGH COUNCIL

cleaner, greener, safer, stronger.

About this Guide

This Supplementary Planning Document (SPD) has been designed to facilitate an easy and quick grasp of the design and construction methodologies, which will ensure that all development in Stockport is as sustainable as it can be. It is a comprehensive document laying out the drivers and benefits of sustainable design and construction, but can be dipped into for those who want specific information on design topics, by using the Table of Contents as a guide.

Throughout the document there are web links which are underlined text, which can be clicked on by those reading the document online, to access directly the resources and information referred to. Online users may find it useful to save a copy of the document as a pdf which allows for easier online use - i.e. you do not loose the link to the original document every time you click for another resource. For those reading paper copies the full web addresses are available in 'Appendix I: Resources'.

Stockport Council aims to be a leading green borough and the approaches outlined in this document will contribute to this objective. The section of this guide detailing 3 'Legislation & Policy' outlines other national and local strategies and policies, which are driving sustainable development in Stockport and beyond.

Status of the SPD

This SPD is designed to assist the Council's partners in developing Stockport Borough in the effort to achieve the sustainable location, layout, design and construction of development.

It is recommended that designers and developers liaise with relevant Council officers and other relevant agencies (e.g. Environment Agency[1]) PRIOR to the submission of their plans. Identifying and resolving possible points of contention by way of informal meeting before an application is registered reduces the likelihood of delay in the development management process. It also allows a decision to be reached more quickly. The submission of a plan and an outline proposal in advance of such a meeting allows officers greater preparation time.

Scope

This document does **not** provide detailed technical guidance as that would replicate existing resources. This guidance references national and other environmental design and construction standards, reflecting their structure for ease of use. Many issues are inter-related and this is reflected throughout the guidance.

It is not the intention of this guidance to cover those aspects of designing and constructing buildings that are mandatory, such as meeting Building Regulations, the Disability Discrimination Act (Amendment) Regulations 2003 or the Construction (Design and Management) Regulations 2007.

Structure

Section 1 'What is Sustainable Design & Construction?' will briefly touch upon the principles and drivers of sustainable design.

1 http://www.environment-agency.gov.uk/research/planning/33368.aspx

About this Guide

Section 2 'Why use Sustainable Design & Construction' outlines the benefits of employing sustainable design and construction, and some of the standards and tools that can be used to do so.

Sections 2 and 3 are designed to assist designers and developers to understand the issues, opportunities and benefits of adopting sustainable design and construction. They can also help to make the case for using a sustainable approach to development.

Section 3 'Legislation & Policy' discusses relevant legislation, and clarifies the relationship of this document to existing policy, including: Stockport's recently adopted Core Strategy as well as the other elements of the emerging Local Development Framework; and other non-planning policy such as the Sustainable Community Strategy.

Section 4 'Topics' offers practical advice under a number of pertinent topic headings. Users should refer to this section for specific information on technologies, methods and resources to achieve the various elements of sustainable design and construction.

When to use this Guide

To assist with decisions in terms of design and cost implications, ideally it should be used in any pre-design stages or discussions. However it can also be used throughout design and construction of any type of development. See detail below on the Checklist option.

Making it Easy - A Checklist

This SPD has an associated Sustainability Checklist for ease of use and reference. This provides an easy tick list guide on the wide range of sustainable design options referring directly back to the topic sections in this SPD. The checklist is designed in such a way that it can support different types of development, whether housing or commercial, large or small.

The structure can be viewed in 'Appendix A: Sustainability Checklist' in this document. For ease of completion it can be obtained from the Planning Policy Team as an Excel spreadsheet, which can be completed and submitted electronically with other documents.

The Checklist asks a series of questions reflecting the topics in this document. A score can be assigned and recorded on the document. Once completed, the document can be revisited with updates and scores altered accordingly, should options become viable or non-viable. Different versions can therefore inform different stages of the design and planning application process.

The Checklist can be completed for any type of development and is an excellent pre-application discussion tool which can inform ideas and designs. The hyperlinked resources in the SPD allow for further detail on options, supporting decision making in terms of finalised designs.

The Checklist can also provide an excellent audit trail for discussion and decisions, during and on completion of the project.

Any queries in terms of completing the Checklist should be directed to the Planning Policy Team and/or the Health & Environment Advisor.

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Appendices

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1 What is Sustainable Design & Construction?

1.1 Sustainable development is that which meets the needs of citizens without compromising the needs of future citizens. The aim is to achieve a balance between social, environmental and economic issues in a community, whilst creating and using resources in a responsible way. This document synthesises the wealth of information on how such best practice can be achieved, signposting useful tools and benchmarks where relevant.

The Standard Approach

1.2 Environmental and design building standards have emerged over the last few decades which provide a framework for engaging in sustainable design and construction. Standards such as Code for Sustainable Homes and BREEAM help in considering every stage of development, including site selection, function, concept, design, contracting, constructing, marketing, operation and management, demolition and recycling.

1.3 Through applying these standards and tools at an early stage (preferably from RIBA Stage B - Strategic Briefing), the resulting development will achieve Stockport Council Priorities: Safe & Strong; Thriving; Green; and Healthy.

1.4 Subsequent sections of this document provide an overview of the approaches and techniques required by various environmental standards.

1.5 Health Impact Assessment is an additional technique which can be easily applied at the concept and design stages. NHS Stockport produced a simple proforma document which can be used to assess concepts and design against health criteria. A copy of this document can be obtained from NHS Stockport or from the Council's Health & Environment Advisor.

2 Why use Sustainable Design & Construction

2.1 This section of the document lays out the business case and further benefits for using the Sustainable Design & Construction Approach. Throughout the document there are elements referring to the health benefits achieved by choosing Sustainable Design & Construction as a method of delivering development in Stockport.

2.2 The Stern Review of the Economics of Climate Change makes some pressing economic arguments for tackling climate change: *'The effects of our actions now on future changes in the climate have long lead times. What we do now can have only a limited effect on the climate over the next 40 or 50 years. On the other hand what we do in the next 10 or 20 years can have a profound effect on the climate in the second half of this century and in the next.'*

2.3 The Mini Stern for the Manchester City Region stated: *'Change stimulates innovation and adaptation, and those organisations that embrace that challenge and seek commercial advantage are most likely to survive and prosper. Targeted support can help to realise those opportunities in business that would otherwise be slower to adapt.'*

2.4 For Stockport the benefits of delivering sustainable design and construction will be realised in a healthy and prosperous populace, living in trusting and modern communities, whilst undertaking business, education and any other day to day activity in an attractive Borough.

The Business Case

Cost Factors

2.5 It is commonly asserted that sustainable development costs much more than conventional methods. This is inaccurate on a number of levels. Adding 'eco-technology' to a conventional building can indeed be costly and an inefficient use of financial resources. However, if considered at the earliest feasibility stages of a project, holistic sustainable design will result in minimal cost increases[(2)]. In some cases, costs can even be reduced – for example where natural ventilation strategies eliminate the need for expensive air conditioning plant.

2.6 The costs of incorporating environmental design standards are also often offset by savings at the later stages of the building's life. These can include: reduced energy bills; lower financial burdens for drainage; and lower staff turnover, sickness and absenteeism. With regard to this last point, British Council for Offices estimate that capital, operational and staff costs over a buildings' life have a ratio of 1:5:200 making staff savings potentially highly significant[(3)].

2.7 Materials which are environmentally sound are less processed or resourced from reclaimed or renewable sources. These materials are becoming more attractive relative to high-impact materials such as steel and concrete. Economies of scale can also help to reduce their cost.

2.8 Off-site construction[(4)] and other types of efficient construction techniques which are more cost-effective are also gaining popularity. This approach also has other benefits including: reduced waste, reduced programme times, improved health and safety, protection against skills shortages,

2 World Business Council for Sustainable Development - Energy Efficiency in Buildings: Business realities and opportunities (2008): www.wbcsd.org/DocRoot/1QaHhV1bw56la9U0Bgrt/EEB-Facts-and-trends.pdf

3 www.bco.org.uk/

4 Scottish Construction Centre - Off-site Construction: http://www.scocon.org/page.jsp?id=1037

reduced petrol and transport costs, protection against impacts of seasonal weather and ease of compliance with Parts L/E Building Regulations.

2.9 There are also opportunities for financial savings by undertaking a sustainable construction approach. Landfill tax is set to rise to £64 per tonne on 1st April 2012, with further increases after this[5].

2.10 Developers and contractors should discuss the potential for cost savings regarding re-use of materials and waste recycling on each project. The guidance in this document suggests using on-site recycling via management tools. A developer could review a contractor's experience with environmental management systems (such as ISO 14001) as part of the tender process in order to achieve cost savings.

2.11 The creative adaptation of heritage assets can dramatically reduce the whole life energy costs and waste impacts that would result from demolition and replacement. This applies even where the proposed development would in itself be of an acceptable standard in terms of energy performance. It is quite possible that the recycling of existing buildings may cut overall financial cost and even save time.

Market Demand

2.12 The eco-building market is growing. Rising energy prices and energy security issues over the last few years boosted the market significantly and will continue to do so in the future. An international market for high-end sustainable properties already exists with several specialist agencies developing, particularly in the US, Canada and Australia[6].

2.13 In the UK the public sector now demands BREEAM 'Excellent' for new commercial buildings and 'Very Good' for refurbishments, while many private sector occupiers and investors are also applying similar standards[7]. In the residential sphere regeneration specialists are building green homes for a younger urban market[8]. Estate agents specialising in green homes have emerged over recent years[9] with some mainstream agencies offering information on specialised Eco Properties. Additionally some online agencies allow properties to be searched by Environmental Performance Certificate rating.

2.14 To take advantage of this emerging market opportunity, developers should be innovative with environmental as well as social initiatives. It would be good practice to compare different environmental impacts using emerging quantitative analysis techniques, reflected within this guidance, to accurately gauge their worth, both in terms of market value and environmental and social benefit.

2.15 Increases in energy prices are likely to continue in the long term, creating a strong argument for purchasing or renting energy efficient buildings. Developers should be aware of market trends in energy prices[10] and the associated links to building design and marketing.

5 www.businesslink.gov.uk/bdotg/action/detail?itemId=1085288287&type=RESOURCES
6 Property Council of Australia:http://www.propertyoz.com.au/Article/NewsDetail.aspx?p=56&mid=1554
7 RICS Going for Green: www.rics.org/site/download_feed.aspx?fileID=9979&fileExtension=PDF
8 Urban Splash: www.urbansplash.co.uk/
9 Green Moves: www.greenmoves.com
10 Energy Price Trends: http://www.decc.gov.uk/en/content/cms/statistics/publications/publications.aspx

2 Why use Sustainable Design & Construction

2.16 The UK's CRC Energy Efficiency Scheme[11] launched in April 2010 and is a mandatory carbon emissions trading scheme to cover all organisations using more than 6,000MWh per year of electricity (equivalent to an annual electricity bill of about £500,000). These organisations have to register and monitor energy use, with the aim of trading carbon allowances in future years. Obviously organisations who qualify are examining their building portfolio with regards to energy performance and may be seeking new venues with low carbon design.

Access to Investment Capital

2.17 Investors now review various types of risk which relate directly to social, environmental and sustainability issues. Morley Fund Management's Igloo Regeneration Partnership[12], the first sustainable regeneration fund in the UK, have recorded potential outperformance, increased liquidity and reduced risk for well designed and sustainable regeneration projects. The level of detailed information required by finance providers varies, however they all require evidence of the developer's ability, as well as a robust preparation and appraisal of a scheme. These requirements need to show evidence of a review of social, economic and environmental factors.

Access to Insurance

2.18 In light of ever more frequent flooding incidences, the insurance sector wants to ensure that the construction industry tackles environmental issues, particularly around carbon reduction and flooding[13]. They are monitoring more closely whether or not developers build with sufficient protection against impending extreme weather events related to climate change. Indeed, the Association of British Insurers is recommending to its members that they only provide flood cover for buildings in areas with less than a 1.3% probability of flooding (1 in 75 years).

2.19 Climate change may present new liabilities requiring insurance[14]. Insurance provides important risk transfer mechanisms enabling business and society to manage potential liabilities in the most economically efficient way. These mechanisms will become increasingly valuable as climate risk increases.

Cost Effective Applications

2.20 The Planning & Compulsory Purchase Act 2004 emphasises the need for pre-application consultation and detailed information provision. This document and the associated Checklist provide a structure for designers and developers to discuss issues at pre-application stages with both clients and planning representatives. Use of these tools can help to facilitate embedding of sustainability issues throughout the Design & Access Statement, including energy information for example, which can help to streamline applicants' workload, thereby reducing costs.

2.21 Use of this approach can inform cost implications for development and in turn informs decisions regarding sustainable design and construction. This process requires knowledge of how to address sustainability at an early stage in the development process. The guidance in this document can facilitate knowledge of which environmental technologies attract finance, including funding, which is also crucial to achieve the most cost-effective solution. If sustainability

11 http://www.environment-agency.gov.uk/business/topics/pollution/126698.aspx
12 www.igloo.uk.net/
13 Coping with Climate Change: risks and opportunities for insurers: http://www.cii.co.uk/ciiimages/public/climatechange/ClimateChangeReportForeword-Summary.pdf
14 Assessing the Risks of Climate Change: http://www.abi.org.uk/Media/Releases/2009/11/45222.pdf

requirements are not integrated early and comprehensively, it can result in the need for significant and costly design alterations later in the process.

Anticipating Pending Legislation

2.22 Developers need to be aware of long-term environmental legislation changes particularly in the construction industry. Construction legislation focuses on overall performance-based targets, such as carbon emissions. Those development teams with the most extensive and practical knowledge on issues such as energy and water consumption will be able to meet requirements most cost-effectively.

2.23 Policy and legislation are changing rapidly to respond to the growing understanding of the need to take account of sustainable design and construction requirements. There are details of pending legislation available in subsequent sections of this document.

Improved Brand & Reputation

2.24 Addressing sustainability can significantly enhance a company's reputation[15]. Conversely, non-compliance with environmental best practice has been proven to damage commercial reputation, which often proves difficult to recover from. In light of the recent launch of the CRC Energy Efficiency Scheme qualifying organisations will be aware of their performance on the associated league tables and the impact that will have on their reputation.

2.25 Reputation can have an impact on a company's ability to recruit employees. A MORI survey[16] stated that 86% of British workers indicated the importance of a socially and environmentally responsible employer. A company's reputation has a strong impact on staff motivation which is reflected in how they speak about and represent the company.

2.26 A good reputation for sustainable design and construction can be used to develop and improve relationships with landowners, local communities and authorities.

Skills & Development

2.27 Familiarisation with the sustainable design and construction approach endorsed in this document allows all members of a developer's team to gain the skills and knowledge which can ensure a cost-effective, successful and timely application. The associated benefits from this in terms of skills available for future projects is immeasurable.

2.28 In association it is critical that marketing agents and staff understand and can promote sustainable design features, as well as understand their potential impact on value. Developers would be wise to work with and encourage marketing agents and staff to research other green schemes to enable them to reflect real value in terms of unit sales prices.

15 Sustainability and Construction: http://envirowise.wrap.org.uk/media/attachments/244130/CIOB%20-%20Sustainability%20and%20construction.pdf

16 Ipsos MORI Loyalty Report: http://www.ipsos-mori.com/researchpublications/researcharchive/poll.aspx?oItemId=849

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Preferential Access to Land

2.29 Land owners such as the Church, National Trust and the Crown Estate as well as landlords such as the Public Sector may be looking to deliver against sustainability targets in terms of development and look favourably upon developers with a track record in delivering sustainability.

2.30 In such circumstances it is also important that the developer has foreseen the cost and design implications of potential sustainability requirements such as renewable energy or sustainable drainage. If these have been incorporated into the development appraisal appropriately, the developer can offer an accurate residual land value whilst protecting their profits. This way the landowner absorbs any potential costs associated with the sustainability targets they have set rather than the developer.

Further Benefits

2.31 This section will highlight the main benefits for using Sustainable Design & Construction, over and above the business case made. Alongside 'Appendix B: Stockport & Health Innovation' it outlines the benefits to the Borough and the wider community, citing how the benefits interact to enhance local communities. This can be reflected in Design and Access Statements.

2.32 Further sections provide more detail on relevant policy and legislation, as well as how Stockport Council and partners promote and enable sustainable design and construction.

Targets

2.33 There are a range of international and national targets (expanded on in 'Appendix D: Environmental Standards') on climate change, carbon and energy, as well as water, waste, biodiversity and health. The Stockport Strategy 2020 sets out the long term vision for the Borough, with four priorities: Thriving, Safer & Stronger, Healthy, Greener.

2.34 This will be achieved by ensuring that development in the borough contributes to the following local aims of the Strategy:

- A unique built environment which preserves our heritage and has high quality new development
- Excellent parks and open spaces
- Sustainable approach to the natural environment, improving air quality, minimising our use of natural resources and maximising recycling
- Good connections with excellent public transport resulting in less congestion
- Active people with levels of obesity which maintain current rates rather than continuing to rise
- Independent people who benefit from high quality and accessible facilities and services
- People with good emotional and mental health
- Cohesive communities where everybody respects each other
- Making all our streets safe at any time of the day
- A vibrant Town Centre complemented by individual District Centres

Social Benefits

2.35 The enhancement of human health, in and of itself, is something that society seeks to ensure through the use of standards and benchmarks in design and development[17]. The obvious benefits to employee performance and a sustained economy are made throughout the preceding sections. However, sustainable development addresses the long term responsibility of societies, in terms of future generations, both short term (i.e. our children and our grandchildren), but also in the longer term where we look to the next century. It is vital to ensure that future generations are not left with buildings that do not protect them from unavoidable climate change, as well as a built environment that promotes social interaction, whilst fostering inclusion. This legacy is important in terms of the urban and sub-urban landscapes we bequeath.

2.36 In the shorter term, tackling climate change which is predominantly seen as an environmental issue, will have social implications as soon as 2030. Many of us will still be alive in 2030, some living in, or approaching, retirement and how we structure our built environment now, will impact on our long term future. Warmer summer temperatures will impact on older more vulnerable groups, with an associated increase in energy demand for cooling. Increased precipitation, both in frequency and volume, will bring higher risks of flooding, impacting on retirement through financial and stress related aspects. It is in our own interests to make the changes in design and development approaches **now**, ready for the retirement of many reading this document.

2.37 Appropriately designed and located buildings can enhance young peoples' life learning experience [18]. Housing and schools located in accessible places, with sustainable commuting infrastructure also promoting modes of transport such as public transport and walking or cycling, facilitate these options for the school run and support use of schemes such as The Walking Bus[19]. There is growing evidence that heavily trafficked streets not only impact on the quality of life of the residents, but can have impacts on social connectivity and even child development[20]. Whilst it is not the sole remit of the planning and development sectors to achieve the ideals outlined above, having the infrastructure and facilities in place is a key requirement to enable delivery.

17 Promoting physical activity in the workplace: http://www.nice.org.uk/guidance/index.jsp?action=byID&o=11981
18 Promoting physical activity for children and young people: http://www.nice.org.uk/guidance/index.jsp?action=byID&o=11773
19 http://www.dft.gov.uk/pgr/sustainable/schooltravel/howtosetupawalkingbus
20 Driven to Excess: http://www.livingstreets.org.uk/news/uk/-/driven-to-excess

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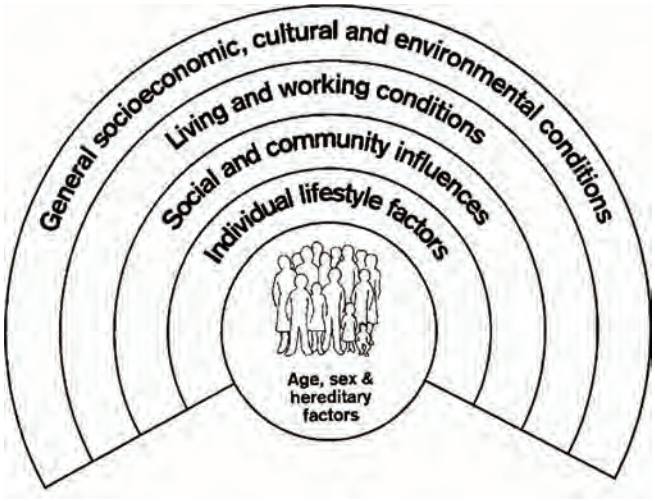
Figure 1 Health Determinants (Source:Whitehead & Dahlgren; Tackling Inequalities in Health 1991)



2.38 The health of an individual and of a community is not *solely* based on their physical make up or their behaviour. We know that where we live can impact directly upon our health – e.g. noise pollution increasing stress, air pollution exacerbating respiratory problems – but the way we live also has an impact. It is recommended that people eat five a day (fruit and vegetables). However, there are people who do not live within easy walking distance of a supermarket or greengrocer, do not have a car and find public transport inconvenient for their needs, so rely on the local corner shop where fresh fruit and vegetables are not stocked. This is an example of where planning, design and development can make an impact upon the health and wellbeing of the community.

2.39 Where people are happy in their environment – enjoying their gardens, walking or cycling on their streets, allowing their children to play outside – they generally hold the perception that they live in a safe area, which in turn improves their mental and physical health.

2.40 'Appendix B: Stockport & Health Innovation' has further detail on benefits of sustainable planning and delivery of the built environment with regards to health, which can be utilised in Design and Access Statements to clarify the benefits of the proposed approaches.

Environmental Benefits

2.41 Sustainable consumption and production[(21)] is a term used to describe how society needs to balance resource use to ensure protection of the natural environment. How we as individuals buy commodities, travel for our daily needs and entertain ourselves during leisure time, is what impacts on the natural environment. Sustainable design and construction allows opportunities to establish an infrastructure that supports consumption and production of goods and services in a sustainable way. Each of the topics in Section 5 addresses this issue in some way from using low carbon energy resources to enabling flexible adaptation of ITC systems to reduce business impacts, as well as many other options.

2.42 Climate change has been cited as the single biggest threat to human existence[(22)]. Saving the planet is not really the issue, since it has been in existence for billions of years and will continue

21 Securing the Future - UK Sustainable Development Strategy 2005: www.defra.gov.uk/publications/files/pb10589-securing-the-future-050307.pdf

22 UK Climate Impacts Programme: www.ukcip.org.uk/index.php?option=com_content&task=view&id=19&Itemid=125

to exist for some appreciable time. More accurately, preserving the capacity for the human species to live on the planet is what addressing climate change is all about. For example evolving car design will go some way to addressing carbon emissions, while doing little to tackle the issue of congestion and further land use for road building. Improved public transport and sustainable transport mode infrastructure will tackle both congestion and emissions, whilst assisting with delivery of additional health benefits. Carbon emissions from housing make up one third of the UK's carbon emissions. Whilst new housing is a relatively small percentage of housing it is critical to ensure that all new buildings are as energy efficient as possible. Any refurbishment or retrofitting of housing needs to incorporate sustainable energy design to tackle the existing housing issue.

2.43 Natural resource protection and environmental enhancement are key issues in delivering the above agendas. Direct benefits such as landscaping and biodiversity management, outlined in the relevant topic sections, are obvious to designers and developers as well as planners[23] and a biodiverse ecosystem is something worth maintaining for the pleasure it provides to all. However, there are economic[24] and social benefits over and above having a pleasant natural environment surrounding us.

2.44 Sustainable communities reflect a stable economy and strong social structure. However to truly achieve sustainable communities the environmental aspects need to be maintained and delivered[25]. A range of targets have been mentioned earlier in this section and those planning applications which enable achievement of those targets are more likely to achieve swifter planning permission. Achieving environmental standards such as BREEAM or Code for Sustainable Homes have been proven to deliver financial savings in the long term through design cost effectiveness and improved brand and business reputation. They also offer designers and developers a structured approach to learning these new skills.

Economic Benefits

2.45 Outside of the business case for designers and developers, a more sustainably designed and constructed built environment helps to foster a sustainable local economy[26]. The low carbon economy is something the UK is striving to achieve and the built environment offers major opportunities in terms of skills[27] and jobs, to achieve this ideal.

2.46 Green buildings offer lower running costs to local businesses, increasing their profit margins[28]. The launch of the CRC Energy Efficiency Scheme will mean that qualifying businesses will be examining their building portfolio for carbon performance and could be seeking alternative low carbon venues. This in turn could result in further employment as companies re-invest their savings and improve or expand their activity. Also further building work could be commissioned as more businesses want to refurbish or re-construct premises, or move to new sites. Associated trades such as plumbers, heating engineers, electricians and joiners can gain skills[29] and

23 Promoting and creating built or natural environments that encourage and support physical activity: http://www.nice.org.uk/nicemedia/pdf/PH008Guidancev2.pdf
24 Natural Economy North West: http://www.naturaleconomynorthwest.co.uk
25 Case Study Rostron Brow in Stockport: http://www.buildingforlife.org/case-studies/rostron-brow/evaluation
26 New Economics Foundation's A Green New Deal: http://www.neweconomics.org/projects/green-new-deal
27 Construction Skills Council Training Opportunities: http://www.cskills.org/supportbusiness/ncc/coursebooking/index.aspx
28 The Relationship between sustainability and the value of office buildings: www.prres.net/papers/Myers_Reed_Robinson_The_Relationship_Between_Sustainability.pdf
29 Sector Skills Council for Building Services Engineering: www.summitskills.org.uk/cgi-bin/go.pl/interests/details.html?uid=64

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employment opportunities from engaging in this approach as well as benefiting from the increased work. New skills sectors in renewable energy and sustainable specification and commissioning offer employment expansion opportunities in terms of new and expanding businesses.

Design & Construction Standards & Tools

2.47 There are a growing range of sustainability and environmental design and building / construction standards which can assist designers, developers and construction professionals with embedding sustainable design and construction into day to day activity. Below is a summary of some of them with more detailed information in 'Appendix D: Environmental Standards':

- The local tool available to use in terms of sustainable design and construction is Stockport Council's Sustainability Checklist which can be used on any development.
- Perhaps the two most recognised environmental standards at the moment for the building and construction industries are BREEAM and Code for Sustainable Homes. BREEAM is relevant to non-residential buildings, managed and administrated by BRE and has cost implications for assessment, which is undertaken by approved assessors. The involvement of assessors at the design and completion stages supports and enables the embedding of sustainable design and constructions ideals throughout the project. There are several associated tools which can assist with the engagement in this system.
- Code for Sustainable Homes: aims to ensure sustainable housing delivery by providing guidance on the construction of high performance homes built with sustainability in mind. There are assessments and costs associated with implementing this process, however as with BREEAM there are a range of tools supporting this system.
- Building for Life was designed by CABE and the Homes Builders Federation, with 20 criteria used to assess and award accreditation. It is free to use. Rostron Brow and Mealhouse Brow in Stockport are local case studies.
- Lifetime Homes was created by the Joseph Rowntree Trust and partners and has 16 design features which are used to measure and assess this standard. Lifetime Homes now forms part of the requirements for Code for Sustainable Homes Level 6 - which is not achievable without inclusion of Lifetime Homes criteria. There is no charge for use of the standard.
- CEEQUAL, developed and promoted by the Institute of Civil Engineers (ICE) amongst others, is the assessment and awards scheme for improving sustainability in Civil Engineering and public realm projects. Costs are available on the website.
- Considerate Constructors is a national scheme financed by registrations and created by the construction industry to improve its own image. The scheme looks at three main areas including the environment, the workforce and the general public.
- Refurbishment projects can make use of these standards. Indeed BREEAM has a specific Domestic Refurbishment standard and the Energy Saving Trust provide information on refurbishment of housing as well. Green Build News also provides the latest news on sustainable refurbishment techniques, while Sustainable Homes Green Streets Programme also delivers guidance on housing refurbishment. English Heritage provides a wealth of information on sustainable transformation of heritage properties from housing to other types of sites.

3 Legislation & Policy

3.1 In terms of relevant local planning policy, the topic sections clarify which policies are relevant and link to 'Appendix C: Core Strategy Policies' where these policies are outlined in more detail.

3.2 So much has happened in the fields of sustainable development and climate change in terms of legislation and policy. Changes to the Building Regulations and planning structure alone require long clarification. Rather than regurgitate a list of policies and legislation here, the most recent and pertinent legislation and policies are tabled, at the end of this chapter, for those who are new to the ideas.

Stockport's Approach to Sustainable Design & Construction

3.3 Stockport Council has a vision which determines a safe and strong, thriving, green and healthy Borough. As part of this vision a Sustainable Design and Construction Supplementary Planning Document was published in 2006, one of the first such documents nationally. This revised version reflects updates and changes, not only to policy and drivers, but facilities and resources, as well as funding and understanding. This document has been designed to formulate a 'how to' manual for designers and developers, as well as other interested parties.

3.4 The SPD has an associated Sustainability Checklist which facilitates an easy way to embed and achieve sustainable design and construction processes into projects.

3.5 Stockport Council (co-funded by NHS Stockport) established a post in the Planning Policy Team of Health & Environment Advisor (Planning). This post is available to advise and comment on planning applications, particularly with regards to sustainable design and construction ideals. Pre-application discussion, as well as consultation throughout the planning application process, is available subject to capacity.

3.6 The policy and support opportunities facilitate the engagement in sustainable design and construction considerations. However there are other barriers such as funding and skills which need to be overcome. The revised SPD details a wealth of information on resources, including training and funding information. The Health and Environment Advisor role can also advise on appropriate funding and financing opportunities, as well as providing comments on funding bids. The role can also sign post to other colleagues who may be able to provide capacity in terms of assistance with comment and funding information. Finally the role can also advise on training options for different aspects of sustainable design and construction.

3.7 For further information on Sustainable Development visit the dedicated webpage on the Planning Policy element of the Council's website.

A Country City: Towards a Greener Stockport

3.8 This report was a section of the 11th Annual Public Health Report for Stockport, written by the Director of Public Health, and has informed Council policy development, as detailed in 'Appendix B: Stockport & Health Innovation'. The report focuses on the importance of creating a peaceful environment in which people can live and work in balance with nature. It includes interesting ideas for the design of buildings and developments, and it makes a critical point about the importance of living environments in producing economic success, in a knowledge-based economy where more people have the opportunity to work at home and therefore choose where they live.

3 Legislation & Policy

Throughout the subsequent topic sections comments on Healthy Sustainable Design are made, which planning applicants can use in their applications to reflect the social, as well as economic and environmental benefits, of their design.

Relationship to Local Policy

3.9 These local policies are detailed in 'Appendix C: Core Strategy Policies' with links to the original documents.

Stockport Unitary Development Plan (UDP)

3.10 The UDP is the plan prepared by the Council under the provisions of the Town and Country Planning Act (1990) and sets out the Council's policies in respect of the control of development and other uses of land in the Borough. The UDP adopted in May 2006 is the current statutory development plan. The UDP has five key directions towards the achievement of sustainable pattern of land use and development. Retaining and enhancing a tightly drawn Green Belt, urban greenspace and vibrant town, district and local centres; encouraging redevelopment of previously developed land and use of sustainable modes of transport, are some of the policies in the UDP contributing to sustainable development. The UDP is saved as part of the Council's Local Development Framework (LDF) and forms the Council's current development plan.

3.11 This SPD has been produced to supplement policies in the UDP by providing additional information on how to achieve sustainable buildings in Stockport. It is recommended that this Guidance Note be read in conjunction with the UDP.

3.12 The UDP has developed policies further aimed at achieving sustainable development. Green Belt, housing and other policies have been strengthened to concentrate development on brownfield sites, in accessible locations within the urban area. Greater emphasis has been made on the needs of vulnerable road users, to encourage travel by foot, cycle and public transport as well as reducing car usage.

3.13 The retention, enhancement and creation of wildlife habitats is also identified as an important aspect of sustainable community. The UDP includes strengthened policies to achieve good quality design and greater energy efficiency. Policies of the UDP with particular reference to this SPD include:-

- DCD1 Design and Character
- NE1 Biodiversity and Nature Conservation
- HC1 Conservation Areas
- HC2 Listed Buildings
- EP1 Environmental Protection and Improvement
- ST2 Sustainable Transport
- ST3 Transport and Social Inclusion
- TD1 Transport and Development
- MW3 Energy Efficiency

3.14 Each of the above policies and others are detailed in 'Appendix C: Core Strategy Policies' and are referenced in the relevant Topic sections.

3.15 With regards to timescales, under the Planning and Compulsory Purchase Act 2004, the policies in the adopted Stockport UDP Review were due to expire after a period of three years from the date of adoption (i.e. after 31 May 2009). Six months in advance of this date, the Council applied to the Secretary of State to save particular policies, and also set out which policies the Council did not wish to retain. A report to Council on 4 December 2008 with regards to the application to the Secretary of State (and associated schedules) are available to view from the webpage.

3.16 From 1st April 2011, following adoption of the Stockport LDF Core Strategy DPD, the policies which are used to manage development in Stockport are those set out in the Core Strategy along with those policies of the Unitary Development Plan Review which are not superseded by the Core Strategy. An informal extract from the UDP Review has been produced which sets out those UDP policies that are still relevant following adoption of the Core Strategy DPD. This extract is available under 'Related Documents' on the right of this webpage.

Emerging Local Development Framework

3.17 A new planning system came into force in September 2004 which replaced existing development plans with Local Development Frameworks. In Stockport the LDF will replace the Unitary Development Plan (UDP) Review (adopted 31st May 2006). The underlying principles behind the new planning system are:

- To produce a system that allows plans and policy to be more responsive to change and capable of being updated in shorter timeframes;
- To facilitate continuous stakeholder and community involvement to build consensus in plan making;
- To have a clear approach to community involvement;
- To have a requirement for a comprehensive evidence base;
- To have a requirement for Sustainability Appraisal, including Strategic Environmental Assessments (SEA), for all plans;
- To have a wider spatial approach to planning to make the LDF the spatial expression of the Community Strategy and other local partnership strategies (see section 6.3 for more detail); and
- A programme managed approach to plan making that adds greater certainty to plan production timescales that can be measured.

3.18 For more details of the Local Development Scheme, the Statement of Community Involvement, Development Plan Documents, Supplementary Planning Documents (and retained SPGs) and Saved Policies please visit the relevant webpages.

Building Control

3.19 Building Regulations MUST be complied with as legislation requires, however much of the sustainable design and construction approach will be reflected in forthcoming changes to the Building Regulations. Local information on Building Regulations is readily available on the relevant pages of Stockport Council's website.

3 Legislation & Policy

Sustainable Community Strategy - Stockport Strategy 2020

3.20 Stockport Strategy 2020 sets out the long term vision for the Borough, with four priorities: Thriving, Safer & Stronger, Healthy, Greener.

3.21 The Vision is to take Stockport from excellent to exceptional. A greener exceptional Stockport should have:

- A unique built environment which preserves our heritage and has high quality new developments
- Excellent parks and open spaces
- A sustainable approach to the natural environment, improving air quality, minimising our use of natural resources, and maximising recycling
- Good connections with excellent public transport resulting in less congestion.

Heritage Targets in Stockport

3.22 Stockport has a rich and varied historic environment reflected in the Conservation & Heritage Strategy 2008. Its heritage assets have an important role to play in connecting us with our past and also have a vital role to play in shaping our future. Heritage assets are a fragile and finite resource. Each has its own intrinsic value and may come under a variety of increasing pressures.

3.23 Stockport has a unique heritage which should be preserved and enhanced for present and future generations. In key areas of conservation work the Council has an enviable record and the Strategy advocates a holistic and joined up approach to the management of the borough's historic assets.

3.24 The historic environment also underpins many successful projects aimed at improving quality of life, transforming areas, empowering local community groups and creating a better and more sustainable environment. These aims in particular should be considered with regards to the Built Environment:

- To actively promote the role and opportunities presented by conservation and heritage in terms of the wider regeneration and economic development of the Borough and provide a framework for investment
- To promote positive action and develop initiatives that secure the future and ensure the preservation and enhancement of Stockport's heritage assets.

Biodiversity Targets in Stockport

3.25 Stockport's Action Plan for Nature clearly outlines the habitats and species for consideration in Stockport, together with management objectives for the habitats. There is a specific section on the built environment and managed greenspace.

3.26 The broad habitat types reflect the character of Stockport and are discussed in more detail in the Habitat Statements and subsequent Habitat Action Plans:

- Urban and Built Environment
- Transport Corridors
- Grassland

- Woodland
- Upland
- Watercourses
- Standing Open Water
- Boundary Features
- Heathland
- Wetland
- Arable

3.27 The species are outlined within each habitat section, and include mammals, birds, fish, invertebrates, plants and amphibians.

Health Improvement Targets

3.28 The Department of Health is committed to tackling obesity, sexually transmitted infections, alcohol and substance misuse and smoking.

3.29 For NHS Stockport, inequalities are a significant health issue for the Borough, reflecting the issue of polarisation in the borough in terms of income and social inclusion. The ageing population requires revising of health delivery in terms of the changing care requirements, the fact that a healthy life expectancy has not kept pace with life expectancy and co-ordination of care giving from both public sector and private resources, with many of those private resources being older aged people themselves.

3.30 In terms of how planning and development can assist with managing these significant issues, emerging policy and development needs to reflect the need to address the widening gap between wealthiest and most deprived, both in terms of wealth and health. The Core Strategy is directed to regeneration areas which, ideally, should enable health and social care agencies to better tackle areas of need, thereby addressing elements of this issue. Ensuring that appropriate employment and affordable housing are targeted at specifically identified areas of need will enable health colleagues to achieve improvements in terms of health issues, especially health inequalities.

3.31 With regards to older people, an Age Proofing exercise was undertaken on the Core Strategy and informed all aspects of emerging planning policy for Stockport. The issue of a 'healthy life expectancy' is one that needs to be considered within emerging planning policy, in terms of the most feasible areas that policy can be designed to enable this.

3.32 Development needs to take account of the above issues and reflect it in design and delivery of new and regenerated sites. A Health Impact Assessment (HIA) proforma document is available from NHS Stockport's HIA Team, which can be applied to design at early stages to inform its evolution.

Stockport's Healthy Weight Strategy

3.33 In 2009 Stockport published its Healthy Weight Partnership Strategy which promotes the key aims of monitoring obesity and overweight levels whilst promoting healthier lifestyles, including active lifestyles and healthy diet. There is particular emphasis on ensuring a culture where young people grow up eating well and being active. Sustainable design and construction offer opportunities to build activity into daily lives, particularly through the way we commute to work, service facilities and educational establishments. This means employment and education sites with ready access

3 Legislation & Policy

to and from housing, shops and leisure facilities. Also with the facilities to encourage walking and cycle commuting, which includes showers, clothing drying and storage capacity as well as the cycle and pedestrian infrastructure to make the site accessible from public transport links and from residential areas.

Stockport's Walking Strategy

3.34 Stockport's Walking Strategy has the aim of encouraging walking as a desirable method of transport in its own right. Encouraging walking helps to tackle congestion, promotes active lifestyles, reduces air pollution and promotes accessible services, whilst contributing to activities to tackle climate change. In addition it creates active and interactive communities, with 'eyes on the street' delivering security benefits, improving perceptions of safety and crime, whilst creating trust in communities. Lifetime Homes promotes considerations of appropriate surroundings and pedestrian facilities in neighbourhoods including pavement surfacing, to ensure people at all stages of life feel able to walk as a method of transport.

Other Legislation & Policy

3.35 Key national policy, targets and legislation relevant to design and construction are summarised below and further detail is available by accessing the free timeline tool: http://www.djdeloitte.co.uk/uk.aspx?doc=25433

Table 1 Relevant National Legislation & Policy

Year	Description
2050	UK Target for 80% reduction in GHGs of 1990 baseline levels across all sectors
2019	Government target for all new non-domestic buildings to be zero carbon (31.12.19)
2018	Zero carbon target for all new public buildings
2016	All new housing to be zero carbon
2015	Zero net waste at construction sites (1st Jan 2015)
2013	Proposed 44% improvement over 2006 carbon emissions for new dwellings through Part L Building Regulations
2012	Energy Performance of Buildings Directive (EPBD II) 31.01.12
2012	Launch of Green New Deal - enables households to invest (at no upfront cost) in energy efficiency improvements
2012	All new construction projects over £1 million will require biodiversity surveys 01.01.12
2011	Carbon Reduction Commitment (April) - first capped phase begins
2011	Renewable Heat Incentive establishes a financial support mechanism for renewable heat
2010	Energy Security & Green Economy Draft Bill

Year	Description
2010	UK Green Building Council Manifesto: 5 key priorities
2010	Green Investment Bank - provide funding investment for infrastructure projects that support economic growth & environmental objectives
2010	Feed In Tariff for renewable energy resources (April)
2010	Carbon Reduction Commitment - Introductory Phase: qualifying organisations required to register and collate building energy use data from April 2010 to March 2011
2008	Site Waste Management Plans required on all construction projects over £300K
2008	1st October all large public buildings required to display Energy Certificates showing the Energy Rating for the building
2008	1st October all buildings whenever sold, built or rented will need an Energy Performance Certificate showing energy performance

4 Topics

4.1 The topics for consideration in this SPD are outlined below and further clarification can be obtained within the specific Topic sections of this document, which outline resources and methodologies. The topics covered reflect the structure used in many environmental standards:

- Location & Transport
- Site Layout & Building Design
- Materials
- Waste
- Energy
- Water
- Landscape & Biodiversity
- Health & Wellbeing
- Operation & Management
- Marketing

How this Guide works

4.2 Each Topic Section details the relevant policies in the UDP which are delivered by those options. The topics sections often inter-relate and achievement on one aspect can help with others. Rather than regurgitate reams of technical guidance, each section references hyperlinks to website information and downloads for use during the design and construction processes. This document aims to be a concise guidance tool informing concept and pre-design discussions as well as Design and Access Statement content. It can be retrospectively applied to designs and applications, however cost implications are higher the later in the process it is applied.

Feasibility & Viability – a Realistic Approach

4.3 Like most sustainable design and construction guidance, the idea in considering the topics for inclusion in a design or development, is not to strive to achieve everything. Taking a realistic approach, viability as well as feasibility are key in determining how much of the following topics can be incorporated into a project, as are the physical surroundings of the site. However, that does not preclude rethinking a concept or design and incorporating as much as can be feasibly achieved. Also full consideration of funding, finance (such as the recent Feed in Tariff and the forthcoming Renewable Heat Incentive) and support available, in terms of government sponsored agencies providing free tools and advice, should also be taken into account before dismissing an approach as not viable. Government sponsored agencies and colleagues across the local authority may be able to assist with comments on funding applications, with some agencies offering to undertake this service, depending on their capacity, function and targets.

Innovation & Discussion

4.4 Clients may well have personal requirements for sustainable design and construction, or company policies and targets which are achieved by incorporating sustainable design not previously thought appropriate or viable. Make full use of opportunities to discuss with land and building owners, the local authority and clients the ideas outlined in this document. Stockport's Sustainability Checklist offers a simple way to showcase and consider different elements for inclusion in design

– remember that not everything has to be attempted and not all sites are feasible, for example in terms of renewable energy or biodiversity improvements.

Informing a Design Access Statement (DAS)

4.5 The DAS guidance suggests demonstration of the steps taken to appraise the physical, social, economic and planning policy context. The Sustainable Design and Construction process lends itself readily to that approach. It also provides a clear audit trail of the pre-application consultations undertaken and facilitates an easy way to reflect context appraisal and its impact on design principles. Use the Healthy Sustainable Design sections in each topic to inform a DAS, highlighting and justifying the benefits of the design approach in terms of the health of the borough, as well as economic and environmental benefits, thereby enhancing the social information.

4.6 The Relevant Policies section of each topic highlights those to include in a DAS, and facilitates the integration of sustainable development throughout the DAS, thereby avoiding the impression of it being an afterthought. Unless specific legislation requires a separate assessment, 'sustainable development' should be inherent throughout the DAS. A simple statement to that fact, at the start of the document, clarifies this for planning teams. This approach can help to speed the assessment and approval processes.

4 Topics

Location & Transport

Relevant Policies

4.7 See 'Appendix C: Core Strategy Policies' for more detail on Stockport's Core Strategy which has the following policies of relevance to this topic:

- CS1 Overarching Principles: Sustainable Development - Addressing Inequalities and Climate Change
- DM-SD3 Delivering the Energy Opportunities Plan - New Development
- DM-SD4 District Heating (Network Development Areas)
- DM-SD6 Adapting to the Impact of Climate Change
- CS2 Housing Provision
- CS5 Access to Services
- CS7 Accommodating Economic Development
- CS8 Safeguarding and Improving the Environment
- CS9 Transport and Development
- CS10 An Effective and Sustainable Transport Network
- DM-T1 Transport and Development
- DM-T2 Parking in Developments
- DM-T3 Safety and Capacity on the Highway Network

4.8 In addition there are other Supplementary Planning Document which will prove useful for specific issues, including:

- Transport and Highways in Residential Areas
- Sustainable Transport
- Design of Residential Development
- Affordable Housing
- Extensions and Alterations to Dwellings
- Town Centre Housing
- Recreational Open Space Provision & Commuted Sums

Considerations

4.9 It is not the intention to replicate the existing plans and policies that already deal with the integration of transport and land use. However this section does consider some basic approaches to ensure developments support the aims of current planning policies. In particular throughout the aspects detailed below runs a theme of **sustainable transport modes**, where public transport, cycling and walking modes are encouraged over private car use, especially the cycle commuting opportunity. These modes of transport can contribute to Stockport's integrated sustainable transport network, which is one where people can move around using any form of sustainable transport and not be reliant on private vehicles.

4.10 This has economic benefits with regards to improved commuter times and a more healthy and productive workforce. Social return is reflected in terms of improved health, as well as more interactive communities as traffic levels reduce. There are enormous benefits for the natural environment through reduced emissions and less need for new road infrastructure. Transport is

responsible for 26% of the borough's carbon emissions[30]: there is an opportunity for development to facilitate a sea change in transport for Stockport.

4.11 Stockport's Annual Monitoring Report assesses the quality of completed housing developments using Building for Life, a standard for well designed homes and neighbourhoods, established by CABE and the House Builders Federation.

Use of Previously Developed Land & Buildings

4.12 If the development is to be located on a brownfield site it will contribute to policies by making the best and most efficient use of previously developed land. Retaining heritage developments can be more sustainable than demolishing and rebuilding, which has associated embedded carbon emissions. Sustainable design and construction lends itself easily to refurbishment schemes, offering cost effective opportunities for development.

4.13 It should be noted that heritage assets are valued components of the historic environment. Heritage assets can be defined as a building, monument, site, place, area or landscape positively identified as having a degree of significance meriting consideration in planning decisions. They include designated heritage assets (as defined by national policy) and assets identified by the local planning authority during the process of decision-making or through the plan-making process (including local listing).

4.14 A further consideration in terms of local distinctiveness should be whether the site has a Landscape Character Assessment designation covering it. Work is underway at national[31] and regional levels[32] to establish updated Landscape Character Assessment, and the Core Strategy has specific policy on this issue (See 'Appendix C: Core Strategy Policies').

Flood Risk Assessment

4.15 Flood Risk Assessment requirements are dealt with in more detail in the Topic section on Water. However design and specification considerations need to take account of the issues as early as possible in the concept and design stages[33].

Urban Design

4.16 Consideration of the location of a site, in relation to other aspects of planning and service provision, is key to ensuring that communities are truly sustainable communities. For example new business development needs to be accessible for potential employees to the site, whilst having the infrastructure in place to deliver energy demand, offer safe sustainable transport options such as cycling (including cycle commuting) and walking, as well as including access to leisure and retail facilities for employees during work breaks.

4.17 It also needs to be attractive to businesses in terms of building operation and management, accessibility for clients and enhancing the business activities of occupants. More flexibly designed work places which can accommodate small, medium and large businesses and can adapt to

30 Government Carbon 2008 Statistics for LA's: http://www.decc.gov.uk/en/content/cms/statistics/climate_change/data/data.aspx
31 http://www.naturalengland.org.uk/ourwork/landscape/englands/character/lcn/default.aspx
32 http://www.naturalengland.org.uk/regions/north_west/ourwork/landscapecharacterframework.aspx
33 Environment Agency standing advice to LA's on Flood Risk Assessment: http://www.environment-agency.gov.uk/research/planning/33098.aspx

change of use will be important. Through reflecting current and future business trends, they will enjoy a lengthy building life, and will support a sustainable local economy.

Sustainable Communities

4.18 Housing estates should be developed with consideration of access to employment and education, also services including health and social welfare, food retail, leisure and recreation facilities, including open space, and all this within the framework of provision of sustainable transport infrastructure. Sustainable transport isn't just about bus and rail accessibility, it includes design of housing and business developments which consider provision of safe and interlinked cycle and pedestrian facilities, which integrate with existing and expanding walking, cycling and public transport networks.

4.19 In order to facilitate cycle and pedestrian commuting, the full support infrastructure needs to be established. This will also include provision of adequate and safe cycle parking at venues and transport interchange facilities, as well as additional design issues such as showering and clothes drying facilities. This should be agreed before discussions about car parking provision commences. Potential to improve existing public transport provision should also be considered within designs. Home Zones[34] are an attempt to strike a balance between vehicular traffic and everyone else who uses the street; the pedestrians, cyclists, business people and residents.

Urban Heat Island

4.20 The term urban heat island[35] is used to describe the dome of warm air that frequently builds up over towns and cities. This has significant implications for human health and comfort and is due to a number of factors which will become more pronounced as a result of climate change. Urban site locations can necessitate careful adaptation to future temperature rises through the design and masterplanning of the scheme. Vegetation and water features can be of assistance in mitigating this effect (see 'Landscape & Biodiversity' Topic).

Coal Mining Legacy in East of Stockport Borough

4.21 The eastern half of the Borough has been subject to extensive coal mining activity. When considering development in this part of Stockport, it would be prudent to obtain coal mining information[36], relevant to the site, in order to identify whether or not the proposed development is affected by former coal mining activity. If the site is affected, it will be necessary to undertake a risk assessment and where necessary, propose remedial measures to ensure the development is safe and stable[37]. According to the Coal Authority, prior extraction of remnant shallow coal should be afforded due consideration as part of development proposals, which can prove to be a more economically viable method of site remediation than grout filling of the voids caused by past shallow mining activities.

Healthy Sustainable Design

4.22 More and more evidence is being gathered with regards to the health benefits of incorporating activity into lifestyles, as well as the design of more stress free environments.

34 Home Zones web information: http://www.environment-agency.gov.uk/research/planning/33098.aspx
35 http://www.cabe.org.uk/public-space/heat-island
36 http://www.gmmineralsplan.co.uk/index.html
37 http://coal.decc.gov.uk/en/coal/cms/services/planning/strategy/strategy.aspx

Stockport's Annual Public Health Report clearly outlines the need to offer residents and visitors opportunities to build 30 minutes activity (especially walking and cycling) into the day. Design of dwellings and businesses which facilitate access via these modes, particularly via green space, will improve the health of the borough, which has associated social and economic benefits.

4.23 The design of communities which do not prioritise the private car have been found to radically improve health and reduce stress, whilst increasing social interaction. The benefits to the local economy in terms of improved performance as well as increased capacity are clear. Added value in terms of benefits to the natural environment cannot be calculated directly but reduced transport emissions will affect climate change rates. This in turn will reduce the economic impact of severe weather events, reduce insurance claims nationally and globally, whilst increasing the potential of the workforce in terms of mental and physical health. Social capital gain can be measured through less stressed communities interacting and contributing to the welfare of the community.

Case Study: Hulme Speed Table Design (Page 86)

Tools & Resources

Stockport Council's Sustainability Checklist

Building for Life – a national standard for well designed homes and neighbourhoods.

Green Build News offers a wealth of resources and information to built environment professionals.

The Sustainable Homes Green Streets offers resources on refurbishing existing housing.

Stockport Council have materials on Travel Planning and other aspects of sustainable transport.

Stockport's Cycling Maps / Green A to Z's can inform site design.

Cycling England's archived website has a wealth of resources which can inform design around cycling needs.

Calculate the health benefits of cycling in economic terms.

Better Public Buildings – design guide to achieve high quality design in all new public buildings.

Starting Out – the Home Zone approach.

CIRIA have produced guidance on open space provision on remediated previously developed land.

Living Streets – the Pedestrians' Association who are experienced in helping public and private sector clients to improve opportunities for walking and the quality of public space across the UK.

Civilised Streets - a CABE briefing presenting a future that is about removing the dominance of the car.

Department of Transport's Manual for Streets Version 2 gathers case studies and good practice examples of designing streetscene for multi purpose use, without prioritising the car. There is an

associated evidence base for reference. A new Guide to Work Related Travel has also been produced, which can help with carbon emissions calculations.

The Driven to Excess research was well publicised in the press and provides a wealth of evidence supporting how poor street design and traffic levels are impacting on communities, including childrens' development.

Healthy Cities is an international movement reflecting the need to design around health issues, there are a wealth of sources and resources on their website.

Eurocities is committed to working towards a common vision of a sustainable future in which all citizens can enjoy a good quality of life. Their website links to case studies of good practice, including design.

AUNT SUE is a series of tools for modelling transport solutions.

The National Institute for Clinical Excellence (NICE) produced two specific pieces of guidance which are relevant to this topic:

Promoting and creating built and natural environments that encourage and support physical activity

Promoting physical activity, active play and sport for pre-school and school-age children and young people in family, pre-school, school and community settings

Knowledge Transfer Networks offer an excellent way for businesses to share ideas and skills - the Modern Built Environment KTN offers a wealth of opportunities to gain and share knowledge on sustainable design and construction.

The Walking Bus Scheme requires the infrastructure to support its ideals including safe pedestrian routes from housing to education establishments.

English Heritage provides professional advice on heritage environments and climate change in terms of design.

Site Layout & Building Design

Relevant Policies

4.24 See 'Appendix C: Core Strategy Policies' for more detail on Stockport's Core Strategy which has the following policies of relevance to this topic:

- CS1 Overarching Principles: Sustainable Development - Addressing Inequalities and Climate Change
- DM-SD3 Delivering the Energy Opportunities Plan - New Development
- DM-SD4 District Heating (Network Development Areas)
- DM-SD5 Community Owned Energy
- DM-SD6 Adapting to the Impact of Climate Change
- CS2 Housing Provision
- DM-H1 Design of Residential Development
- CS5 Access to Services
- CS7 Accommodating Economic Development
- CS8 Safeguarding and Improving the Environment
- DM-SIE1 Quality Places
- DM-SIE2 Provision of Recreation and Amenity Open Space in New Developments
- DM-SIE3 Protecting, Safeguarding and Enhancing the Environment
- CS9 Transport and Development
- CS10 An Effective and Sustainable Transport Network
- DM-T1 Transport and Development
- DM-T2 Parking in Developments
- DM-T3 Safety & Capacity on the Highway Network

4.25 In addition there are other Stockport Supplementary Planning Documents which will prove useful for specific issues, including:

- Sustainable Transport
- Design of Residential Development
- Affordable Housing
- Extensions and Alterations to Dwellings
- Town Centre Housing
- Recreational Open Space Provision & Commuted Sums

Considerations

4.26 The concept and design phase (from inception through to detailed design) is critical for achieving improved sustainability performance in buildings. It is the greatest opportunity to influence building form, layout and materials at the lowest cost.

4.27 These key aspects are crucial considerations and are expanded on in further detail within the relevant topic sections in this document, including links to guidance on their design and construction.

4 Topics

Site Layout & Form

4.28 New developments should use land efficiently and comply with the design principles laid out in the Core Strategy and emerging local policy. If development needs to be phased this should be designed in, with individual phases being self contained and requiring the minimum of demolition and reconstruction. Home Zones and landscaping should be incorporated into the design, alongside considerations of opportunities such as cycle commuting. Considerations of open space requirements are critical to ensuring access for residents to interactive public realm, offering play facilities for children, exercise for adults as well as other benefits including biodiversity opportunities, climate change adaptation, flood management and clean air.

4.29 Heritage sites can be effectively re-designed to retain the heritage element and deliver a useful building. The retention and reuse of heritage assets avoids the material and energy costs of new development. Many older settlements reflect good practice in sustainable urban design. They have compact layouts; co-locate employment, residential, retail and leisure uses; and, are usually near to public transport options. The historic environment can inform and inspire the best modern, sustainable development.

Passive Solar Design

4.30 This design approach allows for the exploitation of solar heat gain and maximum use of natural daylight. Careful orientation of buildings and the appropriate design of elevations that face north or south are major factors in successful passive solar design. Where a mixture of building heights are to be developed, consideration should be given to siting the taller buildings on a north-south axis and the lower buildings on an east-west access. This will minimise the overshadowing effect of the taller buildings. Such design approaches can radically decrease the energy demand of the building, which if carefully marketed, can be a major selling point to potential occupants.

District Heating Opportunities

District heating is a system whereby a single boiler or a series of boilers (dependent on system size) provides the heat for a range of buildings. It can be used on new development which can also link into existing buildings. This approach offers opportunities to easily achieve the increasingly higher carbon emissions requirements in the Building Regulations. Most opportunities for district heating will occur when some interaction with, or connection to, existing buildings or development can happen. Gaining this understanding will involve an appreciation of both the proposed development and the setting in which it is proposed to be built. See 'Appendix G: District Heating Guidance' for a summary of Stockport Guidance for District Heating Feasibility. Also see the 'Energy' section for more detail on this option.

Natural Ventilation

4.31 To complement passive solar design, maximum use should be made of natural ventilation, rather than mechanical or air conditioning systems, further reducing the energy demand within the building, as well as offering a healthier option for managing indoor air quality.

Accessibility

4.32 People are very different in their needs and in the way they use the environment. Part M of the Building Regulations promotes an inclusive environment and these considerations form part

of delivering a sustainable development. Masterplans should be developed to ensure maximum permeability for pedestrians and cyclists with open routes promoting safety, including 'eyes on the street', whilst also incorporating a range of measures to reduce and manage the use of private cars. Specific guidance is available as outlined in the Tools and Resources section. Please also note Stockport's own Sustainable Transport SPD.

Permeable Drainage

4.33 Sustainable Urban Drainage Systems (SUDS) incorporate a range of ideas from swales and basins to simple use of permeable paving options. Their purpose is to mimic natural water systems, reduce surface water run off, and minimise the risk of flooding through drains and sewers being inundated. See the Water Topic for more information.

Materials Selection

4.34 Increased adoption of environmental building standards has resulted in more availability of sustainable materials, ranging from Forest Stewardship Council accredited timber to triple glazed windows. Consideration of these options at this early stage allows for the most cost effective budgeting of the scheme and can help towards achievement of various standards. It can also enhance the marketability of the project. See the specific Materials topic section for more information.

Telecommunications

4.35 ICT requirements grow more sophisticated every day and consideration of the building users' needs is crucial as a selling point on completion. Flexible and adaptable ICT options are part of achieving a sustainable building as it offers opportunities to use e-meeting, e-conferencing and telephone conferencing opportunities, reducing the travel impacts of a company or home.

Roofscape

4.36 Consideration should be given to green roofs and living walls benefits at an early stage, for water, energy and biodiversity considerations, but also as a way of ensuring overlooked roofscapes are attractive.

Promoting Community Trust

4.37 Planting of native thorny plant species can offer a security option to site design for schools, playing fields and businesses etc, whilst offering opportunities to improve biodiversity. Alternatively, open shared space facilitates eyes on the street from pedestrian through-traffic, promoting community interaction, which further encourages feelings of safety and deters any potential crime. A through route for pedestrians and cyclists can also provide an active route which, in itself, is a deterrent. It should be noted that for cycle / pedestrian routes thorny plant species can be problematic, but design guidance is available on appropriate options. Secured by Design encourages the adoption of crime prevention measures in design, including security systems and recent research on the carbon cost of crime[38]. Designers should bear in mind the benefits of through routes in terms of providing activity in neighbourhoods, which reduces the need for

38 Towards healthier, fairer, safer communities: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_091772,

expensive electronic surveillance, as well as maintenance. Groups of children of varying ages playing outside can actually be a deterrent to crime.

Long Term Flexibility

4.38 Buildings should be designed to incorporate flexibility for changes in future use, ensuring that commercial buildings in particular are adaptable to economic changes and trends, with ceiling heights that will accommodate a variety of uses. As a standard, Lifetime Homes offers the opportunity to design housing that caters for the changing needs of occupants throughout their lives, thereby widening its appeal.

Enabling Home Working

4.39 Design of housing should take into consideration the growing support for home working options for employers and employees. Inclusion of separate or flexible working space in housing, with accessible ICT facilities, will be more and more attractive, as employers seek to minimise their transport carbon footprint. Flexible working practises are leading to increased performance and retention of experienced and valuable staff. Housing needs to be designed to facilitate this option.

Healthy Sustainable Design

4.40 Healthy buildings are key to ensuring a healthy populace. This relates to appropriately designed space, natural light and ventilation as well as readily accessible relaxation and leisure facilities, whether for walking the dog or spending the lunch break out of doors. Such benefits are also reflected in a contented and productive workforce, supporting a strong local economy.

4.41 Inclusion of public leisure areas in employment sites and within communities facilitates community interaction, further improving the health of the residents and workers by reducing stress. Trust levels rise, with people more active in local communities, interacting with each other, spending more money and attracting further residents and business to relocate to the attractive town, district and local centres. This can be achieved through functional strategic walking/cycling routes incorporating public areas.

4.42 Design can impact directly on issues such as obesity for example by ensuring that design of a house includes adequate and appropriate family dining facilities, which can help families to instigate healthier eating regimes whilst offering opportunities for quality family time. The inclusion of allotment space or room for vegetable gardens on developments can also help.

Case Study: Staithes, South Bank, Gateshead

Tools & Resources

The Stockport Sustainability Checklist (see 'Appendix A: Sustainability Checklist') highlights useful considerations and is easily applied at this early stage of concept and design. The Checklist supports this SPD which contains a wealth of resources and tools for designers to consider, these are reflected in the following relevant sections. An Excel version of the Checklist is available on request from the Planning Policy Team.

Environmental standards offer a structured approach to incorporating sustainable design and construction approaches. There are some excellent support materials for the various design standards outlined in 'Appendix D: Environmental Standards'.

Green Build News offers a wealth of resources and information to built environment professionals.

The Sustainable Homes Green Streets offers resources on refurbishing existing housing.

Passive Solar Design – basic principles - there are many published books on passive solar design available from on-line bookstores, but several excellent examples include:

- Environmental Design - Editor: Randall Thomas, Taylor & Francis; 3rd edition (15 Dec 2005)
- Sustainable Urban Design, an Environmental approach - Adam Richie, Randall Thomas, Taylor & Francis; 2nd edition (8 Sep 2008)
- Strategies for Sustainable Architecture - Paola Sassi, Taylor & Francis; 1st edition (19 Jun 2006)
- Feilden Clegg Bradley: The Environmental Handbook - Ian Latham (Editor), Mark Swenarton (Editor), Right Angle Publishing Ltd (31 Oct 2007)
- The ZEDbook: solutions for a shrinking world - Bill Dunster, Craig Simmons and Bobby Gilbert, Taylor & Francis; 1 edition (30 Sep 2007)

Natural Ventilation – basic principles - there are published books on natural ventilation systems available from on-line bookstores, and the above titles are also a good reference.

Accessibility by Design in Greater Manchester

Secured by Design – find your local Crime Prevention Design Advisor as well as other information. Care is needed to balance security with through routes for cyclists etc, which provide eyes on the street as a deterrent option.

Eco-TECHS Organic House - a factory produced house

Hemmingway Design has a showcase of design projects which incorporate sustainable design.

Remember the NICE design guides mentioned in the Layout & Transport topic Tools & Resources.

National Refurbishment Centre sponsored by BRE and the Energy Saving Trust provides a resource for rethinking green refurbishment and retrofit of existing buildings.

English Heritage considers heritage design in light of climate change including addressing domestic refurbishment. There are a wealth of publications available from their website around sustainable design and climate change.

Bath Preservation Trust have produced A Guide to Improving the Energy Efficiency of Traditional Homes in Bath which has relevance to heritage assets in general.

The North West has a Heritage Skills Hub which has established a network of knowledge and resources, including information on the Heritage Skills Card for construction.

The University of Minnesota in the US has created an innovative resource entitled Design for Health which highlights issues around Health.

4 Topics

PassivHaus - construction standard for residential and commercial buildings.

Active House - a Danish idea spreading across Europe.

The Theatres Trust provides specific advice on the refurbishment and development of theatres, including sustainability.

BRE have published the following books:

Integrating BREEAM throughout the design process

LIST (Low Impact Shopfitting Tool) for designing greener shopfitting display equipment

Materials

Relevant Policies

4.43 See 'Appendix C: Core Strategy Policies' for more detail on Stockport's own Core Strategy which has the following policies of relevance to this topic:

- CS1 Overarching Principles: Sustainable Development - Addressing Inequalities and Climate Change
- DM-SD6 Adapting to the Impact of Climate Change
- CS8 Safeguarding and Improving the Environment
- DM-SIE1Quality Places
- DM-SIE3 Protecting, Safeguarding and Enhancing the Environment

4.44 In addition there are other Supplementary Planning Documents which will prove useful for specific issues, including:

- Design of Residential Development
- Extensions and Alterations to Dwellings
- Town Centre Housing

Considerations

4.45 The impact of materials processing and manufacture is a major factor in issues such as the 'carbon footprint' of the development. Extraction of raw materials through to energy used in production and maintenance can drastically increase the impact of a development. Environmental building standards recognise and encourage the use of construction materials with a low environmental impact. Life Cycle Assessment (LCA) is an important tool in establishing the true financial and environmental cost of materials over the building's life span.

4.46 There is a growing market of suppliers and contractors who stock or use locally produced and sustainable materials. It can be more cost effective to re-use and/or locally source materials for the project, especially if spreading the cost over one or more developments. Indeed it is beneficial to establish if contractors being considered for supplying or delivering a scheme have a proven environmental track record, for example they have an Environmental Management System accreditation in place. Marketing of such aspects of a development can add to its appeal, particularly if the potential occupants have policies which reflect sustainable and/or social responsibility. Another marketing opportunity is that higher specifications on materials can help to reduce maintenance costs over time.

4.47 The following key aspects should be considered in design and contracting options:

Re-using Buildings - A Heritage Opportunity

4.48 By taking a narrow and rigid view of what makes a building or development sustainable, opportunities may well be missed to adapt and enhance what is already there. In considering development proposals, it is useful to take into account the embodied energy within existing buildings and the whole life costs of any new scheme or proposed alterations. The creative adaptation of heritage assets for example, can dramatically reduce the whole-life costs that would result from demolition and replacement, particularly in terms of energy and materials.

4 Topics

Whole Building Approach

4.49 Concept and design stages allow consideration of truly innovative approaches in house and building design. The PassivHaus approach is recognised across Europe as a super-efficient design for housing. The Active House system achieved in Denmark claims that in 30 years a house will have contributed enough energy back to the grid to completely wipe out the building's footprint.

Appropriate Materials

4.50 Select materials appropriate to the building use and locality, bearing in mind the likely refurbishment cycle. For properties with a predicted longer lifespan, specify a high standard. A shorter term building such as a shop re-fit or residential kitchen can accommodate lower grade, but with consideration of environmental and aesthetic issues.

Life Cycle Assessment

4.51 Life cycle assessment of a building material assesses the environmental and social impact of raw material production, manufacture, distribution, use, maintenance, disposal, and all intermediate steps. The summed impact of all these phases is the life cycle cost of the product. Such environmental profiles enable designers and specifiers to glean reliable and comparable environmental information about competing building materials

Re-used, Reclaimed and Recycled materials

4.52 Whenever possible re-use existing materials or procure reclaimed and recycled materials. Consider using building materials made from construction and demolition waste in preference to primary aggregates. Many types of construction waste can be used for these purposes including soil, asphalt, concrete, bricks and tiles. Carefully store and recycle roof tiles and slates. Aesthetic benefits can be achieved by re-using materials which maintain a local distinctiveness. In addition, priority should be given to materials that can be deconstructed and re-used at the end of the building's usable life.

Locally and/or Sustainably Sourced

4.53 Procurement of locally and/or sustainably sourced materials is becoming easier to achieve with specialist suppliers now appearing. The lifecyle impact of materials is key, with minimal environmental degradation and toxicity preferred. There are Government sponsored agencies who can assist with advice and information on supply chains and costs. However it is still advisable to get a series of quotations before making decisions. Be clear when assessing materials to differentiate between locally PRODUCED and locally sourced. Locally produced will have even lower environmental impact levels than those that are simply advertised as available locally or are listed as 'sustainably sourced', since these may well have travelled to the area from their production source, with an associated carbon footprint.

Soil

4.54 Re-use of soils should be considered on all sites where feasible. This issue is of particular importance in housing development gardens where poor soils are often removed and better soils shipped in, with associated landfill and transport emission issues. To avoid this problem the soil in gardens should be prepared to BS 3882: 2007 Specification for Top Soil Requirements for use.

Supplier Performance

4.55 It is helpful to consider using suppliers that can demonstrate that they have an independently accredited Environmental Management System in place, such as ISO14001[39] or BS7750[40].

Healthy Sustainable Design

4.56 The benefits to health of using sustainable materials are not immediately obvious. However re-use of materials, lifecycle considerations and local sourcing considerably reduce transport and manufacturing requirements, thereby reducing harmful emissions, including carbon. The associated benefit of slowing climate change has important health links, since predicted impacts on health include: flooding; increase in temperatures which could result in increased food and water borne diseases; periods of poor air quality which are more likely in urban areas in warmer summers; as well as the predicted impacts of increases in some diseases on health service provision, evidence of which is slowly coming to light [41].

Case Studies: The Recycled House shows how infrastructural refuse was salvaged and re-used. John Lewis Department Store at Trafford in Manchester resourced recycled materials.

Tools & Resources

PassivHaus – construction standard for residential and commercial buildings

Active House – a Danish idea spreading across Europe.

The most well known sustainable materials resourcing websites include the BREEAM associated Green Guide to Specification. This web resource is the recommended resource if you are undertaking BREEAM accreditation.

There are also other sites such as the Green Building Store or Green Spec or Green Build News. plus a wealth of other sites, available via most web-based search engines.

Envirolink are a not for profit organisation who provide guidance on recycled materials and local sourcing.

The Forest Stewardship Council offers advice on sustainably sourcing timber.

The UK Woodland Assurance Standard offers an independent certification standard for verifying sustainable woodland management in the United Kingdom.

British Standard BS 3882:2007 Specification for topsoil and requirements for use.

WRAP offers a number of guidelines for setting development-wide targets for recycled content and re-use of in-situ materials such as recycled hardcore.

39 www.iso.org/iso/iso_14000_essentials
40 www.quality.co.uk/bs7750.htm#Description
41 UK Climate Impacts Programme - Health: http://www.ukcip.org.uk/index.php?option=com_content&task=view&id=39&Itemid=140

4 Topics

Waste

Relevant Policies

4.57 See 'Appendix C: Core Strategy Policies' for more detail on Stockport's Core Strategy which has the following policies of relevance to this topic:

- CS1 Overarching Principles: Sustainable Development - Addressing Inequalities and Climate Change
- CS8 Safeguarding & Improving the Environment
- DM-SIE3 Protecting, Safeguarding and Enhancing the Environment

4.58 The emerging Greater Manchester Joint Waste Management DPD will be adopted in late 2011.

4.59 Finally there are other Supplementary Planning Document which will prove useful for specific issues, including:

- Design of Residential Development
- Extensions and Alterations to Dwellings

Considerations

Reduce, Re-use, Recycle

4.60 The Waste Hierarchy is a system which considers waste in a stepped approach. Firstly reduce the need for materials where possible – to achieve this, careful consideration at the concept and specification stages can help to ensure the most efficient design, reducing unnecessary waste. Re-use of existing materials on site or locally sourced re-usable materials will considerably reduce the environmental impact of the site. This is clearly explained in the Materials section. Recycling of existing on-site materials and any waste created during the construction process will further reduce impacts.

4.61 Use of all three of these approaches will help to reduce costs associated with the project. Landfill tax is rising and set to rise further; sorting and disposing of waste to recycling opportunities makes financial sense. There are Government funded agencies which can help with management of waste streams – these are outlined in the Tools and Resources section. Please refer to the 'Materials' Topic for information on sustainably produced and resourced materials.

Design, Construction & Building In-use stages

4.62 All stages of development need to be undertaken whilst considering the issues surrounding waste. The re-use of existing materials on site will have implications for the cost of the project. Staff training on construction re-use and recycling will enhance an organisation's ability to deliver on future projects. However design consideration should include recyclate storage during the occupancy of the building, including consideration of access to recycling areas for collection services. Stockport Council's Waste Team have provided advice on appropriate design including information on bin size, clearance issues for trucks and access issues.

Site Waste Management Plans (SWMP)

4.63 The Site Waste Management Plan Regulations 2008 require a SWMP to be prepared and implemented on all construction projects with an estimated cost greater than £300K (exc VAT). Specific guidance is available for designers and specifiers (see Tools and Resources) helping to reduce illegal disposal of waste and improve resource efficiency in construction, relative to demolition and refurbishment as well as new builds. The SWMP process is regulated by the Local Authority and/or the Environment Agency. See the Tools & Resources section for free SWMP tools. Good practice suggests that there is considerable benefit from early development of a SWMP on projects and that clients can ask for pre-tender SWMPs, minimising waste through smart design. Pre-construction SWMPs can allow consideration of anticipated waste streams, also encouraging early communication with waste management contractors, thereby allowing waste cost benefits to be accurately identified. SWMPs can allow contractors to monitor Duty of Care requirements, identify anomalies and determine causes (where predictions are sensible).

Composting

4.64 Whilst composting has limited applications to site waste, it is an aspect of design which should be considered for developments. Provision of composting bins, especially on residential developments is an easy win in terms of environmental design standards. It could also provide materials for improvement of new residential site garden soils within the first few years of occupancy, whilst taking putrescible waste out of the Local Authority's waste stream. On commercial sites composting of appropriate wastes within business venues could contribute to landscape maintenance providing a nutritional soil improvement resource for building owners and managers.

Healthy Sustainable Design

4.65 Like the Materials agenda, waste minimisation has associated impacts on the climate change agenda, offering opportunities to slow the impacts of climate change with the resulting aforementioned health benefits. There are also water and air quality issues associated with landfill, therefore minimising the amounts of waste going to these sites is key. Heritage sites offer great opportunities to re-use materials (including whole buildings) whilst contributing to preserving our fragile heritage resource. Community health and prosperity is therefore achieved when a sustainable heritage project is delivered, fostering community pride and interaction around the site. Waste management is also an opportunity to allow residents and businesses the opportunity to get involved in preserving the natural environment.

Case Study: WRAP website has a range of up to date case studies for all types of development

Tools & Resources

Waste Hierarchy and Landfill Tax information.

Stockport Council's Waste Management Team have provided information on design issues such as space for bins, number and types of recycling bins and access issues for collection vehicles.

Waste & Resources Action Programme (WRAP) offers FREE specific advice to the construction industry on waste minimisation, waste management, recycled content and site waste management plans.

4 Topics

SMARTWaste is a free web-based tool which designers and developers can use, developed by BRE who offer training on SWMPs, for which there is a charge.

WRAP developed a composting advice site for residents which is useful in terms of composting processes and resources.

Envirolink are a not for profit organisation offering resources on waste management and recycling issues.

Green Build News offers a wealth of resources and information to built environment professionals.

The Sustainable Homes Green Streets offers resources on refurbishing existing housing.

Energy

Relevant Policies

4.66 See 'Appendix C: Core Strategy Policies' for more detail on Stockport's Core Strategy which has the following policies of relevance to this topic:

- CS1 Overarching Principles: Sustainable Development - Addressing Inequalities and Climate Change
- DM-SD2 Making Improvements to Existing Dwellings
- DM-SD3 Delivering the Energy Opportunities Plan - New Development
- DM-SD4 District Heating (Network Development Areas)
- DM-SD5 Community Owned Energy
- DM-SD6 Adapting to the Impact of Climate Change
- DM-H1Housing Provision
- DM-H1 Design of Residential Development
- CS8 Safeguarding and Improving the Environment
- DM-SIE3 Protecting, Safeguarding and Enhancing the Environment

4.67 In addition there are other Supplementary Planning Document which will prove useful for specific issues, including:

- Design of Residential Development
- Extensions and Alterations to Dwellings

Consideration

4.68 The impacts of climate change are well documented[(42)]. The issues and considerations, in terms of energy in buildings, are outlined within this section. However, in order to assist with the implementation of the climate change policies in the Core Strategy, Stockport Council has created its own Low Carbon Design Guidance[(43)] to assist developers with low carbon design, following the Building Regulations approach. In addition Stockport's Guidance for District Heating Feasibility has been created to provide a steer on how to undertake feasibility work on district heating, including clarifying policy requirements for sites under certain thresholds to undertake future proofing of development where district heating is not being directly developed.

4.69 The way energy is designed into buildings and public realm is crucial to efforts to reduce carbon emissions and manage energy use in new and refurbished buildings. Like Waste, the Energy agenda has a hierarchy that international, national and regional as well as local policies reflect[(44)]. This is to:

- Minimise energy demand
- Use energy efficiently, and
- Produce low or zero carbon (LZC) energy.

42 UK Climate Impacts Programme: http://www.ukcip.org.uk/
43 Stockport Low Carbon Design Guidance: www.stockport.gov.uk/planningsustainabledevelopment
44 North West Sustainable Energy Strategy: http://www.climatechangenorthwest.co.uk/assets/_files/documents/jun_07/cli__1181140886_North_West_Sustainable_Energy_.pdf

4.70 Minimising the need for energy is best dealt with at concept and design stages, through reducing the need for artificial lighting, heating and cooling. This can be achieved through maximising daylight levels and specifying high levels of insulation and airtightness. Without an energy efficient building low and zero carbon technologies are less cost effective.

4.71 District heating offers a more resource efficient option for energy supply and carbon management, assisting with achieving the ever more stringent carbon requirements within Building Regulations. Combined Heat & Power systems can be used in conjunction with district heating to make use of waste heat to generate additional electricity for use on site. Also trigeneration technologies (heating, cooling and generation) can be linked in so that a district heating system provides heating and cooling to the linked buildings as required, whilst generating electricity. These systems can be fuelled either by more efficient use of gas or through low carbon resources such as biomass. In the case of biomass care is needed to source fuel from a sustainable source, which includes consideration of distance travelled by the fuel. See 'Appendix G: District Heating Guidance' for a summary of the Stockport Guidance on District Heating Feasibility.

4.72 Using efficient plant and equipment and crucially, altering occupant behaviour, will have a significant effect on how efficiently energy is used within the building.

4.73 Incorporation of LZC technologies can provide opportunities to generate income.

4.74 After all opportunities have been exploited throughout the energy hierarchy, any residual use of fossil fuels must be as clean and efficient as possible. Emissions derived from transport are discussed in the Layout and Transport Topic section.

4.75 Refurbishment projects, including Heritage sites, should follow similar principals, but obviously there are existing factors which need to be considered. However, traditional buildings can perform extremely well in energy tests. Thick walls and relatively small windows give high thermal mass, maintaining warmth in winter and providing cooling in summer. Terrace design principles in housing facilitate high energy savings for mid-terraces in particular.

4.76 The key issues and their associated aspects for consideration are discussed below.

Energy Demand Minimisation

4.77 Passive Solar Design: South facing orientation allows maximum solar penetration, which means a reduction in the level of artificial lighting required. In extremely efficient buildings solar gain can also contribute to space heating load during the winter months. Careful design using deciduous tree cover or mechanical shading of the south and west facades can both minimise summer overheating and maximise useful winter solar gain. Use of exposed high thermal mass materials in the building structure can absorb daytime heat gains and release them slowly overnight, thereby reducing internal diurnal temperature variations, reducing the need for summer cooling, and shortening the winter heating season in some cases.

4.78 Natural Ventilation & Daylight: A natural ventilation system uses air pressure differentials and the wind to facilitate cooling of the building, reducing further energy demand. These options also lend themselves to maximum use of natural daylight, reducing the need for any other form of lighting. This approach also facilitates use of solar systems which can further reduce energy use. Careful consideration at conception and design stages are required to ensure that this approach is feasible and designed appropriately.

4.79 Green roofs and/or living walls: can also assist with insulation and particularly summer cooling requirements. They can also be readily integrated with solar systems, and have even been shown to increase the efficiency of PV cells on hot summer days. Further information can be found in the Biodiversity topic.

Energy Efficiency & Supply

4.80 Insulation: This aspect needs to be considered in tandem with ventilation, ensuring buildings achieve air tightness standards. Insulation over and above current Building Regulations is required to ensure that a building's energy demand is further reduced and that space heating systems perform to a high efficiency. By 2016 all new housing will be required through Building Regulations to achieve high levels of insulation (2019 for non-domestic buildings). This will be equivalent to the energy targets required to achieve Code for Sustainable Homes (CSH) Level 6 – a target that will not be possible without adopting insulation and airtightness standards similar to PassivHaus. Organisations that learn these techniques early will be ahead of competitors in their skills and knowledge to deliver on this agenda.

4.81 Ventilation: Natural ventilation is the best option if feasible, subject to noise and air pollution, offering as it does potential cost reductions at construction and occupancy stages. If mechanical ventilation is required then the lowest energy demand system offering the healthiest indoor air quality is the preferred option. Mechanical ventilation can be tied in with heat recovery in building design resulting in further energy efficiency opportunities. Consideration should also be given to a ‘mixed-mode’ building which allows natural ventilation to be used when noise and/or air quality issues permit, but has a mechanical back up system when necessary.

4.82 Design should incorporate energy efficient plant systems within the building. Smart metering is becoming more common, with some highly developed systems allowing zoning of buildings to measure energy and/or heat use. This means that understanding of energy demand in the building needs to be determined during concept and design.

4.83 It is also worth considering specifying a Building Management System (BMS), which can optimise lighting, heating and cooling strategies automatically, according to ambient and internal conditions. This is an excellent way to ensure that the building performs in the way it was designed to. Having said this, manual override controls are essential for flexibility and occupant comfort.

4.84 If passive solar as well as natural ventilation and daylight options are not feasible, then the most efficient space and water heating, ventilation and lighting options need to be considered. Whilst appliances might not be an integral part of the delivery of the project, designing the building to be flexible in terms of appliance needs and future ICT adaptation are key to ensuring a sustainable building.

4.85 A design consideration mentioned in Code for Sustainable Homes is the provision of clothes drying space in housing, reducing the use of appliances to dry clothes. Kitchen design could incorporate space in the ceiling area for clothes drying, as it is often the warmest room in the house for periods of the day. Housing developments which do incorporate appliances should look to include those that perform best on the Energy Saving Trust rating system for appliances, reflecting the highest end of the scale in final specification. Another useful reference is the The OGC / DEFRA ‘Quick Wins’ lists, which specifies energy efficient plant and appliances.

4.86 Heating and lighting controls are a major part of ensuring efficient use of energy, with some sophisticated BMS systems allowing zoning of a building for heating provision at different times of the day. For example a house heating system could be programmed to turn the heating on in living quarters for the occupants' return from work, but not turn on the bedroom heating until later in the evening, as required. In addition, LED technology offers the opportunity to light a building efficiently with minimal energy, maintenance or heat gain.

Low & Zero Carbon Technologies

4.87 **Renewable energy** is a term more readily recognised in today's business world, describing solar, hydro, biomass, wind and heat pump technologies. It forms part of the Low and Zero Carbon (LZC) opportunities available to designers and developers to enable them to achieve low energy design. There is a wealth of information available on the various technologies and resources are detailed in the Tools & Resources section. It should be noted that caution is required with regards to sourcing biomass fuels, including consideration of the transport distances from source as well as its origins. 'Appendix F: Small Scale Domestic Wind Turbines in the Green Belt' outlines detailed guidance for applicants wishing to apply for planning permission for this scale of wind technologies within the Green Belt, including outlining what is required by planning officers. This information is useful generally for wind installation planning applicants with regards to what an application should contain as a minimum. It is important to establish average wind speeds for a site to determine if wind is a feasible option and the Tools & Resources section provides links to tools to undertake this research.

4.88 Low and zero carbon options or LZC as it is often termed, include options such as Air or Ground Source Heat Pumps (not renewable unless the electricity supply for the pump is from a renewable resource), Combined Heat & Power (CHP) systems (efficient systems which re-use waste heat to produce further electricity or heat and are therefore more efficient), District Heating systems which use heat more efficiently and energy from waste options where a resource is recycled through production of energy and/or heat, such as wood waste in a biomass system. A local study has been undertaken to inform the development of district heating projects, including some case study examples. 'Appendix G: District Heating Guidance' details the guidance provided for developers on how to undertake feasibility work for district heating schemes.

4.89 Carbon offsetting offers the opportunity, on sites where low or zero carbon technologies are not feasible for example, for planning applicants to pay into Stockport's Carbon Fund instead of delivering technologies on site. This opportunity forms part of the Core Strategy policies and the mechanism for establishing the likely payment for a development is outlined in 'Appendix H: Carbon Offset Mechanism'. This mechanism is an interim approach until the Community Infrastructure Levy process is established for the Borough.

4.90 Green roofs are included in this list as a design feature which can help with cooling and to a certain degree, insulation. Rather than replicate information from existing resources in this document there are a list of useful web resources which outline technologies and any specification guidance in Tools and Resources, with further detail in the Landscape & Biodiversity Topic.

Energy Services Companies (ESCOs)

4.91 Energy Service Companies (ESCOs) are not a new concept and there are more and more examples available both in Britain and across the world. ESCOs offer significant benefits, increased efficiencies and incentives to improve efficiencies as a result of greater energy management

expertise, experience, capital investment and guarantees. They can deliver the concept of distributed generation and can offer the opportunity to bring people 'closer' to their sources of energy. Each ESCO structure is unique therefore there is no standard outline or guidance for establishing one. Stockport Hydro Limited is a local example of an Industrial & Provident Society which is one form of ESCO.

Healthy Sustainable Design

4.92 Healthy buildings are key to ensuring a healthy populace, whether it is in terms of appropriately designed space, natural light and ventilation as well as readily accessible relaxation and leisure facilities, whether for walking the dog or spending the lunch break out of doors. Pedestrian and cycle routes should be green, providing shade and contributing to biodiversity improvements whilst achieving routes that are safe to use. Such benefits result in a contented and productive workforce, supporting a strong local economy.

4.93 Passive solar design and natural ventilation offer a cost effective option to designing a building for comfort of occupants. The summer of 2006 was the longest continuous period of hot weather recorded in the UK. The heat wave had significant consequences for human comfort and health. The Urban Heat Island[(45)] effect will exacerbate higher summer temperatures, driving the need for robust ventilation that has a low energy demand.

Case Studies: Active House and PassivHaus designs look at energy in design with Canolfan Hyddgen (The Stag Centre) achieving Passivhaus standards in an office. Red Kite House is a leading achievement in energy efficient office design.

Tools & Resources

General

The Planning Portal has a range of tools to guide you through both the planning application and building regulations processes with specific tools for developments, with regards to renewable energy options.

Green Build News offers a wealth of resources and information to built environment professionals.

The Sustainable Homes Green Streets offers resources on refurbishing existing housing.

The Climate Change North Westwebsite has a wealth of information on climate change, carbon and energy issues.

Business Link North West offer advice on using Environmental Consultants.

Innovation Vouchers from Business Link: A Solutions for Business product which enable small and medium-sized businesses in England to buy specialist support from knowledge-based institutions to help in the development of new products, services and processes.

45 Adaptation strategies for climate change in the urban environment (ASCCUE): http://www.sed.manchester.ac.uk/research/cure/research/asccue/

4 Topics

North West Centre for Construction Innovation – can provide advice and organise networking opportunities for designers and developers to discuss issues, including sustainable design and construction information.

Stockport local examples of sustainable energy currently include the BAM Building, an EcoHome and the Reddish Vale Green Roof & Solar PV Array. Stockport has several schemes in development including hydro schemes, anaerobic digestion units and wind turbine applications.

Stockport Homes and other social landlords are implementing solar photovoltaics on their stock.

Manchester is My Planet facilitates programmes and projects on climate change. Energy Services Companies (ESCOs) research has been undertaken by MIMP.

English Heritage have a wealth of information on Climate Change and the Historic Environment. For residents living in heritage housing there is a dedicated website from English Heritage: Climate Change and Your Home which provides information on energy management useful for residential developers.

The Green Deal will launch in 2012 which will facilitate financing of improvements to existing dwellings through utilising savings on energy bills.

The Historic Environment Local Management resource for local authorities provided by English Heritage has a wealth of information on energy management for historic buildings.

The Town & Country Planning Association were early pioneers in producing design guides on energy, which are still relevant today. Climate Change Adaptation by Design includes how to manage high temperatures, flooding and water resources. It also showcases case studies and technologies. Sustainable Energy by Design showcases how design and development can integrate sustainable energy into new and existing developments.

The Energy Saving Trust has an excellent web resource for house building professionals including published guidance and design tools, as well as detailed information on renewable energy technologies. Their site also has information on refurbishing properties to a high energy standard and information on changes to the Building Regulations in terms of energy.

Advice from the Carbon Trust on low carbon building design online or telephone 0800 085 2005 – a free resource dependent on development type and size. There are also business loans available to help finance and invest in energy saving projects.

There are a growing number of independent finance groups offering investment opportunities, which can be found using internet search engines on terms such as low carbon investment. This document does not seek to promote any such organisations directly but provides this information to inform project considerations.

Building Regulations: Energy efficiency requirements for new dwellings - A forward look at what standards may be in 2013.

Businesses wishing to adapt their practices to tackle climate change can look at the UK Climate Impacts Programme's Adaptation Wizard - an online tool designed to help businesses adapt.

Enplanner is an online toolkit designed to help developers with implementing planning policies on energy - some elements are free to use.

Energy Demand Minimisation

Passive Solar Design and Natural Ventilation properties are explained clearly on Page 136 of the Companion Guide to PPS22 Renewable Energy. Design guidance is available at cost from a variety of sources (such as the CarbonLite Programme run by the Sustainable Building Association), further examples of which can be found using a web search engine.

Green Roof Guidelines are available on line following the recent publication of the UK Green Roof Code of Best Practice.

Energy Efficiency

Smart Metering is the subject of Government discussions on how to embed this issue into policy and design.

Government Buying Standards assist with sustainable purchasing.

The Enhanced Capital Allowance scheme is a key part of the Government's programme to manage climate change. It provides businesses with enhanced tax relief for investments in equipment that meets published energy-saving criteria.

A Behavioural Change Report has been produced for Greater Manchester which addresses the issues of behavioural change which can help to deliver emissions reductions.

The Energy House at Salford University provides a wealth of resources and information on refurbishment of existing housing stock.

Low & Zero Carbon Technology

For renewable energy technologies always get at least three quotes before deciding on your installer - if you want to access the Feed in Tariff you will need to resource your installers from the Microgeneration Certification Scheme - this resource is useful generally for lists of installers for different renewable energy technologies.

CLASP have produced a Renewables Handbook which can guide developers through the various renewable technologies and associated planning requirements.

Envirolink are a not for profit agency who offer resources and guidance on low carbon building design, renewable energy suppliers and planning application guidance.

The London Renewables Toolkit is a useful resource for those new to low carbon design. The IDeA has produced a resource for planners and local authorities which can inform developer decisions as to benefits of renewable technologies.

The Feed in Tariff is available for certain generating technologies which means that building owners can generate income on both used and additional generated energy. The Renewable Heat Incentive will commence soon covering those low and zero carbon technologies that provide space

and water heating. However technologies installed now will qualify if installed by an accredited installer.

The Community Sustainable Energy Programme has windows of opportunity for funding.

Manchester Eco House showcases sustainable energy solutions and is open for visits. Bridge 5 Mill and Kingsmead School are relatively local sites which can be visited as examples of good practice.

The UK's Combined Heat & Power Association promotes the wider use of CHP and community / district heating.

The Centre for Alternative Technology in mid-Wales offers training courses appropriate to small scale businesses and installers and the East Cheshire Training & Assessment offer local courses on solar and heat pump installation. Other organisations offer training and installation services which can be found using web search engines.

The Renewable Energy Association provide information to projects etc.

Technology specific resources are:

Solar: Solar Trade Association

Biomass: Wood Fuel Heating in the North of England, Advice note for installing Biomass Heating Systems and the National Biofuel Suppliers Database is provided by the Biomass Energy Centre backed by the Carbon Trust.

Hydro: British Hydropower Association and visit H2OPE who are installing some systems in Stockport. Also the Environment Agency with the Energy Saving Trust have produced a Guide to Micro Hydro Schemes

Wind: British Wind Energy Association; EST have produced a calculation tool for domestic average wind speeds.

Heat Pumps: Heat Pump Association for Air, Ground and Water sourced heat pumps. The Environment Agency provide environmental good practice guidance for Ground Source Heat Pumps.

Small scale wood heating: NEF Website and Wood Pellet Stoves for small scale wood burning stove technologies and costs.

Water

Relevant Policies

4.94 See 'Appendix C: Core Strategy Policies' for more detail on Stockport's Core Strategy which has the following policies of relevance to this topic:

- CS1 Overarching Principles: Sustainable Development - Addressing Inequalities and Climate Change
- DM-SD6 Adapting to the Impact of Climate Change
- CS8 Safeguarding and Improving the Environment
- DM-SIE3 Protecting, Safeguarding and Enhancing the Environment

4.95 In addition there are other Supplementary Planning Document which will prove useful for specific issues, including:

- Design of Residential Development
- Extensions and Alterations to Dwellings

Considerations

4.96 Climate change has a capacity to seriously impact on water supply levels and quality. Despite being in one of the more water affluent regions of England, design considerations should consider the prediction that winter rainfall could substantially increase with associated pressures on waste water systems[(46)]. This section is about consideration of how precipitation moves into, through and out of the built environment. Increased risk of flooding means that increased volumes of water flowing at faster rates through development sites is highly likely. Use of non-potable water for appropriate uses will also considerably reduce the carbon footprint of the building as the processing of potable water uses enormous energy resources.

Flood Risk Assessment (PPS 25 Development and Flood Risk - Annex D)

4.97 The Council seeks the advice of the Environment Agency on any planning application with regards to flood risk. The level of detail required in terms of a flood risk assessment is determined by the level of flooding risk, which is assessed using a sequential process – see 'Appendix E: Flood Risk'.

Sustainable Urban Drainage Systems (SUDS)

4.98 Emerging national legislation on Flood and Water Management will seek to promote sustainable ways of managing water and floods in the built environment. SUDS are currently an alternative approach to managing run-off from buildings and hardstanding. SUDS approaches reduce the amount of surface run off protecting rivers reached by storm water drains. Rapid run off from developments with traditional drainage systems is a contributory factor in flooding incidents.

4.99 Green roofs and other building integrated vegetation can help towards the management of water flowing through the built environment, through storage of water within the vegetation itself. There are technical websites which should be reviewed for in depth information on SUDS

design and construction, these are detailed in the Tools and Resources section. Green roofs contribute to biodiversity benefits as well, as reflected in that topic section.

Water Saving Devices

4.100 Water saving devices are a cheap yet effective way of managing the water consumption of a building, with short payback periods. Where possible specifications should include: low flush toilets; dual flush toilets; waterless urinals; spray taps, water saving showers, tapered or peanut shaped baths, small bore pipes with minimal distance to the most frequently used fittings, and; water saving white goods.

Rainwater Harvesting

4.101 The storage and use of rainwater in washing machines, watering plants/gardens, for flushing toilets as well as for other cleaning tasks should be considered at an early stage of design to reduce the costs of implementing such approaches. In housing developments the inclusion of water butts for each property is a low-cost way of improving the properties' environmental credit, is a marketable option to prospective occupants and achieves scores on most environmental standards.

Water Recycling Systems

4.102 Greywater is water that has already been used in washbasins, showers and baths as well as washing machines. It can be recycled for use in flushing toilets and watering landscaping and domestic gardens. There is research into heat recovery from waste hot water supplies (such as showers and kitchen waste water) to further improve the energy performance of a property [47].

Low Water Use Planted Areas and Gardens

4.103 Dry gardens or low water use gardens are an effective way of reducing water consumption. Low water use gardens can be achieved by selecting drought-resistant plants or using water retaining mulches. Drought tolerant plants include many native species and mulch can be made from tree bark, compost or newspaper. Refer to the Landscape and Biodiversity section for further information.

Healthy Sustainable Design

4.104 Flooding can have a major impact on stress levels of both residents and employers / employees. There are associated health, financial and social impacts, through loss of business and employment, homes and possessions as well as the impacts of recovery time and the re-establishment of the homelife, business and getting back to work.

4.105 Although the north of England is unlikely to suffer from drought, little consideration has been given to potential excess of water in this region. There is an urgent need to consider severe weather events occurring more regularly. Sudden volumes of water passing through the built environment will cause flooding, incurring costs associated with insurance, emergency service provision, as well as potential pollution incidents through overflow of sewerage. Storage of rain water for use in watering plants, washing down sites and vehicles is a useful way to slow the

47 US Laundry Wastewater Heat Recovery Systems: http://www.kemcosystems.com/Case-Studies/Laundry-Wastewater.html

impact of these severe events by reducing the volume and rate of water flowing through our built up areas.

A range of case studies are available from the CIRIA SUDS Database.

Tools & Resources

Environment Agency offers standing advice to Local Authorities on Flood Risk Assessment

SUDS techniques information and design guidance are available via the Environment Agency and CIRIA websites.

The Enhanced Capital Allowance Scheme enables businesses to claim 100% first year capital allowances on investments in technologies and products that encourage sustainable water use. Businesses are now able to write off the whole cost of their investment against their taxable profits of the period during which they make the investment.

United Utilities' Developers Guide to Wastewater Adoptions mentions SUDS and provides contact information to discuss any applications using SUDS.

The TCPA Climate Change Adaptation by Design includes information on how to manage flooding and water resources in design.

Waterwise offer a range of resources at cost.

There are a range of commercial websites which offer water conserving and saving devices, available via an internet websearch on these terms.

Green Build News offers a wealth of resources and information to built environment professionals.

United Utilities Water Resources Plan explains how they intend to maintain water supplies across the North West. United Utilities encourage developers to contact them at the earliest opportunity to enable identification of points of connection with least cost to the developer.

Landscape & Biodiversity

Relevant Policies

4.106 See 'Appendix C: Core Strategy Policies' for more detail on Stockport's Core Strategy which has the following policies of relevance to this topic:

- CS1 Overarching Principles: Sustainable Development - Addressing Inequalities and Climate Change
- DM-SD6 Adapting to the Impact of Climate Change
- CS2 Housing Provision
- DM-H1 Design of Residential Development
- CS8 Safeguarding & Improving the Environment
- DM-SIE1 Quality Places
- DM-SIE3 Protecting, Safeguarding and Enhancing the Environment

4.107 In addition there are other Supplementary Planning Document which will prove useful for specific issues, including:

- Design of Residential Development
- Town Centre Housing
- Recreational Open Space Provision & Commuted Sums

Considerations

4.108 Landscaping can use large quantities of resources and water. However careful selection of materials during design can minimise the impacts and even integrate landforms into water management systems, such as SUDS.

4.109 Areas in the Borough have existing Landscape Character Assessments (outlined in local policy) which should be taken into account when development takes place within these areas. Work is underway at national[48] and regional levels[49] to establish updated Landscape Character Assessment and the Core Strategy has specific policy on this issue (see 'Appendix C: Core Strategy Policies').

4.110 Biodiversity is a term with which we are all becoming more familiar. It reflects the need to maintain a diverse range of species, each of which plays a part in maintaining our human ecosystem. Their natural processes help to provide air to breathe, water to drink, soils to grow food in and resources to protect us from seasonal extremes such as cold and heat, as well as providing the resources to live a modern life.

4.111 Geodiversity is a relatively new term coming into use and is defined as that which is the variety of rocks, minerals, fossils, soils, landforms and natural processes. Rocks, fossils and minerals have been formed over millions of years and represent unique past environments and events. The landforms around us have been produced over hundreds of thousands of years and

48 http://www.naturalengland.org.uk/lcn
49 http://www.naturalengland.org.uk/regions/north_west/ourwork/landscapecharacterframework.aspx

soils may take several thousand years to form. The information provided by geodiversity aids understanding of how the planet has changed over time and how life evolved[(50)].

4.112 Native planting as part of landscaping is an easy way for a development to contribute to local biodiversity targets. Planting can also contribute to security measures on site through use of thorny plants and hedges, although consideration of cycle routes design should be addressed as outlined in the Site Layout & Building Design topic.

4.113 Open space provision can offer opportunities for schemes to achieve many of the issues outlined in this topic. There are specific policies on open space provision in the Core Strategy reflecting the social, environmental and economic benefits such provision can achieve. These include creating community space for interaction that allows improvements in biodiversity through native planting, as well as areas for exercise which can contribute to a healthy and productive local populace.

4.114 These key aspects need to be considered in order to achieve sustainable development:

Protect and enhance existing habitats and corridors

4.115 The built environment can be used to improve and enhance existing habitats and create corridors of migration for many species from mammals to birds to insects. A good example is a cycle and pedestrian path linking the site to other areas, appropriately planted to support the migration and movement of insect species. These in turn provide a food resource for many other animals.

Built and vertical habitats

4.116 Building features, walls and other structures can provide habitats for a wide range of species. Design of flats with balconies should take account of potential for greenery to enhance the building appearance. Hedges, thorny plants and climbing thorny plants beneath windows are an excellent and cost effective security barrier.

Green corridors

4.117 Continuous linear areas of planting provide the corridors for movement of smaller wildlife and can be utilised for human sustainable modes of transport such as cycling and pedestrians. Careful consideration will be required to ensure that future growth does not become unmanageable, leading to pathways becoming blocked.

Design

4.118 Use landscape design to achieve low maintenance and low resource intensive (e.g. water) outcomes. Sustainable materials can be incorporated to further ensure low environmental impact. Beware of inappropriate specification of landscaping features, which can lead to rapid deterioration of the built environment. Remember that if the community has a sense of ownership, maintenance costs can be lowered. This issue links with the materials section in terms of considering low impact materials in landscaping, such as certified timber or glassphalt. Using this approach helps to avoid the use of peat, tropical hardwood, limestone and other materials from vulnerable

50 North West Geodiversity Partnership: http://www.nwgeo.org.uk/?Welcome

habitats. Remember that native, thorny species of hedgerow could be an effective security barrier, meanwhile contributing to improvement of biodiversity.

Green Roofs, Living Walls (Building Integrated Vegetation)

4.119 Green roofs and living walls offer an opportunity to add to the biodiversity benefits of a design. This design approach has already been mentioned in both energy and water related sections, as a means of increasing energy efficiency, providing cooling benefits in hotter weather, ameliorating air and water quality whilst storing water. The design principles are clearly outlined in the growing range of web and download tools, but effectively there are a range of options.

4.120 There is a spectrum of different types of green roof, broadly ranging from intensive to extensive – a reference to the degree of maintenance they require. Intensive roofs (roof gardens) consist of lush vegetation on a comparatively deep and relatively nutrient rich substrate which can accommodate shrubs and even trees. They can require significant increases in load bearing capacity and ongoing management, including irrigation and application of fertiliser. Extensive roofs often have a shallow to medium depth substrate and are designed to be relatively self-sustaining. They require minimal maintenance and often only initial irrigation for establishment purposes. In addition, there are numerous permutations for intermediate treatments typically referred to as semi-intensive or simple-intensive green roofs[(51)].

4.121 Further benefits of Green Roofs include filtering of dust and pollutants, increasing amenity space, improving property value, increasing the life of waterproofing by acting as a protective layer and they can also be useful in reducing external noise impacts (up to 18 decibels of external noise).

4.122 Green roofs can be retrofitted, particularly to flat roofs which are known to require high maintenance with associated costs. Extensive roofs offer an opportunity as their load bearing requirements are less. Heritage flat roofs, such as those on mills, may benefit from this cost effective solution.

Green Infrastructure

4.123 An overarching term which is being used more frequently in the planning process is Green Infrastructure. This term encapsulates all of the above aspects of landscape and biodiversity considerations. Developments which incorporate these issues can claim to be delivering in some way to protecting and enhancing Stockport's Green Infrastructure. A well planned Green Infrastructure Network can help to improve water quality, manage flood risk, promote climate change adaptation and mitigation, reduce the urban heat island effect, improve community cohesion through open space provision, enhance biodiversity, promote recreation and increase the attractiveness of places for economic investment[(52)]. This is clarified by the Town & Country Planning Association's 'Biodiversity by Design' listed in the resources to this section.

Healthy Sustainable Design

4.124 Research shows that contact with the natural environment can help prevent ill-health by improving mood, increasing social contact and building social capital, assisting with stress recovery, contributing to personal development both for adults and young people as well as promoting physical activity and thereby health. Greening the built environment is just as important as protecting

51 Greater Manchester Green Roofs Feasibility Study
52 http://www.greeninfrastructurenw.co.uk/resources/GI_How_&_where_can_it_help_the_NW_mitigate_and_adapt_to_climate_change.pdf

and maintaining the wilder parts of the Borough. Shading of streets and buildings can help with both heating and cooling requirements in built up areas, both in terms of the street scene (with cafés and small businesses able to make use of tree lined boulevards) and in the use of building integrated vegetation, through green roof and/or living wall inclusion or simply by facilitating the use of plants and water features in building design, for example on flats.

Case Studies: The Greater Manchester Green Roofs Guide showcases a range of green roofs from across the world.

Tools & Resources

Whilst there are no free resources for sustainable landscaping, searching via internet search engines will produce a range of organisations who advise at cost.

Stockport Council's Action Plan for Nature - details the Biodiversity agenda for Stockport.

Stockport Council's Nature Development Team can offer advice on appropriate native planting and species management – it makes sense to get input at an early concept and design stage, costing the project effectively and saving time on the planning application process.

Natural England provide a wide range of resources on biodiversity.

Town & Country Planning Association: Biodiversity by Design - provides guidance on how to maximise the opportunities for biodiversity in development, through use of a toolkit of best practice, scaleable to all development opportunities.

To enable Green Roofs use in the UK this resource has a directory of installers and a free online Green Roof Guide is available.

A Green Roof UK Code of Best Practice has been devised by Groundwork Sheffield in partnership with the Environment Agency.

Greater Manchester led on a research project, which has resulted in design guidance being made available.

An independent resource on Green Roofs is the Living Roofs initiative, which is the UK member of the European Federation of Green Roof Associations and currently details other European standards on their website.

The Environment Agency also has a useful free resource on Green Roofs.

Living or green walls are merely the extension of the concept of vegetation integrated into building structure - a search online on these terms will bring up a range of private companies who offer advice and guidance on design as well as case studies.

Green Infrastructure is a term that planners are becoming more familiar with. There is regional guidance in the form of a website containing further information. Natural England provide information including guidance on Green Infrastructure.

Play England produced Making Space for Play which offers design guidance for play spaces.

4 Topics

A Guide to the Benefits of Urban Trees provides key arguments for planting trees in an urban landscape.

Green Build News offers a wealth of resources and information to built environment professionals.

Business Link offer advice on using Environmental Consultants.

Health & Wellbeing

Relevant Policies

4.125 See 'Appendix C: Core Strategy Policies' for more detail on Stockport's Core Strategy which has the following policies of relevance to this topic:

- CS1Overarching Principles: Sustainable Development - Addressing Inequalities and Climate Change
- DM-SD6 Adapting to the Impact of Climate Change
- DM-H1 Design of Residential Development
- CS8 Safeguarding and Improving the Environment
- DM-SIE3 Protecting, Safeguarding and Enhancing the Environment

4.126 In addition there are other Supplementary Planning Document which will prove useful for specific issues, including:

- Transport and Highways in Residential Areas
- Sustainable Transport
- Design of Residential Development
- Affordable Housing
- Extensions and Alterations to Dwellings
- Town Centre Housing
- Recreational Open Space Provision & Commuted Sums

Considerations

4.127 Light, air quality, noise and temperature are some of the conditions that we live and work within. The inadequacy of any of these conditions can impact on the health, comfort and (particularly in a business or education scenario) performance of the building occupants[(53)]. High quality design in these terms adds to the attractiveness of the building for occupants. The attractive surroundings of a business, in particular, benefit the employees and the employer, as well as representing the business in a positive light to visitors and clients. Inclusion of open space in developments foster community interaction and active people.

4.128 The following aspects should be considered:

Daylight

4.129 Building users should be provided with sufficient daylight, not only reducing the need for artificial lighting in terms of energy use, but to ensure that living and working conditions are as naturally lit as possible. Natural daylight helps to maintain healthy eyesight, reduces stress and provides a pleasant environment[(54)].

53 NHS - Sick Building Syndrome: http://www.nhs.uk/Conditions/Sick-building-syndrome/Pages/Introduction.aspx
54 Seasonal Affective Disorder: http://www.sada.org.uk/

Lighting

4.130 Consideration of the health problems associated with fluorescent lighting flicker should be included in design with the specification of high frequency ballasts for these types of lights. In general lighting should be considered throughout the design for its potential impact on occupants. Lighting controls should allow individuals to control their own areas as different people have different lighting requirements.

Views

4.131 In working environments in particular, an appropriate view out for workers is essential to allow them to refocus their eyesight regularly, as well as providing building occupants with opportunities to enjoy an external view. An external view is beneficial even in built up areas.

Glare

4.132 Adequate occupant controls to reduce glare must be included within design. Windows, doors and rooflights should be considered for anti-glare requirements.

Natural Ventilation / Indoor Air Quality

4.133 Natural ventilation is the preferred option in terms of health, ensuring that occupants have some control over air flow and air supply is from a natural source. Mechanical systems, if required, should be designed to avoid siting of intake and exhaust vents within close proximity to each other. External pollution sources should also be taken into consideration. BREEAM offers guidance on best practice for these aspects. Throughflow of air within the design should also be taken into account[(55)].

Volatile Organic Compounds (VOCs)

4.134 Specification of internal finishes and furnishings should be undertaken with the consideration of the VOC content. There are a range of options from suppliers providing no or low VOC's, including paints, lacquers, building materials and furnishings, glues and adhesives, pressed wood products and furniture[(56)].

Thermal Comfort

4.135 The design should consider the achievement of appropriate thermal comfort levels for all occupants, including occupant controls and management of individual areas. There are modelling systems which assist designers with appropriate design and specification of heating and cooling for the building. For naturally ventilated buildings, a rule of thumb is that the design should limit internal temperatures in excess of 25°C to less than 5% of the year and temperatures over 28°C to less than 1% of the year.

Noise

4.136 Noise from external and internal sources should be appropriately assessed and modelled to inform design processes. Noise levels will affect choices of ventilation and internal design.

55 Allergy UK - Sick Building Syndrome: http://www.allergyuk.org/art_sbs.aspx
56 Direct Gov Information on VOCs: http://www.direct.gov.uk/en/Environmentandgreenerliving/Greenerhomeandgarden/Greenershopping/DG_064876

Active Communities

4.137 Open space provision fosters physical activity and community interaction both on business sites and in housing developments. This contributes to improved health in local populace as well as contributing to a productive workforce. Social interaction has been proven to aid management of mental health issues, particularly stress. Physical activity provides opportunities to tackle a whole range of illnesses ranging from back problems to heart disease.

Healthy Sustainable Design

4.138 An unhealthy building contributes to the stress experienced by the workforce or residents who have to work or dwell within it. Poor lighting and ventilation result in hot, stuffy or overly cold indoor environments, contributing to detrimental physical and mental health impacts on building occupants.

4.139 The total cost of mental health problems in England is estimated to be more than £77 billion a year, of which more than £12 billion is spent on health and social care. Mental health disorders affect 1 in 6 of the population. Anxiety with depression is the most common disorder. Depression is predicted to become the second most prevalent cause of disability worldwide by 2020.

4.140 The cost of mental health to the economy in terms of loss of output from people being unable to work is estimated at around £23 billion a year, with a further estimated cost of £41 billion a year from reduced quality of life and loss of life. Stress, anxiety and depression account for the loss of around 60 million working days each year. The number of Incapacity Benefit claimants with mental health conditions has doubled in the last decade to nearly 850,000 people. More than five million people in the UK suffer 'extreme stress' in the workplace. Long-term stress can contribute to cardiovascular diseases, infectious diseases, anxiety and depression. Mental health problems are not only a burden on the NHS; they also threaten the wider economy[(57)].

Case Study: Great Bow Yard, Langport in Somerset - a healthy place with healthy materials

Tools and Resources

Daylight: Natural Daylight Design Through Rooflighting

Noise: Association of Noise Consultants; Institute of Acoustics; Considerate Constructors Scheme

Network for Comfort and Energy in Buildings

For ventilation, noise, lighting and thermal comfort: Chartered Institute of Building Services Engineers and BSRIA

NICE (2008) Promoting and creating built or natural environments that encourage and support physical activity

NICE (2009) Promoting physical activity, active play and sport for pre-school, school age children and young people in family, pre-school, school and community settings

57 Health, Place & Nature, Sustainable Development Commission: http://www.sd-commission.org.uk/publications/downloads/Outdoor_environments_and_health.pdf

Operation & Management

Relevant Policies

4.141 See 'Appendix C: Core Strategy Policies' for more detail on Stockport's Core Strategy which has the following relevant policies for this topic:

- CS1 Overarching Principles: Sustainable Development - Addressing Inequalities and Climate Change
- CS8 Safeguarding and Improving the Environment
- CS9 Transport & Development

Considerations

4.142 Management of the development, both during construction and occupancy, is vital to ensure that the ideals of the design are achieved and best use is made of the design features included to create a sustainable building or site. Each of the key aspects is discussed below.

Best Practice Building Services Commissioning

4.143 Even on smaller developments, commissioning carried out in a comprehensive and ordered manner ensures optimum performance under occupancy conditions. An appropriate project team should follow Building Regulations, as well as BSRIA and CIBSE guidelines. For sustainable design and construction projects, unless the skills are in house, a specialist commissioning individual or team may be required, for example for passive solar design, airtightness, natural ventilation and renewable energy.

Construction Site

4.144 Management of the site during construction is key to actually achieving the sustainable design ideals. Appropriate training of site staff will be necessary and process management essential. One resource which is recommended within BREEAM is the Constructing Excellence website which details KPI's and benchmarking for the construction industry. Another option is to engage with the Considerate Constructors scheme (associated cost involved) which commits those in the scheme to be considerate neighbours, as well as clean, respectful, safe, environmentally conscious, responsible and accountable. A Scheme Monitor (industry professional) provides advice.

Building User Guide

4.145 It should be noted that a Building User Guide should **NOT** replace a technical Operations and Maintenance Manual for Facilities Managers. To enhance marketing and explain use of the facilities that have been incorporated, a Building User Guide should be included in the delivery of the project. It should be non-technical and easy to use for any occupant, explaining the operations of heating, cooling and ventilation as well as lighting, outlining the energy efficiency of the site and its economic benefits. It can also outline the location of recycling facilities, cycle parking and showers, together with clothing drying and storage facilities, as well as any water saving devices. A description of any biodiversity enhancements of the site can be included, for both general information and to ensure any site maintenance requirements are highlighted. The BREEAM Standard provides guidance on the necessary contents of a Building User Guide.

4.146 It should be pointed out to occupants that each of the above aspects helps towards achievement of Environmental Management Systems they may have, or wish to put, in place. This manual can also incorporate other essential information such as fire safety guidelines, first aid equipment, alarm systems and muster points.

Healthy Sustainable Design

4.147 Contractors who deliver such sites obtain a reputation for skills and knowledge to deliver in this growing market. Legislation is changing in response to environmental challenges, in particular climate change, waste and biodiversity. It pays contractors of all sizes to consider acquiring the skills necessary to stay ahead of such legislation and to benefit from new markets. Design and building companies should also consider the benefits in terms of their own staff retention – sustainable construction sites offer employees opportunities to upskill and enhance a sense of responsible design and construction, resulting in a healthier and more productive workforce.

Case Study: visit the Considerate Constructors web resource and view the recent Award winners.

Tools & Resources

Considerate Constructors - is a national scheme established by the Construction Industry to improve its image. Sites that register with the scheme sign up and are monitored against a Code of Considerate Practice designed to encourage best practice beyond statutory requirements.

Constructing Excellence - website detailing the best practice in KPI's and benchmarking for the UK Construction Industry. As well as data the site lists training and reports.

BSRIA is a not for profit member based association providing specialist services in construction and building services.

CIBSE is a resource for sustainable building guidance and building services.

In terms of Building User Guide structure, the BREEAM approach offers some guidance.

Marketing

Relevant Policies

4.148 See 'Appendix C: Core Strategy Policies' for more detail on Stockport's Core Strategy.

4.149 In addition there are other Supplementary Planning Document which will prove useful for specific issues, including:

- Design of Residential Development

Considerations

4.150 Appropriate high quality marketing of a development is key to the success of sustainable design and construction. The design, specification and construction of the development should be summarised in marketing materials, highlighting its social, economic and environmental benefits.

4.151 Designers and developers should be aware that a selling point for commercial buildings is that sustainable design and construction features enable businesses to implement, or adhere to, environmental and social policies. A green building (which can also be a healthy building) can assist with achievement of environmental management system standards such as ISO 14001 or EMAS[58]. Also running costs are considerably reduced, a healthier and happier workforce can be achieved and the local community can benefit in terms of a safer, cleaner and greener neighbourhood. These are all factors that should be marketed.

4.152 The marketing requirements of heritage sites are unique and should be factored into considerations of marketing developments once complete. Sustainably delivered heritage developments will have additional considerations in terms of marketing regarding materials and waste achievements, reduced carbon footprint and attributes of community benefit.

Healthy Sustainable Design

4.153 Marketing materials can reflect the benefits of a sustainable building in terms of a healthy populace and therefore workforce. Stress, anxiety and depression account for the loss of around 60 million working days each year. Sustainable buildings can offer employers an opportunity to reduce lost working days, but also to recruit and retain a high quality workforce, attracted by the surroundings. Green buildings maintain health but also encourage innovation through improved mental capacity in occupants. Housing developments designed to Home Zone standards for example, have been proven to improve health as well as increase social interactiveness, improving trust and perceptions of crime, making areas attractive to new homeowners and retaining existing ones, further strengthening community structure and attractiveness.

Case Study: Green Moves details their requirements for advertising a 'green' home.

Tools & Resources

Training on marketing green buildings is limited, however there are a few firms offering training or packages, details of which can be found through internet searches on terms such as 'marketing green offices' or by contacting the Health & Environment Advisor (Planning) at Stockport Council.

58 EMAS: http://www.iema.net/ems/emas

Appendix A: Sustainability Checklist

Sustainability is not an alternative name for environmental responsibility - it is a far broader goal that supports local communities, encourages economic prosperity and protects the environment for future generations.

This Sustainability Checklist is designed to help developers and building professionals working in Stockport to evaluate the sustainability of their projects. The 8 topics cover Location & Transport, Site Layout & Building Design, Materials, Waste, Energy, Water, Landscape & Biodiversity and Health & Well Being, mirroring the structure of design standards such as Code for Sustainable Homes or BREEAM.

The support document to this Checklist is the Council's Sustainable Design and Construction Supplementary Planning Document (SPD) which is laid out in the above topic format. How to achieve the items in the checklist is explained in detail in the SPD. This document provides free advice and resource information on the various options outlined in the Checklist and can be downloaded from this part of the Council's website under Related Documents on the right of the page:

www.stockport.gov.uk/planningsustainabledevelopment

You can dip into the SPD guidance accessing the information on the topic area of your choice, or read the whole document for detailed guidance on applying sustainable design and construction principles.

Completing the Checklist

Go through the questions answering Y or N in the relevant boxes - DO NOT PUT ANSWERS IN THE GREY BOXES. In the second column, those response boxes marked gold mean that if the answer to the question is Y then it is a gold scoring Y, subject to the instructions in those boxes. Some of the questions will only score gold if both or some of the options are answered yes - please read the instructions in the gold score column carefully.

When you have answered all the questions total up the number of Yes responses in the score box at the bottom of the table. You can then add up the number of gold scores by using the second column to note those Y's which score a gold - you get a gold score for each item - e.g. if the gold requires yes to two options and both are yes then you score two golds. See below for how your score will be converted into the relevant standard level.

On completion, the document can be saved and/or a printed copy can be kept on record with the project details. **For ease of completion and submission an Excel version is available on request by emailing planning.policy@stockport.gov.uk or phoning 0161 474 4385.**

To complete the form, enter a "Y" or "N" into the relevant boxes

Appendix A: Sustainability Checklist

The scoring is evaluated as follows to allow one of the following standards to be applied to the project:

Gold	Score 45 or above with a minimum of 23 gold scores
Silver	Score 25 to 44
Bronze	Score 15 to 24

Project	
Location	
DC Ref Number	
Case Officer	

Topic	Question No	Question	Y/N	Gold Score
Location & Transport	1.0	Are issues of sustainability being considered at the inception, feasibility or outline proposals stages?		
	1.1	Does the development take either of the following into consideration?		
		Flood risk		gold if both
		Permeable Paving		
	1.2	Is the development designed to Building for Life Standard?		gold if B4L score is 16 or higher
	1.3	Is the development on a brownfield site?		
	1.4	Does the development bring back into use an existing building that is derelict or has been vacant for over a year?		
	1.5	Does the project have long term flexibility designed in to allow for changes of use in the future?		
	1.6	Does the development take Urban Heat Island effects into account?		
	1.7	Has a Travel Plan been undertaken?		
	1.8	Are public transport improvements required and/or provided by the development?		

Appendix A: Sustainability Checklist

Topic	Question No	Question	Y/N	Gold Score
	1.9	Are options for integrated sustainable transport networks included in the development?		
	1.10	Does the development include the provision of adequate and safe cycle parking facilities?		Gold if both
	1.11	Are showering and clothes drying facilities for cyclists and pedestrians included in the design?		
Site Layout & Building Design	2.0	Does the design take any of the following into account?		
		passive solar design		gold if all 3
		natural daylight		
		natural ventilation		
	2.1	Are Sustainable Building Standards being used for design and delivery of the project?		
		Code for Sustainable Homes		GOLD if one of the four is yes
		Lifetime Homes		
		BREEAM		
		CEEQUAL		
	2.2	Are green roofs and/or living walls integrated into the development?		
	2.3	Are flexible and adaptable ICT opportunities reflected in the design?		
	2.4	Does the development have long term flexibility designed in to allow for changes of use in the future?		
	2.5	Do housing developments include work space within the dwelling design?		
Materials	3.0	Does the contractor selection process take into account Environmental Performance Assessments or proven environmental performance?		
	3.1	Will the development use Life Cycle Assessment processes to assess proposed materials?		
	3.2	Are any of the following materials going to be re-used / recycled from the site		
		Aggregates		Gold if more than
		Masonry Products		

Appendix A: Sustainability Checklist

Topic	Question No	Question	Y/N	Gold Score
		Timber		75% of any material is re-used
		Other		
	3.3	Are any of the following materials going to be re-used/recycled entirely from another source within 50km?		
		Aggregates		
		Masonry Products		
		Timber		
		Other		
	3.4	Are any of the following new 'virgin' materials going to be derived entirely from local sources (within 50km)?		
		Aggregates		
		Masonry Products		
		Timber		
		Other		
	3.5	Do the materials used take into account the likely refurbishment cycle?		
	3.6	Will soil be re-used and/or prepared to BS Top Soil Standard?		
Waste	4.0	Has a Site Waste Management Plan been prepared?		
	4.1	Project includes segregation and storage zones for collection of recyclable wastes		
		During Construction		gold if both Y
		In Use		
	4.2	Have composting facilities been included in the development?		
Energy	PLEASE NOTE THIS ITEM IS NOT SCORED	If the development triggers the Council's climate change policy thresholds please state for the record the percentage target achieved:		

Topic	Question No	Question	Y/N	Gold Score
	5.0	Which energy saving measures have been included in the design?		
		Establish or connect to district heating		
		Insulation levels above building regulations requirements		
		Designed to Passivhaus standard		
		Designed to Active House standard		
		Energy efficient options for lighting		
		Energy efficient options for heating/cooling		
		Energy efficient options for ventilation		
		Combined Heat & Power Provision		
	5.1	Are Renewable or Low Carbon Energy options included in the development?		
		Biomass		
		Solar Photovoltaics		
		Solar Thermal Hot Water		
		Wind		
		Hydro		
		Heat Pumps		
	5.2	Have minimum AAA rated White Goods been specified for the development?		
	5.3	Has a green tariff energy supply been selected from a supplier for at least 12 months?		
	5.4	Has Smart metering been included in the design?		
	5.5	Has a Building Management System been included in the design?		
Water	6.0	Does the design include sustainable urban drainage systems?		
	6.1	Does the design include low water consumption devices such as:		
		rainwater collection		3 or more Y's
		greywater recycling		

Appendix A: Sustainability Checklist

Topic	Question No	Question	Y/N	Gold Score
		dual flush toilets		scores gold
		waterless urinals		
		spray taps		
		water saving showers		
		tapered or peanut shaped baths		
		water saving white goods		
		low water use gardens / dry gardens		
Landscape & Biodiversity	7.0	Is new or additional open space being provided as a result of the development?		
	7.1	Does the design take account of Landscape Character Assessment?		
	7.2	Does landscaping make use of native plant species?		
	7.3	Have habitats been maintained or newly formed?		
	7.4	Has landscaping contributed to sustainable urban drainage provision?		
	7.5	Where required, are linear areas being planted to enable species migration?		
	7.6	Has the landscape been designed to achieve low maintenance and low resource intensive outcomes?		
	7.7	Has planting been used as part of security provision on site?		
Health & Wellbeing	8.0	Does the design include occupant controls and management of individual areas for thermal comfort and lighting levels?		
	8.1	Has noise from internal and external sources been appropriately assessed and modelled to inform design processes?		
	8.2	Do any fluorescent lights used have high frequency ballasts in to reduce flicker?		
	8.3	Has specification of internal finishes and furnishings taken into account Volatile Organic Compounds?		
		Score		

Any comments on the project can be made on an additional sheet.

Appendix B: Stockport & Health Innovation

Stockport Council and Stockport Health Services are coterminus and historically have close partnership working. Stockport's Director of Public Health wrote 'A Country City' as part of the 1999/2000 11th Annual Public Health Report (APHR). Twenty recommendations related to: planning, greenspace, walking and cycling infrastructure, aesthetic improvements by the council and others, better public transport and stronger community cohesion. To foster a new relationship with nature involving aesthetically-enhanced walking networks, greater use of parks and green infrastructure and associated benefit to the health of local residents, including greening the built environment.

Stockport Council accepted the Country City recommendations as a long term process and started to implement the delivery. By 2003 a progress report in the APHR noted:

- considerable development of the borough's cycling and pedestrian networks;
- a sustainability appraisal of the Unitary Development Plan (UDP) including health and environmental concerns;
- UDP references to future Rail and Metrolink aspirations, Homezones in residential developments, green roofs and a public health policy.

Since 2003 initiatives have proceeded improving sustainability and public health.

Transport

The original report envisaged a transport strategy promoting walking for journeys less than 1mile, cycling for journeys under 5 miles (this would include cycle commuting) and public transport for longer journeys where possible. Only longer journeys not accessible by public transport needed cars. The Council's activities towards improving and promoting walking, cycling, public transport and the health benefits of active travel include:

- identifying and completing the majority of the cycling and walking network,
- Supplementary Planning Guidance on Sustainable Transport for accessibility requirements of new developments,
- streetscape more conducive to walking and cycling – 4% increase in non-car trips to Town Centre since 2003,
- several major off-road walking and cycling routes including the: TransPennine Trail (Stockport Section), Middlewood Way, and Marple Multi User Trail,
- routes through parks for pedestrians and cyclists often forming parts of safer routes to schools - walking to primary schools has increased 6% since 2002,
- on-road improvements for cyclists and pedestrians including cycle lanes, advance stop lines and crossing improvements,
- the designation of an Executive Councillor as cycling champion,
- the designation of a pedestrian network to be aesthetically-protected recognising that people will walk further on pleasant routes,
- the development of a tool to identify essential local pedestrian routes,
- improving public rights of way –BV178 improved 6% since 2004/5,
- improving bus stop accessibility, cycle parking, and disabled parking facilities,
- speed reduction schemes around schools and in residential areas.

Appendix B: Stockport & Health Innovation

Further work includes publishing Stockport's Green A to Z maps to encourage people to try walking or cycling. It categorises routes according to traffic levels, the amount of greenery and route condition as well as highlighting steps for people with mobility difficulties. They are issued free via libraries, doctors, schools etc.

Officers have organised annual local promotional events such as: In Town With Out My Car Day, Bike Week / National Bike to Work Day and Walk to Work Week. In addition, officers co-ordinated the Walk A Day programme - a series of led walks of an intermediate length between Health Walks and those held by the local ramblers societies providing a supported setting without covering greater distances.

Stockport also led on the preparation of Greater Manchester's Cycle Routes Map and On Your Bike Magazine.

Future plans include expanding the walking and cycling network, improving cycle parking and seeking appropriate infrastructure through new development schemes using the Green Infrastructure principles and drivers.

More speculatively, Tram proposals aim to link tram/trains on underused local railway lines via a street tramway avoiding the busy West Coast Main Line.

Country Parks

The original Country City report commended the Council's creation of Reddish Vale Country Park for reclaiming degraded brownfield land and bringing the countryside closer to deprived local communities. Country City advocated public art, greenery etc., supporting a continuous network of green routes for utility and recreational journeys, as well as safe play opportunities for all and enhanced wildlife and biodiversity.

The Council's work on parks and recreation, planning and transport has improved Stockport's aesthetic appearance and public access to attractive areas of the borough while protecting the natural environment. This includes 21 Green Flag park awards. Currently more than 67% of residents live within a kilometre of these Green Flag Parks.

Living as a Community

Since Country City, improved work synergy between different sections of the Council has allowed larger campaigns and funding bids, e.g. Active Stockport Campaign. This campaign promoted physical activity through parks, leisure and sports facilities and active travel, was one of four Mental Wellbeing strands of the Public Health Partnership's inequalities strategy.

Benefits of Healthy Planning

The Health & Environment Advisor role to the planning team is co-funded by Stockport Council and NHS Stockport and is, at this time, unique within Greater Manchester as a supporting role to the Planning Policy Team. The role leads on the Health Impact Assessment of emerging policy, as part of the wider Strategic Environmental Assessment and Sustainability Appraisal workload.

The role also advises on sustainable design and construction issues, commenting on planning applications and arranging training on this subject for both Development Management staff and other colleagues at NHS Stockport as well as partners.

Energy and climate change policy considerations are key to future planning infrastructure and the Health & Environment Advisor role remains heavily involved in developing the evidence and discussion required to embed low and zero carbon considerations into the adopted and emerging elements of the Local Development Framework.

Healthy Planning Considerations

Increasing activity levels will contribute to the prevention and management of over 20 conditions and diseases including coronary heart disease, diabetes and cancer, positive mental health and weight management.

Cardiovascular disease, including heart disease and stroke, as well as cancer are the major causes of death in England, together accounting for almost 60% of premature deaths.

Inactive and unfit people have almost double the risk of dying from coronary heart disease. Increasing activity levels also has beneficial effects on musculoskeletal health, reducing the risk of osteoporosis, back pain and osteoarthritis.

Encouraging increased levels of physical activity in disadvantaged groups will also contribute to the work under way to tackle health inequalities and narrow the health gap.

Physical inactivity, along with unhealthy diets, has contributed to the rapid increases in obesity in both adults and children with 22% of men and 23% of women in England now obese.

Regular physical activity reduces the risk of depression and has positive benefits for mental health including reduced anxiety, and enhanced mood and self-esteem.

Accidents reflect health and social inequalities – deaths from road traffic accidents to children from the poorest families (Social Class V) are more than four times higher than those in the richest families (Social Class I). Fatal road accidents are more frequent in socially deprived areas. However a balance should be achieved when considering that the health benefits of cycling far outweigh the risks and appropriate design can help to manage the risk, whilst facilitating active communities.

Men who rated their local facilities as poor – an issue of access – were more likely to also rate their health as poor, compared with men who viewed their local facilities as good. It is not merely an issue of having services – there is also the matter of quality, e.g. shops that do not sell a complete range of fruit and vegetables.

A run down built up environment is associated with poorer perceived general health.

Recently constructed housing stock (i.e. not to a sustainability standard) is associated with poor mental health over and *above* individual factors. (This is linked to uniformity of house, the lack of paths and closeness to the road).

The presence of attractive walking routes has been shown to predict survival in older people and encourage walking in the adult population.

A harsh climate is associated, over and above individual factors, with poor lung function for those living in poor housing stock – this association is not seen in those who live in good housing stock.

Appendix B: Stockport & Health Innovation

Health and the Natural Environment

The natural environment is essential to a healthy society. Research shows that contact with the natural environment can help prevent ill-health by:

Improving mood: Even short walks and looking at images of nature can reduce negative feelings, such as anxiety and anger, and increase positive feelings.

Increasing social contact and building social capital: Useable green space in a neighbourhood can increase social interaction and reduce social isolation.

Assisting recovery from stress:Taking a walk in a park or gardening can help reduce stress and improve concentration.

Contributing to children's development: Regular exposure to the natural environment in childhood is important for social development; and influences future physical, mental and social well-being as adults.

Assisting personal development, resilience and sense of purpose: Leisure time spent in the natural environment can help to improve self-confidence,self-image, skills and mood.

Promoting physical activity and health: An inviting, green environment close to home and work encourages regular exercise in the form of walking and cycling. Physical activity helps to reduce obesity, anxiety and depression and can improve mood and self-esteem.

Climate Change & Public Health

The Climate Connection is a partnership for public health action and learning on climate change. The initiative is funded by the Department of Health (DH), and arises out of more than two years of collaborative work, led and coordinated by the UK Public Health Association (UKPHA). The importance of supporting regionally-led initiatives and partnerships was identified as one of three priority areas at the National Symposium on Health and Sustainable Development in March 2007.

Urgent action against climate change must be taken on public health grounds because:

- Mitigation (reducing greenhouse gas emissions) is not only essential for the long-term protection of public health, but offers huge synergies with health improvement – through promoting physical activity, healthy diet, community development, efficient housing and better air quality.
- Projected climate variability should be properly risk-managed by health & social care services, and in emergency planning. Measures to increase resilience to climate change also offer opportunities for health improvement and reducing inequalities.

More discussions on the implications of sustainable design and construction is contained in Part 5, however the following key points should be borne in mind:

- Walking, cycling and public transport reduce emissions as well as congestion.
- Prioritise pedestrians over cars – zebra crossings instead of light controlled crossings.
- Create cycling friendly environments that accommodate cyclists and pedestrians safely.
- Additional cycle access should be made available to residential streets that may be closed or one-way for motor vehicles.
- Increase pedestrian/cyclists/public transport interchanges.

- Walking and cycling routes need to be green and pleasant.
- Create pedestrian networks for important routes – to the Town Centre, to libraries, to the hospital.
- Ensure there are good facilities within walking/cycling distance of all residential areas.
- Maximise indoor air quality by avoiding materials containing Volatile Organic Compounds (VOCs).

Appendix C: Core Strategy Policies

Hyperlinks provide access to the original Core Strategy for more detailed reading of policies.

CS1 OVERARCHING PRINCIPLES: SUSTAINABLE DEVELOPMENT - ADDRESSING INEQUALITIES AND CLIMATE CHANGE

In all it seeks to achieve, the Core Strategy will have regard to enabling social progress which recognises the needs of everyone, protecting the environment, ensuring the prudent use of natural resources and maintaining high and stable levels of economic growth and employment. In particular, so as to ensure that the future development of the Borough is economically, socially and environmentally sustainable, the Core Strategy will seek to address the key issues of Inequalities and Climate Change.

DM-SD2 MAKING IMPROVEMENTS TO EXISTING DWELLINGS

Planning applications for changes to existing domestic dwellings will be required, where possible and practical, to undertake reasonable improvements to the energy performance of the existing dwelling. This will be in addition to the requirements under Part L of the Building Regulations for the changes for which planning permission is sought. Improvements will include, but not be restricted to: loft and cavity wall insulation, draught-proofing, improved heating controls and replacement boilers. Applicants will be asked to complete a checklist (see C.2 'Energy Efficiency Checklist') to identify which measures are appropriate to their home. The total cost should be no more than 10% of the total build cost and payback in less than 7 years. The Council will support homeowners in delivering efficiency improvements by identifying financial support initiatives both regionally and nationally.

DM-SD3 DELIVERING THE ENERGY OPPORTUNITIES PLAN - NEW DEVELOPMENT

The Council recognises that different energy technologies and CO_2 reduction strategies will suit different parts of the Borough and different types of development. To reflect this two types of spatial area that have distinct energy opportunities have been identified (see C.1 'Energy Opportunities Plan'): Network Development Area - Locations where the proximity of new and existing buildings creates sufficient density to support district heating and/or cooling networks (shown as "potential district heating areas" on C.1 'Energy Opportunities Plan'); and Microgeneration Area - Locations where lower densities and a fragmented mix of uses mean that only building scale solutions are possible (in effect the rest of the Borough). See the full policy text for details of the targets or download the Council's Low Carbon Design Guidance for information on applying targets on developments which cross the thresholds.

DM-SD4 DISTRICT HEATING (NETWORK DEVELOPMENT AREAS)

The Council is keen to take advantage of opportunities to install district heating across the Borough. New development in ‘Network Development Areas’, where technically feasible and financially viable, should contribute to this objective by considering district heating for meeting the requirements of Core Policy CS1 'OVERARCHING PRINCIPLES: SUSTAINABLE DEVELOPMENT - ADDRESSING INEQUALITIES AND CLIMATE CHANGE'. The Council recognises that different development types will have different opportunities - see the policy in full detail for the criteria on requirements of delivering district heating.

DM-SD5 COMMUNITY OWNED ENERGY

The Council recognises the important role that community owned energy generation including wind and hydro energy will play in reducing CO_2 emissions and increasing installed low carbon and renewable energy capacity. While the Council will consider favourably all applications for standalone or 'onsite' low carbon and renewable energy generation, the Energy Opportunities Plan identifies a number of principal opportunities.

DM-SD6 ADAPTING TO THE IMPACT OF CLIMATE CHANGE

Development should be designed in such a way as to avoid, mitigate or reduce the impacts of climate change. See the full policy detail for information on requirements with regards to Sustainable Urban Drainage Systems and other green or low carbon design options.

CS2 HOUSING PROVISION

A wide choice of high quality homes will be provided to meet the requirements of existing and future Stockport households. The focus will be on providing new housing through the effective and efficient use of land within accessible urban areas, and making the best use of existing housing.

DM-H1 DESIGN OF RESIDENTIAL DEVELOPMENT

The design and build standards of new residential development should be high quality, inclusive, sustainable and contribute to the creation of successful communities. Proposals should respond to the townscape and landscape character of the local area, reinforcing or creating local identity and distinctiveness in terms of layout, scale and appearance, and should consider the need to deliver low carbon housing. Good standards of amenity, privacy, safety / security and open space should be provided for the occupants of new housing and good standards of amenity and privacy should be maintained for the occupants of existing housing.

CS5 ACCESS TO SERVICES

The Core Strategy supports Stockport's network and hierarchy of service centres as accessible hubs of communities situated in distinctive environments. Stockport Town Centre, the eight District and twenty five Local Centres will have a predominance of retail use at their core. These service centres will contain a range of main town centre uses, with some public and community uses, appropriate to their character and position within the Stockport service centre hierarchy.

CS7 ACCOMMODATING ECONOMIC DEVELOPMENT

Development of B1(a) office uses will be focused in the Town Centre, increasing and improving the available office space in the Borough's most sustainable location.

CS8 SAFEGUARDING AND IMPROVING THE ENVIRONMENT

This policy covers the issues of: Quality Places; Green Infrastructure; Strategic & Local Open Space; Landscape Character Areas including the River Valleys; Children's Play; Biodiversity and Nature Conservation; Environmental Protection, Improvement and Safeguarding; Heritage Conservation; Waste and Minerals.

Appendix C: Core Strategy Policies

DM-SIE1 QUALITY PLACES

Development that is designed and landscaped to the highest contemporary standard, paying high regard to the built and/or natural environment within which it is sited, will be given positive consideration. See policy detail for range of issues to be taken account of.

DM-SIE2 PROVISION OF RECREATION AND AMENITY OPEN SPACE IN NEW DEVELOPMENTS

Development will be expected to take a positive role in providing recreation and amenity open space to meet the needs of its users/occupants. Where appropriate in new developments landscaped amenity areas should be provided which are necessary and fairly and reasonably related in scale and kind to the proposed development.

DM-SIE3 PROTECTING, SAFEGUARDING AND ENHANCING THE ENVIRONMENT

Aims and requirements in this policy include: protecting the natural environment; controlling pollution (air quality, noise & vibration; light, water, ground, odour & litter); managing flood risk; protecting the historic environment; and land stability.

CS9 TRANSPORT AND DEVELOPMENT

The Council will require that development is in locations which are accessible by walking, cycling and public transport. The Council will support development which reduces the need to travel by car. Development will be required to consider the needs of the most vulnerable road users first, using the following road user hierarchy: Pedestrians; Cyclists; Public transport; Goods traffic; Powered two wheelers; Private car traffic; Long-distance freight and private car traffic.

CS10 AN EFFECTIVE AND SUSTAINABLE TRANSPORT NETWORK

The Council and its partners will manage development and seek to implement strategies which ensure that no section of the community suffers unnecessary inequality as a result of their transport needs not being sustainably met. Local services, employment opportunities, education, community and cultural facilities will be provided in a way that is accessible to all by walking, cycling and public transport.

DM-T1 TRANSPORT AND DEVELOPMENT

To facilitate a reduction in the need to travel, development will be focused in the Town Centre in particular and also other existing centres, as these locations are the most accessible and already contain a wide provision of services and amenities. New development, notably that generating significant numbers of trips, will be required to be sustainably accessible by public transport, walking and cycling. New residential development should be designed taking into account the principle of Home Zones, whereby the layout of new developments should favour more "people friendly" streets and reduced vehicle speeds. Quality design is a key element in meeting the requirements of the Code for Sustainable Homes and the Council will look favourably on development which meets a high standard according to the code. See the policy detail for information on travel assessment and travel planning requirements.

DM-T2 PARKING IN DEVELOPMENTS

Developments shall provide car-parking in accordance with maximum parking standards for each type of land use as set out in the existing adopted parking standards.

DM-T3 SAFETY AND CAPACITY ON THE HIGHWAY NETWORK

Development which will have an adverse impact on the safety and/or capacity of the highway network will only be permitted if mitigation measures are provided to sufficiently address such issues.

Appendix D: Environmental Standards

Below is further detail on the environmental standards outlined in Section 3, Standards, Legislation & Policy, with hyperlinks to the relevant web resources.

Code for Sustainable Homes

Overview of Structure

The Code has a scoring system of six levels. The different levels are made up by achieving both the appropriate mandatory minimum standards together with a proportion of the 'flexible' standards. Compliance with the Code is assessed at two stages; an initial assessment and interim certification is carried out at the design stage; the final assessment is carried out after construction when a certificate is issued.

Scoring for the Code

Table 2 Relationship between total percentage points score and Code level

Total Percentage Points Score	Code Level
36 Points	Level 1
48 Points	Level 2
57 Points	Level 3
68 Points	Level 4
84 Points	Level 5
90 Points	Level 6

Government Targets & Building Regs Interaction

Government is progressing with the uptake through compliance with Building Regulations. The following is the projected increase in Building Regulations requirements and the target date for mandatory code achievement on all new homes:

- 2010 - 25% more energy efficient and 50% more water efficient than 2006 standards (Code level three).
- 2013 - 44% more energy efficient and 50% more water efficient than 2006 standards (Code level four).
- 2016 - zero-carbon and 80% more water efficient than 2006 standards (Code level six).

Table of Categories, Credits & Status

Table 3

Issue ID	Description	Credits Available	Mandatory
Energy & Carbon Dioxide Emissions			
Ene 1	Dwelling Emission Rate	10	Yes
Ene 2	Fabric energy efficiency	9	Yes
Ene 3	Energy display devices	2	No
Ene 4	Drying space	1	No
Ene 5	Energy Labelled White Goods	2	No
Ene 6	External Lighting	2	No
Ene 7	Low & Zero Carbon Technologies	2	No
Ene 8	Cycle Storage	2	No
Ene 9	Home Office	1	No
	Total Credits for this Category	**31**	
Water			
Wat 1	Indoor Water Use	5	Yes
Wat 2	External Water Use	1	No
	Total Credits for this Category	**6**	
Materials			
Mat 1	Environmental Impact of Materials	15	Yes
Mat 2	Responsible Sourcing of Materials – Basic Building Elements	6	No
Mat 3	Responsible Sourcing of Materials – Finishing Elements	3	No
	Total Credits for this Category	**24**	
Surface Water Run Off			
Sur 1	Management of Surface Water Run off from developments	2	Yes
Sur 2	Flood Risk	2	No

Appendix D: Environmental Standards

Issue ID	Description	Credits Available	Mandatory
	Total Credits for this Category	**4**	
	Waste		
Was 1	Storage of non-recyclable waste and recyclable household waste	4	Yes
Was 2	Construction Site Waste Management	3	No
Was 3	Composting	1	No
	Total Credits for this Category	**8**	
	Pollution		
Pol 1	Global Warming Potential (GWP) of Insulants	1	No
Pol 2	NOx Emissions	3	No
	Total Credits for this Category	**4**	
	Health & Wellbeing		
Hea 1	Daylighting	3	No
Hea 2	Sound Insulation	4	No
Hea 3	Private Space	1	No
Hea 4	Lifetime Homes	4	Yes (L6)
	Total Credits for this Category	**12**	
	Management		
Man 1	Home User Guide	3	No
Man 2	Considerate Constructor Scheme	2	No
Man 3	Construction Site Impacts	2	No
Man 4	Security	2	No
	Total Credits for this Category	**9**	
	Ecology		
Eco 1	Ecological Value of Site	1	No
Eco 2	Ecological Enhancement	1	No
Eco 3	Protection of Ecological Features	1	No

Issue ID	Description	Credits Available	Mandatory
Eco 4	Change in Ecological Value of Site	4	No
Eco 5	Building Footprint	2	No
	Total Credits for this Category	**9**	

There are several publication on the Code, including the Technical Guidance document, but also case studies on all levels.

BREEAM

A standard for non-domestic buildings, similar in scope to Code for Sustainable Homes, but designed for different commercial, industrial and public sector types. The BREEAM Website clearly sets out the aims and objectives as well as the processes of the BREEAM system.

The BREEAM assessment process was created in 1990 with the first two versions covering offices and homes. Versions are updated regularly in line with UK Building Regulations and different building versions have been created since its launch to assess various building types. These versions essentially look at the same broad range of environmental impacts:

- Management
- Health and Wellbeing
- Energy
- Transport
- Water
- Material and Waste
- Landuse and Ecology
- Pollution

Credits are awarded in each of the above areas according to performance. A set of environmental weightings then enables the credits to be added together to produce a single overall score. The building is then rated on a scale of: PASS, GOOD, VERY GOOD, EXCELLENT or OUTSTANDING and a certificate awarded to the development.

There are several different building types, which can be viewed on their website, including: Bespoke BREEAM; BREEAM Offices; BREEAM Retail; BREEAM Healthcare and BREEAM Healthcare XB for buildings in operation; BREEAM Industrial; BREEAM Multi-Residential for example for student halls of residence; BREEAM Education; BREEAM Communities; BREEAM Courts and BREEAM Prisons.

BREEAM In-Use helps building managers reduce the running costs and improve the environmental performance of existing buildings. It consists of a standard, an easy-to-use assessment methodology and a 3rd party certification process that provides a clear and credible route map to improving sustainability.

Appendix D: Environmental Standards

Building for Life

Designed by CABE and the Home Builders Federation, the 20 Building for Life criteria embody a vision of functional, attractive and sustainable housing. They are used for Building for Life assessments and to judge the Building for Life awards. The criteria are a tool for developers, planners, architects and the public – anyone committed to improving housing and neighbourhood design.

Character

Does the scheme feel like a place with a distinctive character?

Do buildings exhibit architectural quality?

Are streets defined by a coherent and well structured layout?

Do buildings and layout make it easy to find your way around?

Does the scheme exploit existing buildings, landscape or topography?

Roads, parking and pedestrianisation

Does the building layout take priority over the roads and car parking, so that highways do not dominate?

Are the streets pedestrian, cycle and vehicle friendly?

Is car parking well integrated so it supports the street scene?

Does the scheme integrate with existing roads, paths and surrounding development?

Are public spaces and pedestrian routes overlooked and do they feel safe?

Design and construction

Is the design specific to the scheme?

Is public space well designed and does it have suitable management arrangements in place?

Do buildings or spaces outperform statutory minima, such as Building Regulations?

Has the scheme made use of advances in construction or technology that enhance its performance, quality and attractiveness?

Do internal spaces and a layout allow for adaptation, conversion or extension?

Environment and community

Does the development have easy access to public transport?

Does the development have any features that reduce its environmental impact?

Is there a tenure mix that reflects the needs of the local community?

Is there a mix of accommodation that reflects the needs and aspirations of the local community?

Does the development provide (or is it close to) community facilities, such as a school, park, play areas, shops, pubs or cafes?

Lifetime Homes

Created by Joseph Rowntree Trust and partners, there are 16 design features which combined make up the Lifetime Homes standard and this standard forms part of the Code for Sustainable Homes Level 6 achievement:

1. Car parking space should be easily capable of enlargement to attain a width of 3300mm
2. The distance from the car parking space to the home should be kept to a minimum and should be level or gently sloping
3. The approach to all entrances should be level or gently sloping
4. All entrances should be illuminated
5. Communal stairs should provide easy access and where levels are reached by lift, the lift should be fully wheelchair accessible
6. Doorways and hallways have to be at least 750mm wide, or at least 900mm wide when the approach is head-on
7. Dining and living areas should have space for turning a wheelchair and there should be adequate circulation space for wheelchair users
8. The living space should be at the level of the entrance
9. If homes of two or more storeys, there should be space at entrance level which should be used as a convenient bed space
10. The design of the property should incorporate a provision for a future stair lift and a suitably identified space for a through-the-floor lift from the ground to the first floor
11. The design of the property should provide for a reasonable route for a potential hoist from a main bedroom to the bathroom
12. There should be a WC situated at the entrance level of the property and a drainage provision enabling a shower to be fitted in the future
13. Walls in the bathrooms and toilets should be capable of taking adaptations such as handrails
14. The bathroom should be designed to incorporate ease of access to essential amenities such as the bath, basin and WC
15. Living room windows should begin 800mm from the floor or lower and be easy to open
16. Switches, sockets, ventilation and service controls should be situated between 450mm and 1200mm from the floor

CEEQUAL

is the assessment and awards scheme for improving sustainability in civil engineering and public realm projects. It is being promoted by ICE and a group of committed industry organisations such as CIRIA, CECA and ACE. Its objective is to encourage the attainment of environmental excellence in civil engineering, and thus to deliver improved environmental and social performance in project specification, design and construction.

All sites registered with the Scheme will be visited by one of the Scheme's Monitors, who will contact the Site Manager to arrange the visit. Sites receive one visit unless they are longer than 20 weeks in duration or have a value over £5 million, in which case they receive two. The Monitors

are experienced industry professionals, drawn from the senior ranks of the industry, who are trained in the expectations of the Scheme. The role of the Monitor is to give a subjective view of the site and to assess how it is performing against the Scheme's Code.

The Monitors will highlight areas where they feel improvements are necessary, as well as congratulating sites when their initiatives and working practices could be considered higher than satisfactory performance. After each visit, the Monitor will produce a report that covers each of the issues discussed while on the site. The report will include a score that reflects the level of performance witnessed at the time of the visit. The eight categories are Considerate, Respectful, Environment, Safe, Cleanliness, Responsible, Accountable, Good Neighbours. A range of registration costs from £100 + VAT for those projects worth less than £100,000 to those over £5m which pay £600 plus VAT. The scheme has had 30,000 registrations in its 11 years of existence.

Considerate Constructors

is a national scheme, financed by registrations to the scheme, created by the construction industry to improve its image. The scheme looks at three main areas including the environment, the workforce and the general public.

The Code of Considerate Practice commits those contractors in the Scheme to be considerate and good neighbours, as well as clean, respectful, safe, environmentally conscious, responsible and accountable. All sites registered with the Scheme will be visited by one of the Scheme's Monitors, who will contact the Site Manager to arrange the visit. Sites receive one visit unless they are longer than 20 weeks in duration or have a value over £5 million, in which case they receive two.

The Monitors are experienced industry professionals, drawn from the senior ranks of the industry, who are trained in the expectations of the Scheme. The role of the Monitor is to give a subjective view of the site and to assess how it is performing against the Scheme's Code. The Monitors will highlight areas where they feel improvements are necessary, as well as congratulating sites when their initiatives and working practices could be considered higher than satisfactory performance.

After each visit, the Monitor will produce a report that covers each of the issues discussed while on the site. The report will include a score that reflects the level of performance witnessed at the time of the visit. The eight categories are Considerate, Respectful, Environment, Safe, Cleanliness, Responsible, Accountable, Good Neighbours. A range of registration costs vary for those projects worth less than £100,000 to those over £5m, with more detailed information on the website. The scheme has had 30,000 registrations in its 11 years of existence.

Appendix E: Flood Risk

What the different zones mean

In the first instance it is important to stress that just because a property or site is in the flood zone does not mean that it will get flooded.

The zones are mapped by the Environment Agency and do not necessarily take account of existing flood defences. A "Strategic Flood Risk Assessment" (SFRA) has been undertaken which reviewed all of the existing information available on flooding, watercourses and drainage to identify the zones more accurately than has previously been the case. In areas where this initial assessment suggested that there might be a risk of flooding and in which a high level of development is expected in the future (for example Stockport Town Centre) a more rigorous assessment has been undertaken, including detailed surveying and modelling of watercourses. The main purpose of identifying the zones is to inform the level of detail required for making planning decisions, not to state categorically whether buildings are at risk of flooding.

In short, there are 4 different flood zones:

- **Zone 3b – "Functional Floodplain"**. This is defined as land where water has to flow or is stored in times of flood, with an annual probability of at least 1 in 20 (5%) of flooding in any year. Land within Zone 3b may have been specifically allocated or designed to flood so as to reduce risk elsewhere.
- **Zone 3a – "High Probability"**. This area has a 1% (1 in 100) or greater chance of being flooded each year - commonly known as a "1 in 100 year flood" (area shown in dark blue on the UDP proposals map).
- **Zone 2– "Medium Probability"**. These outlying areas are likely to be affected by a major flood should one occur, with up to a 0.1% (1 in 1000) chance of occurring each year - commonly known as a "1 in 1000 year flood" (area shown in light blue on the UDP proposals map)
- **Zone 1 – "Low Probability"**. Essentially this is everywhere else - technically it is anywhere with a chance of less than 1 in 1000 of being flooded in any given year.

For the purposes of long-term strategic planning (i.e. to help develop the LDF) the SFRA also identifies an area with 20% greater risk than Zone 3a. The purpose of this is to allow for the expected increased risk resulting from climate change when considering, broadly speaking, where future development will go.

The flood maps are publically available on the Environment Agency's website[59] however, at the time of writing, they are not detailed enough to allow a distinction to be made between zones 3a and 3b. The maps also do not show the area identified by the SFRA which takes account of climate change.

Policy requirements

UDP Review policy EP1.7 (Development and Flood Risk) sets out that in:

59 www.environment-agency.gov.uk/homeandleisure/floods/

Appendix E: Flood Risk

- **Zone 3** development will not be permitted unless a particular location is essential (e.g. water-based recreation, transport or utilities uses) or the development would form part of an area which is already extensively developed and provided with adequate flood defences.
- **Zone 2** - special consideration will need to be given to proposals for civil infrastructure such as hospitals, fire and ambulance stations, and depots to ensure that access can be guaranteed in times of flood emergency.

National Planning Policy Statement 25 (PPS25) [60] provides greater detail as to the types of development that should be permitted in different areas, setting out a sequential test which seeks to ensure that as far as possible development takes place in the areas least at risk. It accepts, however, that there may be circumstances in which development may, for other planning reasons, be permitted within an area where it would not normally be accepted - in such situations an "Exceptions Test" has to be complied with which ensures that any such development is designed in such a way as to still be safe and to not cause a knock-on increased risk of flood elsewhere.

Consultation with the Environment Agency

The Environment Agency (EA) are statutory consultees on any planning applications where there is an identified potential flood risk. Environment Agency standing advice on flood risk shows the level of information and consultation with the EA that will be required in relation to flood risk. The vulnerability of different types of development referred to in the left hand column of the table is explained in more detail in PPS25 Annex D.

60 www.communities.gov.uk/documents/planningandbuilding/pdf/planningpolicystatement25.pdf

Table 4 Environment Agency standing advice on flood risk

	Development (including boundary walls) within 20 metres of the top of a bank of a main river	Development including culverting or control of flow of any river or stream	Development within Flood Zone 3	Development within Flood Zone 2	Development within Flood Zone 1
Householder development and alterations	Consult Environment Agency	Consult Environment Agency with Flood Risk Assessment showing design details of any culvert or flow control structure proposed	No consultation required but Council would refer to standing advice provided by the Environment Agency	No consultation required but Council would refer to standing advice provided by the Environment Agency	No consultation with Environment Agency required
Non-residential extensions with a footprint of less than 250m^2	Consult Environment Agency	Consult Environment Agency with Flood Risk Assessment showing design details of any culvert or flow control structure proposed	No consultation required but Council would refer to standing advice provided by the Environment Agency	No consultation required but Council would refer to standing advice provided by the Environment Agency	No consultation with Environment Agency required
Change of use from "water compatible" to less vulnerable development	Consult Environment Agency if also falls within Flood Zone 3. Flood Risk Assessment required	No consultation with Environment Agency required	Consult Environment Agency with Flood Risk Assessment	No consultation with Environment Agency required	No consultation with Environment Agency required
Change of use resulting in highly vulnerable or more vulnerable development	Consult Environment Agency if also falls within Flood Zone 3. Flood Risk Assessment required	No consultation with Environment Agency required	Consult Environment Agency with Flood Risk Assessment	Consult Environment Agency with Flood Risk Assessment	No consultation with Environment Agency required
Operational development less than 1 hectare	Consult Environment Agency	Consult Environment Agency with Flood Risk Assessment	Consult Environment Agency with Flood Risk Assessment and	Consult Environment Agency with Flood Risk Assessment and	No consultation with Environment Agency required

Appendix E: Flood Risk

	Development (including boundary walls) within 20 metres of the top of a bank of a main river	Development including culverting or control of flow of any river or stream	Development within Flood Zone 3	Development within Flood Zone 2	Development within Flood Zone 1
		showing design details of any culvert or flow control structure proposed	Sequential Test evidence (and, where required, confirm Exception Test has been applied)	Sequential Test evidence (and, where required, confirm Exception Test has been applied)	
Operational development of 1 hectare or greater	Consult Environment Agency	Consult Environment Agency with Flood Risk Assessment showing design details of any culvert or flow control structure proposed	Consult Environment Agency with Flood Risk Assessment and Sequential Test evidence (and, where required, confirm Exception Test has been applied)	Consult Environment Agency with Flood Risk Assessment and Sequential Test evidence (and, where required, confirm Exception Test has been applied)	Consult Environment Agency with Flood Risk Assessment

Appendix F: Small Scale Domestic Wind Turbines in the Green Belt

Making the Case for Small-Scale (Domestic) Wind Turbine Development in the Green Belt

National planning policy (set out in Planning Policy Guidance (PPG) note 2) states that the fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the most important attribute of Green Belt is their openness. Green Belts can shape patterns of urban development and help to ensure that development occurs in those areas where it is most necessary. They help to protect the countryside, be it in agricultural, forestry or other use. They can assist in moving towards more sustainable patters of urban development.

National and local planning policy set out a presumption against inappropriate development in the Green Belt. Inappropriate development is considered to be any form of development that is not identified in policies as being appropriate. **THE INSTALLATION OF WIND TURBINES IS CLASSED AS INAPPROPRIATE DEVELOPMENT** and is therefore contrary to both local and national planning policies.

HOWEVER PPG2 sets out that inappropriate development is harmful by definition and should not be approved except in very special circumstances. If planning permission is to be gained it **must** be demonstrated by the applicant that other considerations clearly outweigh the harm that would be caused – if that can be demonstrated then very special circumstances can be considered to exist.

There isn't really any guidance set out nationally as to what a case for very special circumstances should contain. However, case law and local experience combined suggest that the following elements should be included:

1. Demonstration of the existence of an essential objective that the proposal would achieve;
2. Demonstration of the harm that the proposal would cause to the Green Belt; and
3. Demonstration that the essential objective could not be achieved in any alternative way that would be less harmful to the Green Belt.

The following information relevant to each of the elements above should, therefore, be submitted in support of all planning applications for small-scale wind turbine development at domestic properties within the Green Belt:

1. Evidence of the current and previous level of electricity consumption at the dwelling (or dwellings if the development is to serve more than one property) - copies of electricity bills/statements are ideal for this - along with an estimation of the amount of power that the wind turbine will generate at that location (the manufacturer/installer will be able to provide this). Alternatively a detailed technical assessment of the current carbon footprint of the household compared to the estimated carbon footprint once the wind turbine is operational.

The Council has set a precedent which accepts that, because of the need to reduce the borough's carbon footprint, the generation of renewable energy amounts to an essential objective where it is on a small, domestic scale. So long as the applicant demonstrates that the scheme will result in a significant decrease in carbon emissions from the property(s) that it serves then it will be accepted that the essential objective would be achieved. The above

Appendix F: Small Scale Domestic Wind Turbines in the Green Belt

evidence would provide the necessary demonstration. Details of the carbon emissions data for the Borough can be found in the current Annual Monitoring Report: www.stockport.gov.uk/ldf

2. An assessment of the visual impact that the proposal would have – photomontages are ideal for this, showing the wind turbine superimposed onto photographs taken from at least 4 different angles and, additionally, showing the wind turbine from any sensitive view points, in relation to any local features of interest and in relation to the outlook from any other nearby residential properties.

This allows the Council and anyone else interested in the scheme to see what its likely visual impact would be and, therefore, judge whether the level of harm caused is outweighed by the benefits of achieving the essential objective.

3. Demonstration that other methods of reducing the properties' carbon footprint have already been put in place, are not viable (or are less viable) or would cause a greater degree of harm.

Firstly it should be shown that all reasonable, possible steps have been taken to reduce the amount of energy consumed by the property: Is the property insulated to the maximum recommended level (both roofs and, where possible, walls (including party walls if relevant/possible)? Does the property have high-performing double/triple glazing? Does the property have low energy and/or energy saving appliances and fittings throughout (including low energy light-bulbs as standard, for example)? The Energy Saving Trust provides guidance on these options.

Secondly it should be demonstrated that other renewable technologies have been considered and ruled out on the grounds of financial viability (i.e. the initial cost would be prohibitive or it would have a substantially longer pay-back period), technical feasibility or visual impact. CLASP have produced a Renewables Handbook for developers which offers detailed information on different technologies.

Thirdly it should be shown that the siting of the proposed wind turbine is optimum within the site in terms of the balance between visual impact and generation potential: Could the turbine be located differently within the site and have a lesser visual impact? If more than one turbine is proposed, could a better balance be achieved through fewer but larger turbines? Similarly, if one large turbine is proposed could a better balance be achieved through several smaller turbines? Could the turbine be painted in a way which allows it to blend into the landscape better? Could other (minor) alterations be made to the landscape (within the property boundary) to reduce the impact of the development?

Additionally, anyone wishing to install a wind turbine is strongly advised to seek the views of any affected parties, for example neighbouring properties or other properties who might be able to view the turbine.

In all cases you are advised to discuss your proposals with the Council Development Management Officer at the earliest possible opportunity. This is particularly important as

there are likely to be policies and issues other than the Green Belt which you will need to take into account.

Appendix G: District Heating Guidance

Feasibility Implementation Guidance

Core Strategy Policy SD4 District Heating (Network Development Areas) lays out what requirements are for those new development sites where district heating provision has been deemed potentially feasible and viable. This Appendix presents a summary of more comprehensive guidance notes relating to early stage district heating feasibility processes - Stockport Guidance for District Heating Feasibility. The notes have been presented as a checklist of opportunities that should be explored when initially assessing the feasibility and viability of a development site. The Guidance notes should be read in the context of demonstrating consideration of the issues outlined in 'Appendix C: Core Strategy Policies'.

This work draws on the guidance document produced by the Town & Country Planning Association: Community Energy - Urban Planning for a Low Carbon Future which can be downloaded using the link.

The summary checklist of district heating feasibility implementation is:

Table 5 Summary of district heating guideline steps

Step	Consideration	Yes/No
1	Consider the range of drivers for developing district heating on the site, and prioritise drivers according to influence on development proposals	
2	Define a set of objectives for the development in relation to energy supply and carbon reduction	
3a	Collect key information relating to proposed development, including initial energy profiling	
3b	Collect key information relating to existing development/buildings including: building types, outline heat demands/energy profiles	
3c	Collect key information relating to site including: site conditions, fuel supply information and existing mapping data (GIS/energy maps)	
3d	Combine information collected in 3a – 3c to define site in terms of energy opportunities, with potential to add development to existing mapping data	
4a	Using data gathering in step 3, carry out an initial district heating technology study for the development – technical expertise potentially required at this stage	
4b	Use technology study to develop an effective energy option, relating to objectives outlined at step 2	
5a	Alongside district heating consideration, take into account the role of microgeneration technologies in meeting the objectives outlined at step 2 – technical expertise potentially required at this stage	

Step	Consideration	Yes/No
5b	Consider the financial benefits to microgeneration, in relation to financial incentives such as the Feed-in-Tariff and the Renewable Heat Incentive	
6a	Carry out full feasibility study using information and data gathered in steps 3 to 5, focusing on design principles and technical issues – technical expertise potentially required at this stage	
6b	Include as part of feasibility study consideration of: programmes of improvements to existing buildings; design targets; layout/phasing; size/scale; heat connections, future-proofing; financing/delivery; stakeholder engagement	
6c	Propose district heating solutions (or otherwise) that make explicit reference to thresholds and requirements of Stockport Core Strategy Policy SD-4	
6d	Where district heating feasibility is considered not initially feasible, demonstrate measures proposed for provision for future connection	

Appendix H: Carbon Offset Mechanism

Stockport Carbon Fund

Implementation of Stockport's Core Strategy Policy SD3 Delivering the Energy Opportunities Plan (New Development) engenders the need to include an Energy Statement in all new development planning applications. If the intention is to pay into Stockport's Carbon Fund rather than achieve reduced carbon emissions on site through minimised energy demand and/or use of low and zero carbon technologies, then the following calculation needs to be undertaken and agreed with the Planning Team at Stockport Council. An Excel spreadsheet version of the flowchart below is available on request from planning.policy@stockport.gov.uk or by phoning 0161 474 4385. The policy clearly states that planning applicants can make the case in their energy statements for delivery of low carbon technologies resulting in non-viability of the project and this includes where carbon offset may be deemed by the applicant to make the project non-viable. However it is the responsibility of the applicant to make this case showing clear costs to support the statement.

Carbon offset means the increased carbon dioxide emissions from a new development are balanced by savings in carbon dioxide elsewhere, which are brought about by measures paid for by the carbon fund. Any net increase in carbon dioxide emissions from a development will be calculated as tonnes per year. A one-off contribution will be required to the carbon fund, by means of a Section 106 agreement, at a rate of £295[(61)] for each tonne of carbon dioxide emitted.

Coupled with existing best practice in energy efficiency, carbon offset could provide carbon neutrality for a few hundred pounds per house. The carbon fund will be managed by Stockport Council's Planning Policy Team and as a priority will be used by the Council to fund the following activities: improvement of existing housing stock through funding of schemes to provide low and no cost insulation; pump prime funding for district heating networks including the proposed town centre scheme; pump prime funding of Stockport based community owned renewable energy schemes. The fund will be spent on carbon reduction measures with a lifespan of at least 30 years equivalent to the increased carbon output from new development.

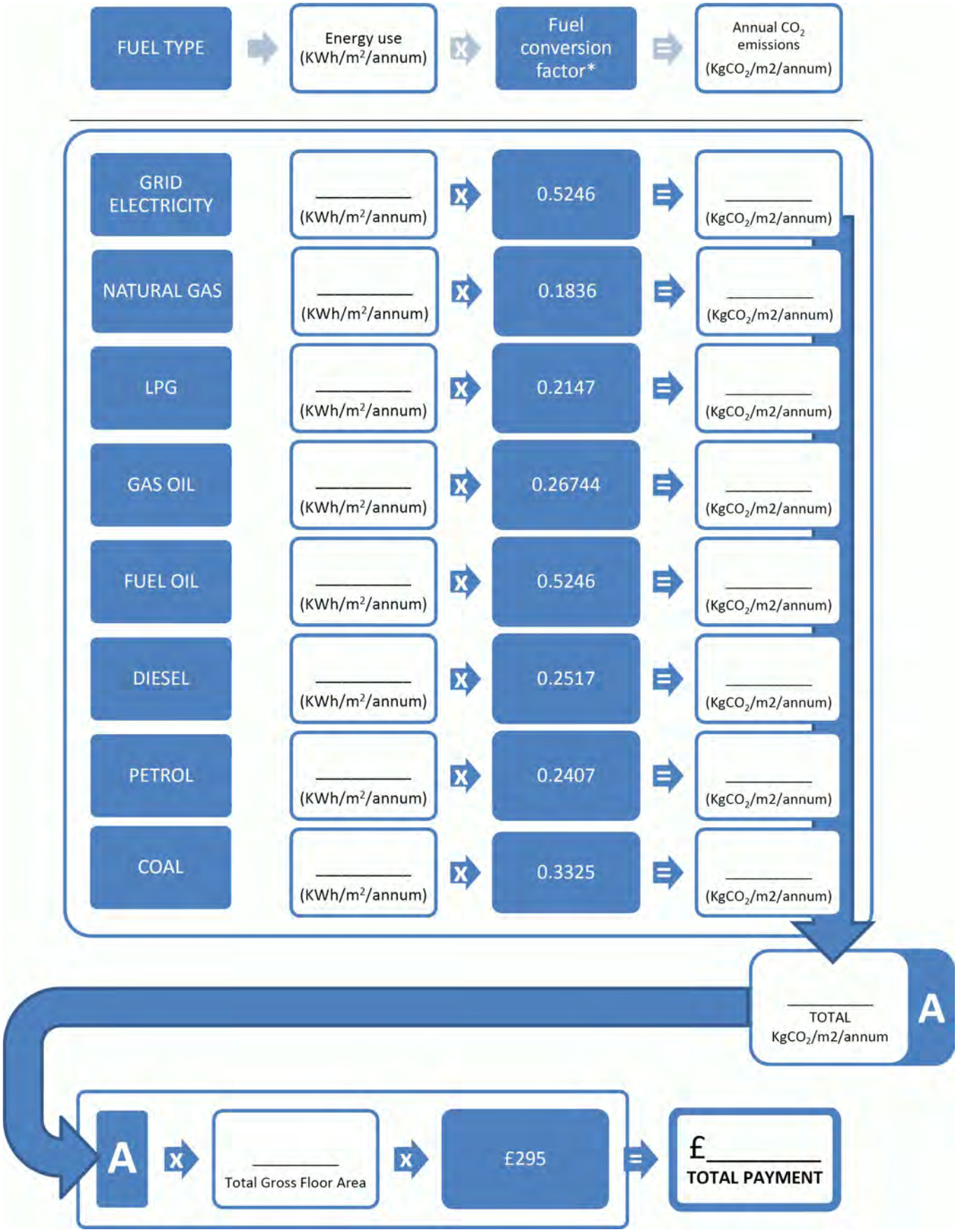
Calculation method:

1. Take the energy use figure for the proposed development (KWh/m2/yr), including any reduction due to low or zero carbon technologies such as renewables, and subdivide into different fuel sources e.g. gas, electricity – see flowchart below.
2. Multiply the resulting figure for each fuel by the relevant conversion factor, shown in the flowchart, to give CO2 emissions (Kg/m2/yr).
3. Add each fuel figure to give combined CO2 emissions (Kg/m2/yr).
4. Multiply by total gross floor area to give total CO2 emissions (tonnes/yr).
5. Multiply tonnes by £295 to calculate payment to the carbon offset fund.

61 This figure is the average estimated cost of carbon for retrofit improvement measures for Stockport provided by the Stockport Low Carbon Policy Implementation Study

Appendix H: Carbon Offset Mechanism

Carbon Offset Mechanism Flowchart



*www.carbontrust.co.uk/cut-carbon-reduce-costs/calculate/carbon-footprinting/pages/conversion-factors.aspx

Appendix I: Resources

It is recognised that some users of this document will want to read paper editions. Therefore, listed in the table below are the URL's for any reference or resources hyperlinked in this document which does not already depict the URL as part of the notation.

Table 6 References and Resources

Reference	Web Address / URL
About This Guide	
Stockport Council's Sustainability Checklist	http://www.stockport.gov.uk/planningsustainabledevelopment
Planning Policy Team: email contact details	Planning.policy@stockport.gov.uk
Health & Environment Advisor (Planning)	http://www.stockport.gov.uk/services/environment/planningbuilding/planningpolicy/planningpolicyteam?view=Standard
What is Sustainable Design and Construction?	
NHS Stockport	http://www.stockport-pct.nhs.uk
Why use Sustainable Design and Construction	
Stern Review of the Economics of Climate Change	http://www.hm-treasury.gov.uk/d/Executive_Summary.pdf
Mini Stern for Manchester City Region	http://www.deloitte.com/assets/Dcom-UnitedKingdom/Local20Assets/Documents/UK_GPS_MiniStern.pdf
CRC Energy Efficiency Scheme League Tables	http://www.carbonreductioncommitment.info/crc-league-table
Stockport Strategy 2020	http://www.stockportpartnership.org.uk/pdf/Stockport%20Strategy%202020%20final%20reduced.pdf
BREEAM	http://www.breeam.org
Code for Sustainable Homes	http://www.breeam.org/page.jsp?id=86
Building for Life	http://www.buildingforlife.org/
Rostron Brow	http://www.buildingforlife.org/case-studies/rostron-brow/introduction
Lifetime Homes	http://www.lifetimehomes.org.uk
CEEQUAL	http://www.ceequal.co.uk
Considerate Constructors	http://www.considerateconstructorsscheme.org.uk
BREEAM Domestic Refurbishment Standard	http://www.breeam.org/page_1col.jsp?id=54

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Reference	Web Address / URL
Energy Saving Trust - Existing Housing	http://www.energysavingtrust.org.uk/business/Business/Housing-professionals/Existing-housing
Green Build News - Refurbishment	http://www.greenbuildnews.co.uk/left-tabs/Refurbishment/27/1
Sustainable Homes Green Streets	http://www.sustainablehomes.co.uk/greenstreet.aspx
English Heritage Professionals Guidance	http://www.english-heritage.org.uk/professional/
Legislation and Policy	
Stockport Council's Sustainability Checklist	http://www.stockport.gov.uk/planningsustainabledevelopment
Health & Environment Advisor (Planning)	http://www.stockport.gov.uk/services/environment/planningbuilding/planningpolicy/planningpolicyteam?view=Standard
Sustainable Development	http://www.stockport.gov.uk/planningsustainabledevelopment
UDP Saved Policies	http://www.stockport.gov.uk/services/environment/planningbuilding/planningpolicy/ldf/udp/savedpolicies?view=Standard
Stockport's Local Development Framework	http://www.stockport.gov.uk/ldf
Building Regulations	http://www.communities.gov.uk/planningandbuilding/buildingregulations/
Stockport Council's information on Building Regulations	http://www.stockport.gov.uk/services/environment/planningbuilding/buildingregulation/advisorynotes
Stockport's Sustainable Community Strategy	http://www.stockportpartnership.org.uk/pdf/Stockport%20Strategy%202020%20final%20reduced.pdf
Stockport Conservation & Heritage Strategy	http://www.stockport.gov.uk/historicareas
Stockport Action Plan for Nature	http://www.stockport.gov.uk/services/leisureculture/parksandrecreation/countryside/biodiversity/actionplanfornature
NHS Stockport HIA Team	http://www.stockport-pct.nhs.uk/ContactUs.aspx
Stockport Healthy Weight Partnership Strategy	http://www.stockport.gov.uk/2013/2996/41105/healthyweightstrategy
Stockport Draft Walking Strategy	http://stockport-consult.limehouse.co.uk/portal/tp/draftwalkingstrategy?pointId=46418

Appendix I: Resources

Table 7 References and Resources - Topics

Reference	Web Address / URL
Location and Transport	
Building for Life	http://www.cabe.org.uk/building-for-life
Case Study: Hulme Speed Table Design	http://www.dft.gov.uk/pgr/sustainable/manforstreets/pdfmanforstreets.pdf
Green Build News	http://www.greenbuildnews.co.uk/
Sustainable Homes Green Streets	http://www.sustainablehomes.co.uk/greenstreet.aspx
Stockport's Travel Planning Team	http://www.stockport.gov.uk/services/transportstreets/trafficservices/transportpolicy/greentravel1/travelplansinstockport/
Stockport's Cycle Maps	http://www.stockport.gov.uk/services/transportstreets/trafficservices/transportpolicy/greentravel1/travelplansinstockport/sustainabletravelpublication/stockportcyclemap
Cycling England	http://www.dft.gov.uk/cyclingengland/
Calculate the health benefits of cycling	http://webarchive.nationalarchives.gov.uk/20110407094607/http://www.dft.gov.uk/cyclingengland/health-fitness/health-economics/
Better Public Buildings	http://www.cabe.org.uk/better-public-building
Home Zones	http://www.homezones.org/starting.html
Living Streets	http://www.livingstreets.org.uk/what_living_streets_do/consultancy_services.php
Civilised Streets	http://www.cabe.org.uk/publications/civilised-streets
Manual for Streets	http://www.dft.gov.uk/pgr/sustainable/manforstreets/pdfmanforstreets.pdf
Driven to Excess Report	http://www.livingstreets.org.uk/news/uk/-/driven-to-excess
Healthy Cities	http://www.healthycities.org/overview.html
Eurocities	http://www.eurocities.eu/main.php
Aunt Sue	http://www.aunt-sue.info/tools.html
NICE Guidance - Physical Activity	http://www.nice.org.uk/nicemedia/pdf/PH008Guidancev2.pdf
NICE Guidance - Childrens Physical Activity	http://www.nice.org.uk/nicemedia/pdf/PH017Guidance.pdf
Modern Built Environment Knowledge Transfer Network	http://mbektn.globalwatchonline.com/epicentric_portal/site/mbektn/?mode=0

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Reference	Web Address / URL
Walking Bus	http://www.dft.gov.uk/pgr/sustainable/schooltravel/howtosetupawalkingbus
English Heritage - Climate Change	http://www.english-heritage.org.uk/professional/advice/advice-by-topic/climate-change
Site Layout and Building Design	
Case Study: Staiths, South Bank	http://www.cabe.org.uk/case-studies/staiths-south-bank
Stockport Council's Sustainability Checklist	http://www.stockport.gov.uk/planningsustainabledevelopment
Planning Policy Team Contact Details	planning.policy@stockport.gov.uk
Green Build News	http://www.greenbuildnews.co.uk/
Sustainable Homes Green Streets	http://www.sustainablehomes.co.uk/greenstreet.aspx
Passive Solar Design Principles	http://www.esru.strath.ac.uk/EandE/Web_sites/01-02/RE_info/passive_solar.htm
Natural Ventilation	http://www.urbanwindenergy.org.uk/index.asp?PageID=21
Accessibility by Design	http://www.stockport.gov.uk/2013/2994/developmentcontrol/accessibilitygtrmanchester
ECO Techs Organic House	http://www.bre.co.uk/page.jsp?id=957
Hemmingway Design	http://www.hemingwaydesign.co.uk/html/urbandesign.htm
NW Heritage Skills Hub	Http://www.ccinw.com/services/north-west-heritage-skills-hub/20671
University of Minnesota - Design for Health	http://www.designforhealth.net/
Passivhaus	http://www.passivhaus.org.uk/
Active House	http://www.activehouse.info/
Materials	
Case Study: Recycled House	http://www.ssdarchitecture.com/works/residential/big-dig-house/
Case Study: John Lewis, Trafford	http://www.wrap.org.uk/downloads/Case_study_John_Lewis_Trafford4.a8727a85.4450.pdf
Passivhaus	http://www.passivhaus.org.uk/
Active House	http://www.activehouse.info/

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Reference	Web Address / URL
BRE's Green Guide to Specification	http://www.thegreenguide.org.uk
Green Building Store	http://www.greenbuildingstore.co.uk/
Green Spec	http://www.greenspec.co.uk/
Green Build News	http://www.greenbuildnews.co.uk/
Forest Stewardship Council	http://www.fsc-uk.org/
UK Woodland Assurance Standard	http://www.ukwas.org.uk/
British Standard for Topsoil	http://www.bsi-global.com/en/Shop/Publication-Detail/?pid=000000000030173907
WRAP Recycled Construction Industry Guidance	http://www.wrap.org.uk
Waste	
Case Study: Net waste analysis of a business park	http://www.wrap.org.uk/construction/case_studies/index.html
Landfill Tax Information	http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageExcise_ShowContent&id=HMCE_CL_001206&propertyType=document
Stockport Recycling Guide for Developers	http://www.stockport.gov.uk/2013/2994/developmentcontrol/38460/recyclingguidedevelopers
WRAP Site Waste Management Plan Resource	http://www.wrap.org.uk/construction/tools_and_guidance/site_waste_management_planning/index.html
Envirolink North West	http://www.envirolinknorthwest.co.uk/Envirolink/Remade-sig.nsf/LookupAreas/40517D1C3A74CAD380257211004FE3EA?OpenDocument
WRAP Composting	http://www.recyclenow.com/home_composting/index.html
Green Build News	http://www.greenbuildnews.co.uk/
Sustainable Homes Green Streets	http://www.sustainablehomes.co.uk/greenstreet.aspx

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Reference	Web Address / URL
Energy	
Case Study: Red Kite House	http://www.southeastexcellence.co.uk/sustainability/?/792/Case%20Studies/#study3
Case Study: Passivhaus	http://www.passivhaus.org.uk/
Case Study: Active House	http://www.activehouse.info/
Planning Portal Tools	http://www.planningportal.gov.uk/england/public/tools/house/
Green Build News	http://www.greenbuildnews.co.uk/
Sustainable Homes Green Streets	http://www.sustainablehomes.co.uk/greenstreet.aspx
North West Climate Change Action Plan	http://www.climatechangenorthwest.co.uk/
Manchester City Region: Low Carbon Economic Area for the Built Environment	http://neweconomymanchester.com/stories/1209-low_carbon_economic_area_event_
Foundation - funding	http://foundation.climatefund.org.uk/
Business Link North West	http://www.businesslink.gov.uk/bdotg/action/layer?site=102&topicId=1079422061
Business Link Innovation Vouchers	http://www.businesslink.gov.uk/bdotg/action/detail?site=102&type=RESOURCES&itemId=1082208892
North West Centre for Construction Innovation	http://www.ccinw.com
Stockport - local examples	http://www.stockport.gov.uk/planningsustainabledevelopment
Manchester is My Planet	http://www.manchesterismyplanet.com/about.asp
TCPA Climate Change Adaptation by Design	http://www.tcpa.org.uk/data/files/bd_cca.pdf
TCPA Sustainable Energy by Design	http://www.tcpa.org.uk/data/files/bd_sustenergy.pdf
EST Information for Building Professionals	http://www.energysavingtrust.org.uk/business/Business/Building-Professionals
EST Renewable Energy	http://www.energysavingtrust.org.uk/Generate-your-own-energy
EST Guidance on Refurbishing Existing Housing	http://www.energysavingtrust.org.uk/business/Business/Building-Professionals/Existing-housing

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EST Guidance on Building Regulations	http://www.energysavingtrust.org.uk/business/Business/Building-Professionals/Building-Regulations
Carbon Trust - low carbon design support	http://www.carbontrust.co.uk/cut-carbon-reduce-costs/products-services/building-design-advice/pages/building-design-advice.aspx
Building Regs - forward look at energy in new build	http://www.communities.gov.uk/publications/planningandbuilding/energyefficiencynewdwellings
Passive Solar Design	http://www.communities.gov.uk/documents/planningandbuilding/pdf/147447.pdf
Carbon Lite Programme	http://www.carbonlite.org.uk/carbonlite/
Greater Manchester Green Roofs Studies	http://www.djdeloitte.co.uk/uk.aspx?doc=33709
Smart Metering	http://decc.gov.uk/en/content/cms/what_we_do/consumers/smart_meters/smart_meters.aspx
Government Buying Standards	http://www.defra.gov.uk/sustainable/government/advice/public/buying/index.htm
Enhanced Capital Allowance	http://www.eca.gov.uk/etl/default.htm
London Renewables Toolkit	http://www.lep.org.uk/uploads/renewables_toolkit.pdf
EST on Feed in Tariff	http://www.energysavingtrust.org.uk/Generate-your-own-energy/Sell-your-own-energy/Feed-in-Tariff-Clean-Energy-Cashback-scheme
Renewable Heat Incentive	http://www.rhincentive.co.uk/
Other FIT Site	http://www.fitariffs.co.uk/eligible/energies/
Low Carbon Buildings Programme	http://www.lowcarbonbuildings.org.uk/home/
Community Sustainable Energy Programme	http://www.communitysustainable.org.uk/
North West Sustainable Energy Strategy	http://www.climatechangenorthwest.co.uk/assets/_files/documents/jun_07/cli__1181140886_North_West_Sustainable_Energy_.pdf
UK Combined Heat & Power Association	http://www.chpa.co.uk
Centre for Alternative Technology	http://www.cat.org.uk
East Cheshire Training & Assessment	http://www.eastcheshiretraining.co.uk/

Reference	Web Address / URL
Renewable Energy Association	http://www.r-e-a.net/REA
Solar Trade Association	http://www.solar-trade.org.uk
Wood fuel heating in the North of England	http://www.creativeconcern.com/iwood/pdf/WoodfuelHeating.pdf
Biomass Heating Installation Advice Note	http://www.merseyforest.org.uk/files/Biomass%20Heating%20Advice%20Note%20for%20DC%20planners.pdf
British Hydro Power Association	http://www.british-hydro.org/
H2OPE - local schemes	http://www.h2ope.org.uk/
British Wind Energy Association	http://www.bwea.com
Heat Pump Association	http://www.feta.co.uk/hpa/
NEF's Logpile Website	http://www.nef.org.uk/logpile/
Wood Pellet Stoves	http://www.woodpelletstove.co.uk/
Water	
PPS 25 Annex D	http://www.communities.gov.uk/documents/planningandbuilding/pdf/planningpolicystatement25.pdf
Case Studies: CIRIA SUDS Database	http://www.ciria.org.uk/suds/sites/index.html
Environment Agency	http://www.environment-agency.gov.uk/research/planning/33098.aspx
EA on SUDS	http://www.environment-agency.gov.uk/business/sectors/36998.aspx
CIRIA on SUDS	http://www.ciria.org.uk/suds/suds_techniques.htm
Enhanced Capital Allowance	http://www.eca-water.gov.uk/?gclid=CIrhjPn_n5sCFaAU4wodFnsnDA
UU's Developers Guide	http://www.unitedutilities.com/S104_Developers_Guide_SFA6.pdf
TCPA Climate Change Adaptation by Design	http://www.tcpa.org.uk/data/files/bd_cca.pdf
Green Build News - Water	http://www.greenbuildnews.co.uk/left-tabs/Water/25/1
Landscape and Biodiversity	
Greater Manchester Green Roofs Guide	http://www.djdeloitte.co.uk/uk.aspx?doc=33709

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Stockport Action Plan for Nature	http://www.stockport.gov.uk/services/leisureculture/parksandrecreation/countryside/biodiversity/actionplanfornature
Stockport Council's Nature Development Team	http://www.stockport.gov.uk/services/leisureculture/parksandrecreation/countryside/biodiversity/actionplanfornature
TCPA Biodiversity by Design	http://www.tcpa.org.uk/data/files/bd_biodiversity.pdf
Green Roofs Today	http://www.greenroofstoday.co.uk/
Living Roofs	http://www.livingroofs.org.uk/index.html
Green Infrastructure	http://www.greeninfrastructure.eu/?section=006.008&page=45
NW Green Infrastructure	http://www.greeninfrastructurenw.co.uk/html/index.php?page=resources&NorthWestRegion=true
Green Build News	http://www.greenbuildnews.co.uk/
Using Environmental Consultants	http://www.businesslink.gov.uk/bdotg/action/layer?site=102&topicId=1079422061
Health and Wellbeing	
Case Study: Great Bow Yard - Healthy Materials	http://www.sd-commission.org.uk/publications/downloads/Outdoor_environments_and_health.pdf
Natural Daylight Design	http://www.narm.org.uk/home/pdfs/brochure.pdf
Association of Noise Consultants	http://www.association-of-noise-consultants.co.uk/index.php?*p=home
Institute of Acoustics	http://www.ioa.org.uk/
Considerate Constructors	http://www.considerateconstructorsscheme.org.uk/
Network for Comfort & Energy in Buildings	http://nceub.org.uk
Chartered Institute of Building Services Engineers	http://www.cibse.org/
BSRIA	http://www.bsria.co.uk/
NICE Guidance encouraging and supporting physical activity	http://www.nice.org.uk/PH8
NICE Guidance for children's physical activity	http://www.nice.org.uk/nicemedia/pdf/PH017Guidance.pdf

Reference	Web Address / URL
Operation & Management	
Case Studies: Considerate Constructors - see Award Winners	http://www.ccscheme.org.uk/
Constructing Excellence KPIs	http://www.constructingexcellence.org.uk/zones/kpizone/default.jsp
Chartered Institute of Building Services Engineers	http://www.cibse.org/
BSRIA	http://www.bsria.co.uk/
BREEAM Building User Guide Structure	http://www.breeam.org
Marketing	
Case Study: Green Moves	http://www.greenmoves.com/criteria.php
Health & Environment Advisor	http://www.stockport.gov.uk/planningsustainabledevelopment

Table 8 References and Resources - Appendices

Reference	Web Address / URL
Appendix B - Stockport Health and Innovation	
Promoting physical activity and health	http://www.sd-commission.org.uk/publications/downloads/HF6-final.pdf
Climate Connection	http://www.theclimateconnection.org/home
Appendix C - Core Strategy Policies	
RSS Policy DP 1	http://www.nwrpb.org.uk/downloads/documents/oct_08/nwra_1224232588_Final_adopted_RSS_300908_Spati.pdf
RSS Living in the North West	http://www.nwrpb.org.uk/downloads/documents/oct_08/nwra_1224233272_Final_adopted_RSS_300908_Livin.pdf
RSS Regional Housing Provision	http://www.nwrpb.org.uk/downloads/documents/oct_08/nwra_1224233272_Final_adopted_RSS_300908_Livin.pdf
RSS Transport in the NW	http://www.nwrpb.org.uk/downloads/documents/oct_08/nwra_1224233016_Final_adopted_RSS_300908_Trans.pdf

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RSS Environment, Minerals, Waste & Energy	http://www.nwrpb.org.uk/downloads/documents/oct_08/nwra_1224233062_Final_adopted_RSS_300908_Envir.pdf
Stockport UDP	http://www.stockport.gov.uk/udp
Appendix D - Environmental Standards	
Code for Sustainable Homes	http://www.breeam.org/page.jsp?id=86
BREEAM	http://www.breeam.org
Building for Life	http://www.buildingforlife.org
Lifetime Homes	http://www.lifetimehomes.org.uk/
CEEQUAL	http://www.ceequal.com
Considerate Constructors	http://www.considerateconstructorsscheme.org.uk/
Appendix F - Small Scale Domestic Wind	
Stockport Annual Monitoring Report	Http://www.stockport.gov.uk/ldf
London Renewables Toolkit	http://www.lep.org.uk/uploads/renewables_toolkit.pdf