



LOCAL DEVELOPMENT FRAMEWORK

CORE STRATEGY SUBMISSION DOCUMENT

SUSTAINABLE DESIGN & CONSTRUCTION BACKGROUND DOCUMENT

OCTOBER 2006

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1. INTRODUCTION

1.1 This background paper provides the justification and further supporting information for the policy approach taken by Ashford Borough Council to delivering 'Sustainable Design and Construction' in the Local Development Framework (Policy CS10). It sets out the context for the key issues within the Core Strategy, identifying the relevant policy guidance, best practice, planning implications and justification for the standards and requirements set out. The material (in addition to previous studies and published documents) presented in this paper has informed the development of CS10 Sustainable Design and Construction. Much of this report will outline the key links to the Greater Ashford Development Framework (GADF) and its approach to delivering Sustainable Development.

CS10 Sustainable Design & Construction

Developments must:

- A) Achieve the Building Research Establishment's BREEAM standard as set out below or an equivalent quality assured scheme, with a strong emphasis on energy, water and materials. These requirements will be met through:**
- (a) Energy and water efficiency,**
 - (b) Sustainable construction materials, and,**
 - (c) Waste reduction.**
- B) Reduce carbon dioxide emissions through on-site sustainable energy technologies at a percentage set out below.**
- C) Be carbon neutral which can be met through a combination of (A) and (B) above, with any shortfall being met by financial contributions to enable residual carbon emissions to be offset elsewhere in the Borough.**

Ashford LDF 2007 – 2014					
		(CS3) Town Centre & (CS4) Brownfield Urban Sites	(CS5) Urban Extensions & (CS4) Greenfield Urban Sites	(CS6) Tenterden, the Villages, and (CS7) The Countryside	Existing and refurbishment
(A)	BREEAM/EcoHomes	Very Good	Excellent	Good	Very Good
	Energy Credits	Excellent	Excellent	Excellent	Excellent
	Water Credits	Maximum	Maximum	Excellent	Excellent
	Materials Credits	Excellent	Excellent	Very Good	Very Good
(B)	Minimum Carbon Dioxide reduction				
		20%	30%	15%	15%

Ashford LDF 2015 - 2021					
		(CS3) Town Centre & (CS4) Brownfield Urban Sites	(CS5) Urban Extensions & (CS4) Greenfield Urban Sites	(CS6) Tenterden, the Villages, and (CS7) The Countryside	Existing and refurbishment
(A)	BREEAM/EcoHomes	Very Good	Excellent	Very Good	Very Good
	Energy Credits	Excellent	Excellent	Excellent	Excellent
	Water Credits	Maximum	Maximum	Excellent	Excellent
	Materials Credits	Excellent	Excellent	Very Good	Excellent
(B)	Minimum Carbon Dioxide reduction				
		30%	40%	20%	20%

Where any site is brought forward as two or more separate development schemes of which one or more falls below the relevant threshold for this policy, the Council will require the relevant targets in the above table to be met as though the site had come forward as a single scheme.

1.2 The paper will:

- Outline the relevant legislation, policy, guidance and strategies to planning for 'Sustainable Design and Construction'
- Review the current trends and characteristics and best practice in planning for 'Sustainable Design and Construction'.
- Discuss the previous options and the recommended approach for the Local Development Framework.
- Outline those policies submitted as part of the Core Strategy Submission Document.
- Provide the evidence base and justification for those standards proposed in the Core Strategy
- Consider the costs of meeting the standards set out in Policy CS10
- Provide best practice examples and case studies.

2. Policy context

The evidence base for policy CS10 is detailed extensively below. There have been a number changes in the planning approach to those issues which cover Sustainable Design and Construction since the GADF and Core Strategy Preferred option (CSPO). It is not for this report to detail all these changes, but it will highlight those key changes which have a direct impact on the departure from existing Local Plan policies to new LDF policies. In light of these changes, the policies relating to sustainable design and construction need to be updated and replaced to reflect and progress the Government's high quality sustainable design agenda.

2.1 National planning policy

National	
PPS1 : Delivering Sustainable Development	<p>PPS1 sets out the overall approach and the Governments commitment to good design, placing an emphasis on promoting more sustainable development and improving the quality of the built environment. The pursuit of 'high quality, inclusive' design is a key element of the Governments sustainable communities' agenda.</p> <p>PPS1 sets out the objectives for sustainable development in the planning system. This takes as its starting point the four aims of A Better Quality of Life, A Strategy for Sustainable Development in the UK, which are as follows:</p> <ul style="list-style-type: none"> • Social progress which recognises the needs of everyone • Effective protection of the environment • The prudent use of natural resources • Maintenance of high and stable levels of economic growth and employment
PPS 3 : Housing (Consultation paper)	<p>'Designing for Quality' is one of the key objectives of PPS3.</p> <p>(a) creating places, streets and spaces which meet the needs of people, which are attractive, have their own distinctive identity, and positively improve local character; and</p> <p>(b) which promote designs and layouts that are inclusive, safe, take account of public health, crime prevention and community safety, ensure adequate natural surveillance and make space for water where there is flood risk.</p> <p>It also advocates energy efficiency in new housing developments, stating: <i>Local planning authorities should adopt policies which: Promote the energy efficiency of new housing where possible.</i>" (Para 56)</p>
PPS 6 : Planning for Town Centres	<p>Promotion of high-quality design and efficient use of land. Stating "<i>Well-designed public spaces and buildings, which are fit for purpose, comfortable, safe, attractive, accessible and durable, are key elements which can improve the health, vitality and economic potential of a town centre</i>"</p>
PPS 9 : Biodiversity and Geological Conservations	<p>PPS9 sets out the main approach to ensure that the potential impacts on planning decisions on biodiversity and geological conservation are fully considered. Para14 'Biodiversity within Developments' states, "<i>Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as apart of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where appropriate</i>".</p>
PPS 10 : Planning for Sustainable Waste Management	<p>PPS10 promotes the principles of the waste hierarchy of reduction, re-use, recycling and composting, energy recovery and disposal.</p>
PPS 22 :	<p>Planning Policy Statement 22 (Renewable Energy) promotes the increased</p>

Sustainable Energy	development of renewable energy resources to facilitate the Government's target to generate 10% of UK electricity from renewable energy sources by 2010, with the aspiration to double that figure to 20% by 2020. It indicates that renewable energy developments should be capable of being accommodated throughout England provided that technological and environmental issues can be addressed. It also advises that local planning authorities should consider the contribution that their own area can make towards meeting energy requirements on a local, regional and national basis. Following the success of the 'Merton style' policy, PPS2 advises that LPA can set a percentage of energy generation to come from on-site renewables. It also provides guidance on the criteria-based policy for renewable energy installations, landscape issues, key issues in development control and involving the community.
PPG 25 : Development and Flood Risk	PPS 25 advocates the use of sustainable drainage systems in new development proposals to reduce the risk of flooding, add biodiversity and amenity benefits to developments and to aid in pollution prevention and aquifer re-charge.
Proposed PPS26 Climate Change	Intention to produce a PPS on Climate Change has been made by the DCLG, no detail on the contents or consultation draft were available at the time of publishing the Core Strategy.

2.2 Regional Policy

Regional Planning Guidance (RPG9)	
Chapter 12 - Ashford Growth Area	<p>Policy 3: Sustainable Communities</p> <p>The growth envisaged at Ashford should deliver an enhanced quality of life following the principles of sustainable development. This will necessitate the phased and co-ordinated provision of quality community, economic, environmental and social infrastructure. This shall include the following :-</p> <ul style="list-style-type: none"> iv Water-related - the provision of reinforcements to water supply in parallel with demand management measures, and water treatment capacity v Drainage - the strategic planning of surface water drainage management to minimise flood risk vii Resource efficiency - more efficient use of resources, particularly energy, waste and water viii Design quality - a step change in sustainable design , construction and innovation, including the use of the SEEDA Sustainability Checklist
RPG9 : Regional Planning Guidance for the South East : Ashford Growth Area	At a regional level, the recently revised Regional Planning Guidance for the South East (RPG9, November 2004) saw changes made to the chapter concerning energy efficiency and renewable energy. Included within this guidance are regional targets for renewable energy production, which take into account the Government's targets, as detailed in paragraph 3.3 of this document. Policy INF6 of RPG9 sets a minimum regional target of 5.5% of electricity to be generated by renewable sources by 2010 with subsequent targets of 8% by 2016 and 16% by 2026
Draft South East Plan (Regional Spatial Strategy)	
CC1 : Sustainable Development	Sets out the principles objective of the Plan based on the 4 principles of the 1999 UK Sustainable Development Strategy.
CC2 Climate Change	This policy sets out the measures needed to mitigate and adapt to the forecasts effects of climate change through planning policy. Such measures for mitigation (reducing greenhouse gas emissions) include improving energy efficiency performance, development of renewable energy, sustainable transport, carbon sinks and reducing the amount of biodegradable waste. This policy included a regional target to reduce the regions carbon dioxide

	emissions by at least 20% below 1990 levels by 2010 and by at least 25% below 1990 levels by 2015. Adaptation measures included locating land away from flood risk areas, making buildings more resilient to climate change, sustainable drainage, water efficiency and flood management.
CC3 Resource Use	This policy introduced the tool of ecological footprinting, with an overall target to stabilise the South East's footprint by 2016 through measures such as resource efficiency, reduction in energy and water use and behavioural changes.
CC4 Sustainable Construction	The South East plan sets out through this policy how new buildings and refurbishment will be expected to adopt and incorporate sustainable construction standards and techniques. These include high standards of energy and water efficiency and the increased recycling of construction, and designing for adaptation.
CC12 Character of the Environment and Quality of Life	This policy highlighted the importance conservation or enhancement of the character, distinctiveness and sense of place of settlements and landscapes. It states "Opportunities for creating a high quality environment should be sought, based on a shared vision that places emphasis on good design, innovation, sustainability and achieving a high quality of life"
Policy 3 : Sustainable Communities	This outlined that the growth of Ashford should deliver "an enhanced quality of life following the principles of sustainable development". This would be delivered by: ii. Urban renaissance iv. Water-related , including water demand management measures v. Drainage vii Resource efficiency - more efficient use of resources, particularly energy, water and waste. viii. Design quality - a step change in sustainable design, construction and innovation, including use of the SEEDA Checklist.
H5 : Housing Density and Design	Delivery of high quality design, raising the quality of new housing and encourage use of sustainable construction and address the implications of changing lifestyles for new housing design.
NRM1 : Sustainable Water Resources, groundwater and River Water Quality Management	Location of development, and require development to incorporate high levels of water efficiency including BREEAM 'very good' and increasingly 'excellent standards, also suggests sustainable drainage solutions.
NRM3 : Sustainable Flood Risk Management	Water efficiency and environmental impacts of new developments
NRM7 : Air Quality	Impact on air quality through the design of new developments and best practice in construction activities.
EN1 Development Design for Energy Efficiency and Renewable Energy	Encouragement for 10% on site renewable energy generation target, support for higher energy efficiency ratings, use of EcoHomes/BREEAM, renewable energy sources and SPDS.
EN2 : Combined Heat and power	Encouragement for the integration of CHP, including mini and micro-CHP and district heating infrastructure.

EN3 : Regional Renewable Energy Targets	This policy set out Installed Capacity (MW) and Electricity Generation Capacity (%) targets for renewable energy for the South East. It stated that the onshore and offshore wind, biomass and solar have the greatest potential for meeting these targets.
EN4 : Sub-Regional Targets	The Sub-Regional targets indicated that Kent should achieve a 111 MW of installed renewable energy capacity by 2010, 154 MW by 2016 and 194 MW by 2020.
EN5 : Location of Renewable Energy Development	This explained how applications for renewable energy developments should be assessed highlighting issues such as impacts on landscape, wildlife and amenity. It also detailed the approach to developments in protected and sensitive areas.
EN6 : Development Criteria	This is a more detailed continuation of policy EN6.
BE1 : Management for an Urban Renaissance	Covers issues such as quality of life, public realm and open space, and the use of development briefs for key sites
S3 : Supporting Healthy Communities	Suggests measures such as community access to parks and open space, mixed and cohesive communities, and healthier forms of transport
W2 Sustainable Design, Construction and Demolition	Local Development Documents will require development design, construction and demolition which minimises waste production and associated impacts through: <ul style="list-style-type: none"> o The re-use of construction and demolition materials o The promotion of layouts and designs that provide adequate space to facilitate storage, re-use, recycling and composting.
POLICY M1: Sustainable Construction	Local Development Documents should promote the use of construction materials that reduce the demand for primary minerals, by requiring new projects to include a proportion of recycled and secondary aggregates wherever practicable.
Kent & Medway Structure Plan	
SP1 : Our Vision and Guiding Principles	Key principles included ‘encouraging high quality development and innovative design that reflects Kent’s identity and local distinctiveness and promoting healthy, safe and secure living and working environments”, and a key principles to respond to the implications of long term climate change.
QL1 : Quality of Development and Design	Stated the approach to delivering high quality design as that prescribed at the national level. It also detailed that LA should apply the principles of the Kent Design Guide and requirements for a design statement. <p>(iii) The design of development should:</p> <ul style="list-style-type: none"> (a) consider the needs of all sections of the community; (b) provide for a healthy, safe and secure environment; (c) enhance the public realm; (d) protect the amenity of residents; (e) incorporate sustainable construction techniques as detailed in Policy NR1.
NR1 Development and the Prudent Use of Resources	Proposals for development should incorporate sustainable construction techniques and demonstrate that their design and layout contributes to: <ul style="list-style-type: none"> (a) the conservation and prudent use of energy, water and other natural resources, including provision for recycling facilities, water conservation and energy efficiency; and (b) a reduction in greenhouse gas emissions through re-use, or the more

	efficient use, of resources."
NR2 : Energy Generation	Sets out how proposals for energy generation will be assessed by local planning authorities.
NR3 : Renewable and Sustainable Energy Productions	This policy sets out the approach to the location of production of energy from renewable sources, and the provision of renewable and sustainable energy production as an integral component of new development and in small-scale community projects. It advised that LDDs include a renewable energy production target, and identify sites for renewable and sustainable energy facilities.
NR4 : Combined Heat and Power	Outlines the support for combined heat and power and district heating systems.
WM3 : Securing Waste Reduction	It required that LDDs include policies in order for new developments to make a contribution to reducing growth in the volume of waste generated in Kent. This includes policies for recycling facilities within major development proposals, waste minimisation.
MN1 : Sources of mineral supply	Sets out the approach to the provision of minerals through recycling, the use of secondary materials, and facilitation of imports and the acceptable extraction of local sources of supply are supported.
MN2 : Use of Secondary/Recycled Materials	Sets out the approach to the use of secondary/recycled materials

2.3 Local Planning Policy

<i>Ashford Borough Local Plan 2000</i>
<p><i>A number of key design principles were set out as follows:</i></p> <p><i>DP1 Design quality</i> <i>DP2 Standard environmental requirements for development</i> <i>DP3 Energy saving design and layout</i> <i>DS4 Designing for security</i> <i>DP5 Noise sensitive development</i> <i>DP6 Noise generating development</i> <i>DP7 Habitat creation and nature conservation</i> <i>DP8 Infrastructure and community facilities for new development</i> <i>DP9 Detailed site analysis and development briefs</i> <i>DP10 use of development briefs</i></p>

2.4 Ashford Borough Council Community Strategy 2004 - 2014

The Ashford Community Strategy has an overall vision which states;

"Set in the heart of the Garden of England Ashford borough provides a safe healthy and thriving environment that offers an excellent quality of life to all who live work and visit the area."

Within the Community Strategy 'Housing and Environment' is one of the key themes. A number of the milestones under this theme will be implemented by the LDF policies. The overall aim under this theme is to balance the built and natural environment to ensure its sustainability both for now and the future.

Key priorities under 'Housing and Environment' are:-

Housing and Environment	
Key Priorities	Relationship to LDF policies
Work together to ensure all housing is of the highest quality contributing to the independence of individuals and families	Design and Sustainability' policies will reinforce this priority.
Enhance the borough's natural and built environment, making sure new developments are sympathetic to existing landscapes, buildings and communities	A clear understanding of context is a key part of the 'Design and Sustainability' policies
Increase the supply of water and reduce demand by better water efficiency	Sustainable standards through EcoHomes/BREEAM and a Carbon Emissions policy will deliver this priority through the LDF
Adopt a strategic approach to energy efficiency and environmental protection	As above
See less waste, more recycling, fuel-efficient homes buildings and more use of renewable energy supplies	As above
Short term aim (5 years)	
Ensure sustainable construction methods are used in new buildings	High sustainable construction standards will be a central part of the approach to 'Design and Sustainability'.

2.4 Sustainability Appraisal

The SA report states:

Overview

The inclusion of this section on design and sustainability, including the environmental standards, has occurred partly as a result of the recommendations emerging from the SEA process, but also reflects a commitment to sustainability principles on the part of Ashford's Future Board and Ashford Borough Council. Moreover, the proposed standards and targets as set out in the LDF Core Strategy are based on the outcome of extensive consultation, taking into account the aspirations of Government and stakeholders, and reflect the recommended approach of the SEEDA sustainability checklist and RPG9. Moreover, the standards are based on the phasing in or sustainability, and as such will become more demanding over time, enabling the developers and the public sector to gear up, as well as allowing development to keep pace with policy and technological change.

The Core Strategy Options Report does not set out options in respect of standards, thus the typical approach to SA/SEA cannot be used in the appraisal. Indeed, it is considered that the quality of life on Ashford is not compromised, there is no option but for such standards to be applied.

The setting of higher standards for new development in order to compensate for the performance of existing development is endorsed

It concludes by stating:

The inclusion of clear design and sustainability standards as part of the Core Strategy is supported. These should be considered in more detail as various elements of the LDF are developed. Moreover in support of these standards it is considered that a number of key initiatives should be pursued at the local level. These include mechanisms to encourage local renewable energy generation the necessary infrastructure to promote sustainable waste management clear initiatives to encourage a reduction in water demand.

Table 1 - SEA/SA Appraisal Framework links to 'Design and Sustainability'
(see overleaf)

Topic	Objective	Criteria	Target	Core Strategy Policy Link
2.0 Water & Soil	2.1 Protection and enhancement of ground and surface waters	2.1.1 The DF will include measures to maintain and improve water quality in the Stour	75% of paved areas in new development composed of porous paving & 75% of new roads to be served by <i>Sustainable Urban Drainage Systems</i> . ¹ All new development to include on-site provision for rainwater re-use, with the intention of achieving rates of run-off comparable to an undeveloped site	CS10 included within BREEAM/EcoHomes credit score. CSS20 Sustainable Drainage
	2.2 To ensure a sustainable water supply	2.2.1 The DF will promote reduced water use and water-saving technology	Reduction in average household water consumption by 30% (over existing consumption levels) in new developments by 2010. 50% in new developments, post 2010. All new development to include water saving technologies. No outside taps connected to the public water supply in new development.	CS10 water issues are covered in BREEAM/EcoHomes and water is identified as a core resources issue of which higher standards are set.
		2.2.2 The DF will include measures to ensure sufficient water supply , commensurate with the scale of development proposed?	All development to include innovative measures to supplement supply, including rainwater collection and grey water recycling.	CS10 direct policy on sustainable drainage systems and included within BREEAM/EcoHomes credit score.
3.0 Population and human health	3.1 Encourage healthy lifestyles	3.1.1 The DF will reduce the need for travel by promoting mixed use development	80% of development to be within walking distance of local amenities, including the following within 1000m: post office & banking facilities, primary and secondary school, medical centre, leisure centre, community centre, public house, children's play area. (BREEAM)	CS10 covered in BREEAM/EcoHomes and an outcome of CS9 Design Quality.
4.0 Air	4.1 Reduce air pollution and ensure air quality continues to improve over the longer term.	4.1.5 The DF design & implementation proposals will include specific measures to utilise locally sourced materials and low environmental impact materials in buildings and infrastructure, thereby decreasing the amount of road traffic	To ensure that design of new development enables the use of locally sourced materials with a targets of 20% of all materials to be sourced from within a 50km radius and 80% of built materials sourced from within 30km.	No direct policy is made for local sourcing and is not covered by BREEAM/EcoHomes. Although the policy does encourage the use of locally sourced materials. Kent Design Guide: Sustainable Construction Annex also covers this issue.
	4.2 To reduce air pollution from vehicular sources by improving transport choice	4.2.1 The DF will include measures to improve the integration of new development with public transport , by promoting major development in high accessibility locations	80% of development to be located within 500m of a public transport route/ stop which <ul style="list-style-type: none"> operates at least a half hourly service between 06.30 and 23.00, Monday to Sunday goes to a local centre, or a town or city centre, or to a major transport node. To ensure development creates sufficient densities to support viable public transport 	CS10 covered in BREEAM/EcoHomes and an outcome of CS9 Design Quality.
5.0 Climatic factors	5.1 To reduce the impacts of climate change, with a particular focus on reducing levels of CO2	5.1.1 The DF will include measures which promote a sustainable energy supply for Ashford.	20% reduction in CO ₂ emissions by 2020 over 1990 levels 50% of energy requirements in new development to be provided from community renewable sources/ integrated renewables (e.g. photovoltaics) by 2020	CS10 This is a core part of the policy approach to deliver zero carbon growth in Ashford.
		5.1.2 The DF will include measures aimed at promoting reduced energy demand and enhanced energy efficiency in the layout and design of buildings.	New development to be 30% more energy efficient than under current building regulations All development to meet the Eco Homes or BREEAM ratings of "good"/ "very good by 2005", and "excellent" by 2010. New office buildings to have passive ventilation rather than air-conditioning designed to higher environmental standard	CS10 BREEAM/EcoHomes covers energy efficiency and standards are set for energy to encourage higher energy efficiency standards. The BREEAM/EcoHomes policy is adopted.

¹ With due consideration given to zones of High Aquifer Vulnerability.

	5.2 To ensure that development is capable of withstanding the effects of global warming and climate change and microclimatic impacts	5.2.1 The DF will promote design for more extreme climatic events, incorporating robust and weather resistant built forms .	Design of all new development to demonstrate robustness to climate change and to include weather resistant built forms. Development to include the following measures: shelter belts, windbreaks, shaded outdoor areas, high reflectivity external surfaces, maximizing solar gain, minimal ratio of external surface to floor area, maximizing absorptive surfaces.	Covered in CS9 Design Quality
6.0 Material	6.3 To protect and reduce the use of non-renewable resources	6.3.2 The DF will include specific measures to incorporate renewable and recycled materials in buildings and infrastructure, or materials of lower environmental impact.	To ensure that at least 50% of construction materials are derived from renewable sources, including recycled sources, such as wood and concrete To ensure that materials used/specified in construction are of low environmental impact.	CS10 materials are covered in BREEAM/EcoHomes and materials is identified as a core resources issue of which higher standards are set.

2.5 Other relevant non-planning strategies and policy

International / European	
Kyoto Protocol	International agreement to reduce greenhouse gas (GHG) emission. The UK has committed to a 12.5% reduction by 2012.
EU Energy Performance of Buildings	The European energy rating scheme for buildings requires an energy rating certificate to be displayed in all public buildings. The aim is to give building owners and occupiers an incentive to improve energy performance.
National	
Securing the future: UK Sustainable Development Strategy (March 2005)	Sets out five principles for sustainable development (see part 2 above) with a focus on environmental limits. It also identifies four priority areas: sustainable consumption and production, climate change, natural resource protection and sustainable communities.
UK Climate Change programme	This stated that Climate Change is now inevitable, and details how the UK plans to deliver its Kyoto target to cut its greenhouse gas emissions.
Our Energy Future: Creating a Low Carbon Economy (2003)	Sets a target of generating 10% of UK energy by renewable technologies by 2010 and 15% by 2020. Other policies include creating an energy system that ensures security of supply and affordable warmth, as well as an aspirational target of 60% reduction in CO2 emissions by 2050.
UK Building Regulations, Part L (April 2006)	Regulations control the quality and performance of new buildings. The recent revision to Part L (energy efficiency) will require a 20% improvement on current energy standards in buildings.
DTI Micro-generation strategy (March 2006)	This strategy promoted the use of micro-generation technologies to complement the strategy to reduce carbon dioxide and increase the capacity of renewable energy in the UK.
DTI, Energy review, 2006	In the energy review the Government stated that: <i>Around 30% of the houses that will be standing in 2050 are yet to be built. So while improving the existing housing stock is very important, it is equally vital to ensure that new houses are built to the highest possible cost effective energy efficiency standards.</i> (para 2.14) The Government is strongly urging planning authorities to set

	ambitious policies for the percentage of energy in new developments to come from on-site renewables ² through PPS22, alongside a government ambition to move towards carbon neutral developments ³ . The announcement of a PPS on Climate Change will help deliver this at the national level. This PPS is expected to complement the Code for Sustainable Homes (which covers the fabric of new developments), and make clear that the location and design of new developments should also promote the reduction of carbon emissions. This will be done through, for example, promoting mixed-use developments and reducing the need to travel. The new PPS will also encourage the use of more sustainable energy sources, including microgeneration, and Combined Heat and Power ⁴ .
Code for Sustainable Homes	<p>The code is a voluntary initiative, by Government and Industry, to actively promote the transformation of the building industry towards more sustainable practices by requiring buildings that use:</p> <ul style="list-style-type: none"> • Energy resources more efficiently; • Water resources more efficiently; • Material resources more efficiently; and • Practices and materials designed to safeguard occupants' health and well being. <p>The Government have announced that it will strengthen the Code for Sustainable Homes in order to address climate change.</p>
UK Waste Strategy	The Waste Strategy 2000 set out a number of targets to reduce the amount of industrial and commercial waste landfilled.
Government's Strategy for Combined Heat and Power to 2010	Sets out the framework to support the growth of CHP in the UK. Reinforces the 2000 target of at least 10,000MW of Good Quality CHP by 2010.
SEEDA Taking Stock Report	This set out an analysis of the ecological footprint of the south-east.

2.6 Consultation response to Preferred Options Report

A complete response to the representations made to the Core Strategy preferred Options report can be found in the Regulation 28 Statement which forms one of the background documents to the Core Strategy. This can be found on www.ashford.gov.uk/ldf

² Para2.16.7, DTI Energy Review, 2006

³ Para2.16, DTI Energy Review, 2006

⁴ Para2.16.6, DTI Energy Review, 2006

3. Policy approach

- 3.1 The Core Strategy and GADF (Chapter 04.5) set out the context for delivering sustainable communities and the required step change that is needed to deliver high quality design and sustainable development. This context can be seen within the wider sub-regional, regional and national agenda on Sustainable Development, Climate Change, and high quality design. Section 2 sets out these key policy links which provides the evidence base for the policies and the approach set out in CS10. In particular reference is made to PPS1, PPS22, the Draft south East Plan and the Energy Review.
- 3.2 The GADF process highlighted that 'Design and Sustainability' were important issues for the growth of Ashford and that there were high ambitions for Ashford to deliver high quality design and aspire to challenging standards for sustainable construction and design. In addition to the GADF masterplanning exercises a Sustainability Workshop took place which brought together experts in the field of sustainable design and construction and assessed the approach to delivering sustainable development in Ashford.
- 3.3 The detailed approach to setting policies in sustainable design and construction in response to national and regional guidance, the challenge of sustainable development and community aspirations are set out in the GADF, CSPO and Core Strategy Submission document. Three approaches could have been taken forward for the LDF, these were ;
1. *Do nothing approach*
 - Take forward existing design and built environment policies from the Ashford Borough Local Plan 2000 and SPGs into the LDF
 2. *Market led approach*
 - Update policies in line with minimum regional and national policy requirements update Supplementary Planning Documents as necessary.
 3. *Policy and community led approach*
 - Provide more detailed policies/ requirements that challenge and go beyond national and regional guidance in order to meet the aspirations of the community and deliver true sustainable communities.
- 3.4 It was felt that the *policy and community led* approach, building on the experience of other local authorities and best practice guidance to meet the aspirations of the community would be employed, although it was accepted that some elements of a market led approach may be appropriate for some areas of policy.
- 3.5 A 'do nothing' approach was not one which would deal with the numerous sustainability issues of the borough as outlined in the Ashford Capacity Study (2002) and the SEA/SA. It would have made little contribution to tackling the causes and impact of climate change, and fail to match and support the national, regional and community sustainable development agenda.
- 3.6 The policy however, is a significant departure from the current Local Plan. This not only reflects the considerable changes that have been made in planning for sustainable buildings and construction, but also reflects the ambitions and desires of the local community for higher environmental standards, and recent statements from central government about the direction for carbon and environmental standards (See Part 2). The justification for this policy and the scale of that standards applied has a wealth of planning policy guidance and strategy behind it. These are detailed fully in Part 2. Within this policy there are a number of key issues that were raised in previous consultation exercises, and are expected to form part of future representations.
- 3.7 As these policies have been emerging, the policy approach and subsequent standards have been reviewed since they were published in the GADF (April 2005) and subsequent Core Strategy preferred Options (July 2005). The reasons for this will be explained in Part 8. Policy CS10 Sustainable Design and Construction has emerged from the GADF

and Core Strategy Preferred options, and has been amended in light of recent statements by the Government on energy and sustainable developments. The approach taken in CS10 (in combination with the wider Core Strategy policies) is to ensure that the high environmental aspirations were met through the LDF in a way that:

- Ensure a level playing field for developers
- Phased standards that allow for changes in the economic viability of technologies
- Simple quality assured scheme
- Government recognised
- Covers a wide array of sustainability issues
- Flexible for types of development in Ashford.
- Allows local circumstances to be prioritised
- Meets national and regional policy

The Council believes that Policy CS10 has satisfied all the above criteria

3.10 The overarching vision for CS10 is to deliver Zero carbon developments and meet BREEAM/EcoHomes 'Excellent'. The policy approach is set out in the CS Submission document, which states:

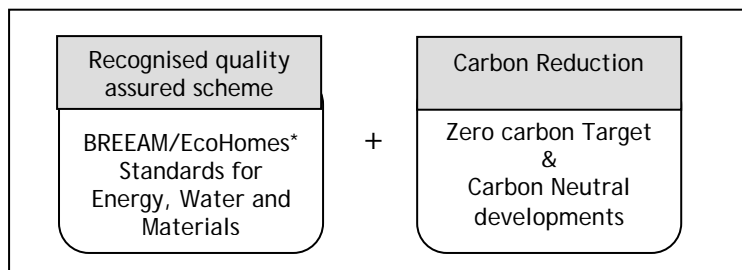
All developments are encouraged to be zero carbon and meet the BREEAM Excellent standard. To achieve this and provide flexibility for developers this policy relies on a combination of:

*A The Building Research Establishment Environmental Assessment Method (BREEAM) standard,
B percentage carbon reduction target through on-site sustainable energy technologies.*

The Council's preferred approach is to deliver zero carbon growth through (A) and (B). However, developments which cannot meet this objective because of economic viability or technological barriers can:

C Through financial contributions or carbon offsetting from residual carbon emissions deliver carbon neutral developments.

3.8 This approach is a combination of two areas of environmental sustainability.



* Or equivalent such as the forthcoming Code for Sustainable Homes

3.9 Policy CS10 uses a combination of a 'zero carbon' aspiration and an environmental assessment to ensure that carbon is reduced and wider environmental features such as water, materials and biodiversity are incorporated. The 'zero carbon' aspiration puts into policy the application of the energy hierarchy. Table 1 below highlights how the energy hierarchy can be applied against policy CS10.

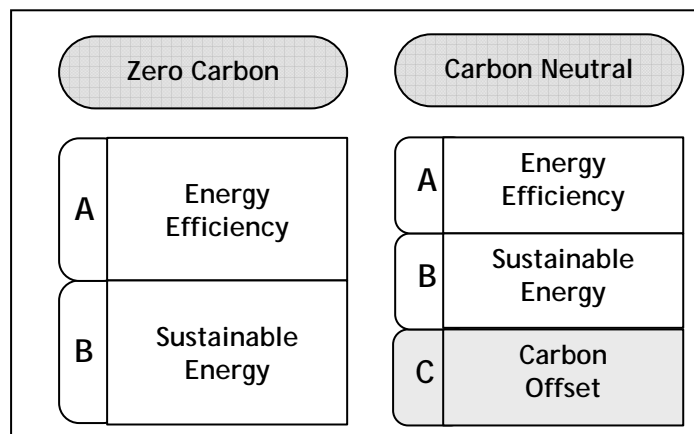
Table 1 - The Ashford Energy (carbon) Hierarchy

Ashford Energy (carbon) Hierarchy			
1	Reduce the need for energy		CS9 - Design Quality
2	Maximise energy efficiency		CS10 A EcoHomes/BREEAM
3	Supply energy from renewable sources		CS10 B Carbon Reduction policy
4	Supply energy efficiently		CS10 A & B
=	Zero Carbon Developments		
5	Carbon compensation		CS10 C Carbon Offsetting
=	Carbon Neutral Development*		

*In this table we do not take into account the carbon emissions as a result of transport or the carbon emissions from embodied energy, it is purely from the energy use of the building.

3.10 The overall aim is to move towards Zero Carbon, CS10 details how, if this cannot be achieved 'Carbon Neutral Developments' can be delivered. A carbon neutral development means that no net carbon or carbon dioxide emissions from a building or activity. There may still be emissions but these are balanced by savings in emissions elsewhere, through carbon offsetting. A zero carbon development is one that achieves zero net carbon emissions from energy use on site, on an annual basis.

3.11 Figure 1 below gives a very simple graphical representation of the policy approach to carbon.



The next sections will provide more detail on the approach taken to (A) , (B) and (C) in Policy CS10.

4 POLICY APPROACH A: BREEAM/EcoHomes

4.1 The second part of Policy CS10 (recognised quality assured scheme) ensures that wider environmental impacts and features are considered to deliver wider sustainability benefits from developments. It employs the use of the EcoHomes/BREEAM scheme to capture a whole array of environmental performance measures.

4.2 The Capacity Study 2001, Community Strategy, GADF (2005) and SEA (2005) all highlighted a wide array of issues which new developments would need to incorporate to deliver sustainable communities. For instance the Capacity Study promoted energy, water and neutral development, while the SEA suggested the use of BREEAM/EcoHomes and renewable energy (see Section 2). This was reflected in the GADF (Section 04.5) and Core Strategy Preferred Options Report (2005). Policy CS10 takes forward the BREEAM/EcoHomes scheme.

4.3 The EcoHomes/BREEAM approach has been recognised and supported by the Government as useful tools in ensuring buildings are built to certain environmental performance. The Government in its pursuit for a Code for Sustainable Building, now a Code for Sustainable Homes recognised the advantages and success of the EcoHomes/BREEAM scheme and has based the CSH around the BRE scheme. The benefits of an approach based on EcoHomes/BREEAM are as follows:

- It is an independent quality assured scheme
- It is reviewed in line with changes to building regulations
- It covers holistically a wide array of sustainable features within one rating
- It is a tried and tested independent quality assured scheme.
- It acts as a label advertising a commitment to sustainability
- Developments standards are judged on a level playing field
- Reduced running costs through energy and water efficiency
- Affordable warmth for residents
- Support a healthy and comfortable internal environment
- Reduced maintenance costs
- Increase sustainable behaviour

4.4 The holistic approach taken by the BREEAM/EcoHomes scheme will also help developments reduce their ecological footprint, which is supported by the Draft RSS Policy CC2. BREEAM/EcoHomes has slowly begun to be utilised in both planning policy and through planning conditions. Policy examples include Tower Hamlets, Reading, and Milton Keynes and it has recently been adopted in Greenwich⁵.

4.5 The BREEAM Scheme covers eight categories in total and scores them against a 4 different ratings given below :-

- Management
- Energy
- Water
- Land Use & Ecology
- Health & Well being
- Transport
- Materials
- Pollution

⁵ Policy D1 - Adopted Unitary Development Plan 2006

BREEAM and EcoHomes scoring		
	BREEAM score	EcoHomes Score
Unclassified	< 25	< 36
Pass	≥ 25 - <40	≥ 36 - < 48
Good	≥ 40 - < 55	≥ 48 - < 60
Very Good	≥ 55 - < 70	≥ 60 - < 70
Excellent	≥ 70	≥ 70

Core Resource Priorities - Energy, Water, Waste and Materials

- 4.6 The second part of this approach was to ensure that those core resource issues identified as essential for Ashford's growth in the Capacity Study (2001), Community Strategy (2004), GADF (2005) and SEA (2005) were delivered through the LDF. The case for why these should be considered in detail is identified in those documents highlighted above and in Regional policy (Draft RSS).
- 4.7 In the Core Strategy Preferred Options report specific standards for these issues were set. It was decided that to simplify this table that instead of specific standards for each of the issues, the BREEAM/EcoHomes 'ratings' (Excellent, Very Good and Pass) would be used to set the standards required, it also ensured that the implementation and assessment of meeting these standards is built in to the overall BREEAM/EcoHomes standard.
- 4.8 For each of the Core Resource issues there were broadly three approaches which could be taken to setting the standards. These were
- *Option 1. Baseline 'do nothing' approach* - Rely on applicants to pick up energy, water and materials credits voluntarily. This risks other non-strategic credits being picked up to achieve an overall higher score. This would not meet national guidance and SEA targets or the aspirations to tackle these core resource issues, especially for energy and water. This may lead to a net increase water demand and carbon dioxide levels.
 - *Option 2. 'Very Good' or 'Excellent'* - By setting a 'Very Good' or 'Excellent' target the applicant will have to meet a number of credits defined under the system for energy, water and materials. This ensures that these core resources issues are tackled consistently with the BREEAM/EcoHomes scheme and helps to deliver regional and local targets. This is supported in regional policy.
 - *Option 3 'Maximum'* - A 'Maximum' level could be set for each of the resources issues. This would ensure that all issues are tackled comprehensively, however it may impose an extra burden on developers above that which will be required for meeting the overall BREEAM/EcoHomes scheme and carbon reduction.
- 4.9 As a result the tables presented in CS10 reflect a combination between Option 2 and Option 3. The standards were set at a level that would balance the need to tackle these core issues, their priority in Ashford, the community aspirations and the economic and technical viability of meeting these standards. Further explanation of the 'undue burden on developers' is presented in Part 8.

Ashford LDF 2007 – 2014					
		(CS3) Town Centre and (CS4) Urban Sites	(CS5) Urban Extensions	(CS6) Tenterden, the Villages, and (CS7) The Countryside	Existing and refurbishment
(A)	BREEAM/EcoHomes	Very Good	Excellent	Good	Very Good
	Energy Credits	Excellent	Excellent	Excellent	Excellent
	Water Credits	Maximum	Maximum	Excellent	Excellent
	Materials Credits	Excellent	Excellent	Very Good	Very Good
Ashford LDF 2015 - 2021					
		(CS3) Town Centre & (CS4) Brownfield Urban Sites	(CS5) Urban Extensions & (CS4) Greenfield Urban Sites	(CS6) Tenterden, the Villages, and (CS7) The Countryside	Existing and refurbishment
(A)	BREEAM/EcoHomes	Very Good	Excellent	Very Good	Very Good
	Energy Credits	Excellent	Excellent	Excellent	Excellent
	Water Credits	Maximum	Maximum	Excellent	Excellent
	Materials Credits	Excellent	Excellent	Very Good	Excellent
(B)	Minimum Carbon Dioxide reduction				
		30%	40%	20%	20%

4.9 Key points:

- Water - Due to the critical nature of supply and management of water in Ashford the 'maximum' credits were set for the Town Centre, Urban Sites and Urban Extensions. This would complement regional and local water efficiency targets and Policy CS20 Sustainable Drainage in reducing water demand in the growth area which is highly characterised by flooding. This supports the findings of the IWMS for water demand management and sustainable drainage.
- Energy - Due to the wide scope of credits sought for 'Energy' under the BREEAM/EcoHomes scheme, and the close links with (B) Carbon reduction through sustainable energy, the 'Excellent' rating was set across the board. This ensures that through the BREEAM/EcoHomes scheme the energy hierarchy is consistently applied by making developments as energy efficiency as possible. It also supports the overall ambition for Zero Carbon/Carbon Neutral could be achieved. This approach is supported by the SEA targets for energy efficiency above building regulations and regional policy for energy efficiency in new developments.

4.10 *Other issues*

Materials and Waste

Waste and materials are highlighted as an important issue for Ashford's growth. The approach to incorporate this into policy through the BREEAM/EcoHomes scheme has been taken forward. However, a selection of the issues within materials and waste are not covered by BREEAM/EcoHomes. These are:

Covered by BREEAM/EcoHomes under 'Materials'

- Sustainable sourcing of materials
- The provision of recycling/sorting facilities
- The environmental impact of materials
- The management of construction waste (covered under 'management')

Not covered by BREEAM/EcoHomes under 'Materials'

- The local sourcing of materials
- The use of recycled materials

For those issues not covered by 'Materials' under BREEAM/EcoHomes it was felt that a separate core strategy would not be consistent with the simple approach being proposed by using the BREEAM scheme. It was decided that the SEEDA Sustainability Checklist, the Kent Design Guide (including Annexes) and further Supplementary Planning Documents would be sufficient to pick up the remaining areas under 'Materials and Waste'. In addition, the Council would encourage these other areas to be considered in the design of new developments.

Renewable Energy

The BREEAM/EcoHomes 2006 scheme also includes 3 credits for on-site renewable energy. These credits will be met through the application of Approach B: Carbon Reduction target.

- 4.11 To meet these standards for each of the Core Resource Issues a number of technologies and design features can be employed. It is the Council's intention to prepare a Supplementary Planning Document (SPD) on how to meet these standards. However, there is a wealth of information already available to illustrate how applicants can meet these targets; these can be found in Appendix B. A summary of these technologies and design features include:

Energy

Energy Efficiency

- Highly insulated facades
- Low-energy lights and appliances
- Heat recovery
- Natural ventilation
- Maximising solar gain

Sustainable Energy

- Combined Heat and power (CHP)
- Wind
- Biomass and biofuel
- Photovoltaic (PV) panels
- Solar thermal hot water collectors
- Energy from waste
- Ground Source Heat Pumps
- Wave and Tidal Power
- Micro/small scale technologies
- Fuel cells
- Insulation

Please see Appendix C for more information

Water

- Showers
- Taps (internal)
- Outdoor water use (water butts and taps)
- Toilets
- Appliances
- Rainwater/greywater systems

Please see the Kent Design Guide Appendix - Water Efficient Homes for more information

Materials and Waste

- Procurement of materials with a minimum environmental impact - through the BRE 'A' Rated scheme.
- Providing for recycling/sorting facilities on site and within the design of individual buildings
- Procurement of materials which are sustainably sourced
- Use of recycled materials and locally sourced materials

Summary of the approach to Core Resource Issues

4.11 The need to tackle these core resources issues in a more co-ordinated way through the design of new developments is set out in the evidence base (Section 2). The approach taken to these issues in the Core Strategy has sought to enable them to be consistently delivered within the BREEAM/EcoHomes scheme. A summary of the implications for requiring 'Excellent' and 'Very Good' in these standards is set out below. Please note that standards do vary for the spatial areas of the LDF and the 'Excellent' and 'Very Good' standards is only used as an indication.

Table 1. Implications for CS10 policy standards for Energy , Water and Materials

EcoHomes Calculation Table (2006 credits)		EcoHomes	Minimum Credits	
		Credits Available	Excellent	Very Good
EcoHomes Ratings				
	Pass	36% +		
	Good	48% +		
	Very Good	60% +		
	Excellent	70% +		
Energy		24	16	14
Ene1	Dwelling Emission Rate	15		
Ene2	Building Fabric	2		
Ene3	Drying Space	1		
Ene4	Eco-Labelled Goods	2		
Ene5	Internal Lighting	2		
Ene6	Internal Lighting	2		
Materials		27	18	16
Mat1	Environmental Impact of Materials	16		
Mat2	Responsible Sourcing of Materials : Basic Building Elements	2		
Mat3	Responsible sourcing of Materials : Finishing Elements	3		
Mat 4	Recycling facilities	6		
Water		6	4	2
Wat 1	Internal Potable Water Use	5		
Wat 2	External Potable Water Use	1		
Total for Energy, Water , Waste		57	38	32
Total EcoHomes Credits available		107	75	64
Pol 4	Renewable and Low Emission Energy Source	3		

4.12 Phasing, scale and area

The reasons for setting different standards over time, scale and area were provided in the Core Strategy. In addition to that provided in the Core Strategy the level which were set were also reviewed against the Cyril Swett analysis of BREEAM/EcoHomes against different location types, and consultation with relevant stakeholders. The table below shows the % increase in capital costs to achieve certain BREEAM/EcoHomes ratings. The standards set out in CS10 are therefore a balance between the increase in capital costs against wider objectives and aspirations.

Table 2 Cyril Swett analysis of increase in capital costs for EcoHomes

Table 1 % increase in capital costs to achieve a Good, Very Good and Excellent EcoHomes rating in 3 locations				
Location	% increase in capital cost to achieve a Pass/Good/Very Good/Excellent			
	Pass	Good	Very Good	Excellent
Poor	0.1	0.9	3.1	—
Typical	0	0.4	1.7	6.9
Good	0	0.3	1.3	4.2

In Ashford, the Town Centre and Urban Sites which have a 'Good' location can be justified to have a Very Good level set, whilst developments on Greenfield land (i.e. the New Urban Extensions) which will have an inherently 'Good' location credits as demonstrated in the GADF can be justified to have a higher Very Good or Excellent level set. The GADF masterplan which is built on the concept of compact development and subsequent policies on sustainable transport and mixed-use enables locations to achieve locations credits more efficiently. Locations in the rural area which will have 'POOR' location credits and may have less potential to gain credits for the ecological value of the site will therefore need to have a lower level set to compensate for this location, but still set challenging targets.

For both Water and Materials the lower standard was set for Tenterden, the Villages and the Countryside, and Existing and refurbishments. This reflected the extra costs imposed for the types of development expected in these areas and the extra burden in obtaining the fourth credit for rainwater/greywater recycling on smaller schemes in the rural areas.

Further guidance and references (see Appendix D)

5 POLICY APPROACH B: CARBON DIOXIDE REDUCTION THROUGH SUSTAINABLE ENRRGY

5.1 *The policy approach*

Reducing carbon dioxide emissions is set out in the Capacity Study (2001), the GADF (2005) and the SEA (2005). There is also considerable effort at the national and regional level to reduce the amount of carbon emissions emitted through new developments. The recent Energy Review (2006) and statements by the DCLG all indicate a shift to reducing further carbon emissions from new developments in the pursuit of low carbon and carbon neutral developments - see Appendix B.

The need for renewable energy was highlighted in the Capacity Study, GADF and Preferred Options Report, although no target was set. A review was carried out on current Government guidance (PPS1 and PPS22), further studies⁶, recent Government statements (Energy Review, DCLG Press Release) and representations on the need for an on-site target. This led to the inclusion in the submitted Core Strategy policy of a requirement for on-site sustainable energy generation.

This was supported by a study into the Sustainable Energy Opportunities for Ashford, commissioned by ABC and GOSE. The study indicated the potential application for various sustainable energy technologies for a number of situations. Further research was collected in looking at the cost implications for meeting such standards for on-site renewable energy. The Core Strategy target is based on an analysis of all these variables.

For the purposes of this report the distinction between Renewable Energy and Sustainable Energy is set out as follows:

Renewable Energy: Non-fossil fuel technologies, such as photovoltaics and wind.

Sustainable Energy: Efficient and renewable supply of energy from a range of low and zero carbon technologies. This can include Combined Heat and Power and Bio fuels.

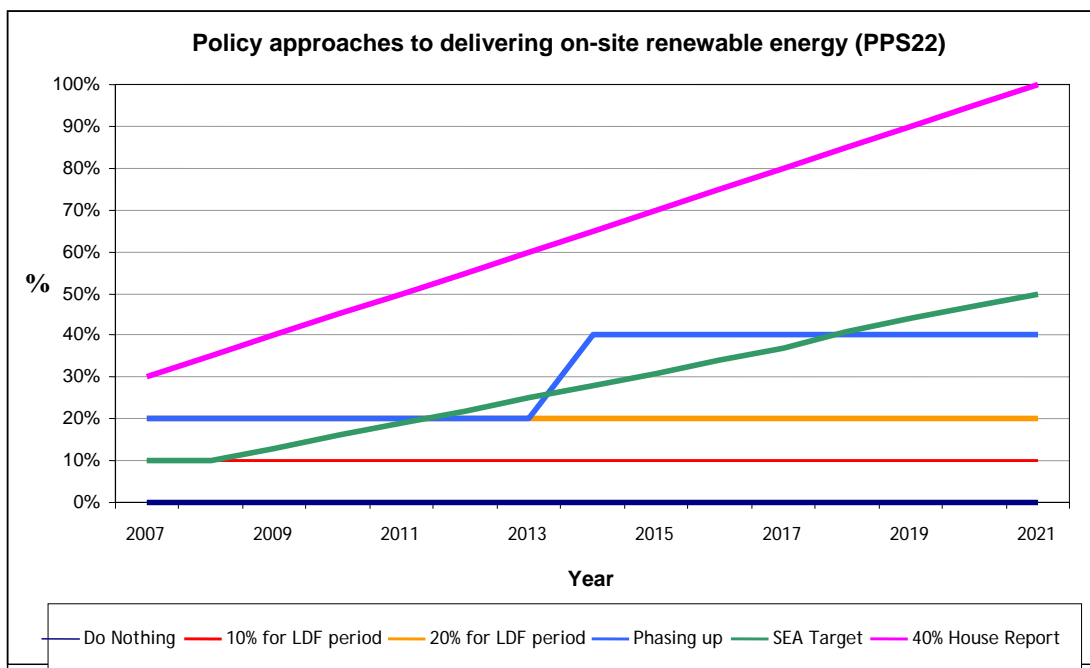
A number of approaches were considered when looking at incorporating a renewable energy on-site policy. These are summarised as follow:

- **Approach 1: 'Do-nothing'** - This approach will not set an on-site policy. This approach is not an option as it does not follow national guidance as set out in PPS22.
- **Approach 2: Baseline** - The 'market' approach by using current best practice and policy to set a minimum 10% policy for on-site renewable energy generation, and rely on EcoHomes/BREEAM to pick up credits for renewable energy generation (Pol3)
- **Approach 3: Best Practice** - Recent experience and research has indicated that many authorities will be setting policies that go beyond the current norm of 10% as led by the London Borough of Merton.
- **Approach 4: Ambitious** - As indicated by the Energy Review and the Government's approach to renewable energy (PPS22) the fourth option would be to set ambitious targets which are commensurate with the challenge of climate change, the aspirations of the community and the increase in the capacity of renewable energy in Ashford. This would go beyond current and

⁶ Opportunities for Sustainable Energy in Ashford

best practice to reflect the shift towards higher targets. The scales would be set dependent on the type of development likely to come forward and help move towards Zero Carbon developments.

- **Approach 5: Strategic Environmental Assessment Objective** - The SEA suggested that by 2020, 50% of requirements should be provided by renewable energy (SEA 5.1.2). To meet this target, Ashford would have to set a base percentage requirement of 10%, which would need to increase year on year by 5% to reach the 2020 target.
- **Approach 6: 40% House Report** - The 40% House Report by Oxford University indicated that in order to meet the UK carbon emissions target, new build developments should deliver 100% on-site renewable energy by 2020. This approach would require a ratcheting up of standards every year by 5% from a base of 30%.



The graph above illustrates how these 6 approaches would transpire over the LDF period to 2021.

The aspirations as set out in the Capacity Report (2001) and in the GADF all indicate the need for a challenging standard for on-site renewable energy in order to move towards Zero Carbon developments. As a result the Core Strategy takes forward a variation of Approach 4 by setting a higher ambitious target which is reflective of the type of development likely to come forward as part of the 5 spatial areas of the Borough.

These standards will be reviewed as the Local Development Framework develops and through the Annual Monitoring Report (AMR) in order to reflect the relevant policy and best practice changes in delivering sustainable energy on new developments. The approach taken forward puts new developments on course to reach the national 60% target by 2050 as the policies for the LDF period will stimulate the local market for sustainable energy, particularly in biomass. It also puts it on course to meet the SEA target by 2021 at the end of the LDF period.

The third approach to Policy CS10 which is detailed in section 6 will indicate how developments can reduce their Carbon Dioxide emissions further to 100% by delivering Carbon Neutral Developments.

5.2 Carbon Dioxide emissions versus predicted energy requirements

The approach taken in the Core Strategy is to frame a policy in terms of carbon dioxide emissions rather than predicted energy requirements. By setting a Carbon Dioxide emissions target this will:

- Bring policy in line with national policy, targets and regulations (e.g. building regulations) that are moving towards a reduction in carbon dioxide emissions.
- It also ensures that implementation of a percentage renewable energy target will take full account of carbon dioxide pollution from different fuel types and thus maximise reduction in the carbon dioxide burden.
- It brings policy in line with EcoHomes/BREEAM which includes credits for Carbon Dioxide reduction and Renewable Energy. These calculations will already be calculated as part of EcoHomes/BREEAM assessment.
- It takes into account the provision of heat to the development.
- Brings policy in line with SEA/SA requirements to reduce Carbon Dioxide emissions by 20% by 2021.
- Complements the Zero Carbon and Carbon Neutrality approach.
- It can also aid wider monitoring of carbon emissions in the Borough.

5.3 Carbon Reduction targets

Policy CS10 sets carbon reduction targets through sustainable energy across the five spatial areas as part of the Core Strategy (CS3-7). The standards were set at a level that would balance the need to tackle these core issues, their priority in Ashford, the community aspirations and the economic and technical viability of meeting these standards. They reflect the justification for the approach taken to setting the BREEAM/EcoHomes standards (see 4.19). In addition, national research and guidance based on the '10% rule' first championed by the London Borough of Merton has enabled an assessment on the percentages set for Ashford.

It is important to note that the composite percentages set across the 6 spatial areas complement the move towards the SEA targets (as indicated in Figure 1). It is generally felt that the baseline championed by Merton of 10% is a pure minimum. The South East Plan support this as a minimum but encourages the setting of standards beyond this, furthermore the Energy Review 2006 indicates that the Government is looking to local planning authorities to set ambitious targets. The move beyond the 10% is already gathering pace across other local authorities.

(B) Minimum CO2 reduction	2007 - 2014	2015 - 2021	Justification
(CS3) Town Centre and Brownfield (CS4) Urban Sites	20%	30%	The GADF outlined a masterplan based on compact growth. As a result a large proportion of the development in the LDF will come forward in the next few years within the Town Centre. The Council recognises that in some circumstances brownfield land carries additional cost. However, by requiring a 20% reduction at the outset the market and skills to deliver sustainable energy technologies and infrastructure can be stimulated through the town centre development. This can have a wider effect on achieving the higher percentages in the other areas.
(CS5) Urban Extensions	30%	40%	As indicated by the GADF and SEA, it is far better to build in sustainable development features to new build

and Greenfield (CS4) Urban sites			especially on 'greenfield' land. The new urban extensions have the greatest potential to build in sustainable energy infrastructure when designing the new urban extensions. As a result a higher percentage is required.
(CS6) Tenterden, the Villages, and (CS7) The Countryside	15%	20%	The Council recognises that for developments in these areas the additional costs for the size of schemes which are likely to come forward may make a higher percentage economically unviable at this time.
Existing and refurbishment	15%	20%	The need to tackle the existing stock of development is an important part of reducing carbon dioxide emissions across the borough. By incorporating these developments we can start to tackle this issue, especially as Ashford expects to see a growth in this market. The carbon footprint of the borough can then be reduced.

Further explanation of the 'undue burden on developers' is presented in Part 8.

5.4 *Implementation*

This policy does not specify which types of sustainable energy producing equipment to be incorporated. It is intended that applicants would consider the full range of opportunities and choose the most appropriate solution. This is likely to include a mix of sustainable energy technologies to meet the carbon reduction target. Further guidance will set out how developers can meet their carbon reduction target in SPD, this can include:

- Combined Heat and Power (CHP)
- Wind
- Biomass and biofuel
- Photovoltaic (PV panels)
- Solar thermal hot water collectors
- Energy from waste
- Ground source heat pumps (GSHP)
- Wave and tidal power
- Micro/small scale hydroelectric
- Fuel cells

Detailed guidance on the above sustainable energy technologies and related planning issues can be found in:-

- Planning for Renewable Energy : A Companion Guide to PPS22
- Town & Country Planning Association (TCPA) Sustainable Energy By Design
- London Renewables Toolkit
- Appendix C

5.5 *A Route Map to meeting your Carbon Dioxide Emission targets*

The following route map has been adapted from the London Renewables 'Integrating renewable energy into new developments: Toolkit for planners, developers and consultants' (2004). A more detailed note will be prepared as part of the Sustainable Design and Construction SPD.

The use of a route map is firstly to demonstrate how the carbon reduction targets have been met, but it also serves to assess the feasibility of sustainable energy proposals and how to include them into development proposals.

The following steps apply at both the outline and detailed planning stages but developers are more likely to use the provided benchmark figures at outline design when they know less detail about their buildings.

- A. Refer to the Core Strategy (and Supplementary Planning Document [when published]) for the specific Carbon Reduction target under approach (B) of Policy CS10.*
- B. Draw up a shortlist of sustainable energy technologies to study*
- C. Calculate the annual predicted energy demand of the site in kWh for each fuel after the application of suitable energy efficiency measures and technologies [see also the relevant BREEAM/EcoHomes Energy Credits required in Policy CS10 approach (A)]*
- D. Calculate the baseline carbon emissions of the development, i.e. the carbon emissions arising from the predicted use of energy in all the buildings, structure and infrastructure in the proposed development.*
- E. Calculate the contribution of each proposed sustainable energy technology to reducing the baseline carbon emissions of the development.*
- F. Calculate the costs of technically feasible sustainable energy technologies*
- G. Assess the benefits of technically feasible sustainable energy technologies.*
- H. Calculate the reduction of baseline carbon emissions for the development achieved by applying the proposed sustainable energy technologies.*
- I. Include sustainable energy technologies in the planning application, and provide the evidence that the technologies have met, or exceeded the Core Strategy Policy CS10 requirements.*

Planners will be expected to follow a similar process to establish

- A. Baseline carbon emissions*
- B. The target carbon emissions reduction for the site*
- C. The total carbon emissions reduction achieved*
- D. Compare C with B to determine whether the policy has been met*

The London Renewables Toolkit (page 92 and Section 3) and Creative Environmental Networks (CEN) have provided a way in which developers can draw up and assess against a list of sustainable energy technologies to meet certain targets. They also highlight the key issues applicants must consider when looking at different sustainable energy technologies.

Further guidance will be prepared in the Sustainable Design and Construction SPD which will detail how the route map will integrate with the required BREEAM/EcoHomes standard.

5.6 Further guidance and references

Energy Savings Trust 'Meeting the 10 per cent target for renewable energy in housing - a guide for developers and planners (2006)

Milton Keynes Carbon Offset study, 2005 (National Energy Foundation)

London Renewables 'Integrating renewable energy into new developments: Toolkit for planners, developers and consultants' (2004)

Adapting to climate change a checklist for developments: Guidance on designing developments in a changing climate, (South East Climate Change partnership) 2005.

Town and Country Planning Association 'Sustainable Energy By Design' (2005)

Kent Design Guide (2006)

Planning Policy Statement 22: Renewable Energy (ODPM)

Planning Policy Statement 22: Renewable Energy; A Companion Guide (ODPM)

Adapting to Climate Change: A Checklist for Development (Three Regions Climate Change Group) 2005

Counting consumption (WWF) 2006

6 POLICY APPROACH C: CARBON NEUTRAL DEVELOPMENTS

6.1 *The policy approach*

The approach to delivering carbon neutral developments is set out in the Core Strategy; further detail is given in Section 4. This chapter sets out the evidence base and justification for carbon offsetting and how it will be implemented and monitored. A large majority of the research for this policy has been provided by the Milton Keynes Carbon Offset Study (2005) and information received from the Energy Savings Trust. The Council will take the comprehensive approach taken by Milton Keynes forward and provide further guidance into delivering this policy in Ashford.

It is important to reiterate that Approach C will only apply when developments cannot meet the overall objective of Zero Carbon developments.

There are a number of reasons why a carbon neutral policy should be adopted as part of the Core Strategy, these include:

- Ensures that the LDF contributes to global sustainability by addressing the causes and potential impacts of climate change (PPS1, para 13 ii)
- Puts into place a framework to deliver carbon neutral developments as outlined in the Energy Review 2006
- Implements RPG9 and RSS Draft Policy CC1, CC2, and EN 4
- Delivers the Halcrow Capacity Study 2001 management aim for Energy Efficiency and to be Energy neutral in order to facilitate growth in Ashford.
- Contributes to the wider carbon reduction target in the SEA/SA.
- Helps to contribute to the national carbon dioxide emissions reduction agenda
- It implements a strengthening of policies that will mitigate and reduce greenhouse gas emissions, as called for in the ODPM's Planning response to climate change.
- Creates a fund to reduce the carbon emissions off-site.
- Can help tackle wider issues of fuel poverty and energy efficiency in existing homes.
- Benefits can include assisting with fuel poverty, providing local jobs, retaining funding the local economy and developing expertise and a technology base for the new low Carbon Technologies.

6.2 Carbon Offsetting

This is a relatively new area of policy development which has been led by another growth area, Milton Keynes. This approach has already been approved in 2005 when Milton Keynes put forward Policy D4 of their Unitary Development Plan. For a summary of this approach which will be taken forward by Ashford please see the Energy savings Trust.

The Milton Keynes Study (2005) provides the basis for the concept of carbon neutrality and how it can be applied. Although the study does relate to a different area the issues it raises and assumptions made are generic and are not location specific. The Council will prepare further guidance and work with stakeholders to look at the implementation of the carbon offset fund. This section has therefore taken from the Milton Keynes Carbon Offset Study (2005), a brief extract is given below:

The current schemes for energy rating and the new Carbon Index as applied in the latest version of Building Regulations are inadequate when contemplating or aiming for Carbon Neutral emission houses.

Carbon offsets (or the payment for energy savings in older housing stock in the city, large scale renewables or tree planting) could provide a more cost effective way of limiting overall Carbon emissions for the City. Again coupled to existing good energy efficiency practise Carbon Offsets could achieve Carbon Neutral emissions associated with heating for a few hundred pounds per house.

Milton Keynes Carbon Offset Study (2005)

Carbon offsetting can take 3 forms, each of which will be assessed in the Ashford context. These are:

1. Energy Efficiency schemes in existing households

A recent publication by the Sustainable Development commission has highlighted the inefficiencies of existing homes, and the opportunities in reducing carbon emissions by tackling the existing stock. By applying the carbon offset fund to this area the Borough can reduce its carbon emissions further.

2. Strategic renewable energy infrastructure

On-site renewable energy infrastructure is already promoted through PPS22 and will be delivered through Approach B: Carbon Reduction target. Where it is not viable to deliver further carbon reductions through on-site renewable energy, strategic site infrastructure can be provided. This can serve more than one development and/or existing developments. The funding from the carbon offset fund can help to provide strategic sustainable energy infrastructure and supplement the approach taken in Policy CS8 Infrastructure contributions. This could include district wide community heating systems, CHP and large wind turbines.

3. Tree planting

Tree planting offers an opportunity to provide a fund for strategic tree planting as part of Ashford's Blue and Green Grid. Further research will be investigated to look at the sequestration opportunities for different types of vegetation. This can also support Draft RSS policy CC2 in promoting land for carbon sinks.

The Council is also exploring other means of offsetting carbon in addition to those highlighted above, for example through the waste stream.

6.3 The Carbon Offset Fund Management

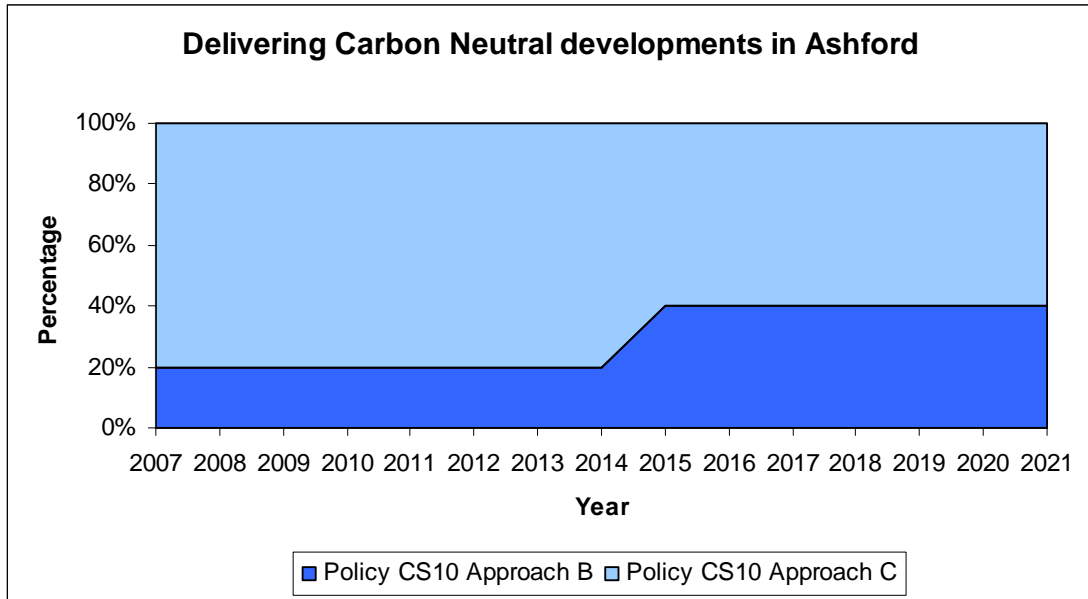
The Milton Keynes study highlighted how a carbon offset fund could be managed and implemented; it also details potential costs of offsetting carbon in comparison to energy efficiency and renewable energy measures.

The actual cost of achieving Carbon Neutral emission status for a new energy efficient home (assuming it is only emitting one tonne of Carbon Dioxide/annum) could be as little as £100 (which works out at £5/tonne over 20 years). This will depend on the Carbon Offset available and the amount or proportion of the investment required to trigger the implementation of the measure resulting in the one tonne Carbon Dioxide saving. A range of £100 to £500 per house is likely as the cost for achieving Carbon Neutral status.

Milton Keynes Offset Study 2005

6.4 Delivering Carbon Neutral Developments

Section 5 highlighted the role of carbon dioxide reduction through sustainable energy in reducing carbon emissions from new developments. This took forward the phasing up approach which is represented in the dark blue below. The light blue highlights how the implementation of the policy approach (C) would deliver carbon neutral developments. However, this must also be balanced against Building Regulation standards which are likely to increase periodically over the lifetime of the LDF.



6.5 Further guidance and references

DTI Our Energy Future: Energy Review (2006)

DCLG Press Release 'Speech to the Green Alliance'

Energy Savings Trust: Milton Keynes Carbon Neutrality Policy

Milton Keynes 'A Study into Carbon Offset'

Sustainable Development Commission 'Taking Stock' Report

London Energy partnership/London Renewables 'Towards Zero Carbon Developments: Supportive Information for Boroughs (2006)

Taking Stock, Sustainable Development Commission (2006)

7 Key Changes from Core Strategy Preferred Options Report (CSPO)

Throughout the masterplanning process and preparation of LDF policies a number of changes have occurred, many of which are in a response to a change in government guidance or responses made as part of consultation. A summary of these key changes are outlined below (The response to comments received as part of the Preferred Options consultation can be found in the Regulation 28 Statement).

The approach and overall objectives for sustainable construction and resource use has not changed from the GADF. However, on p.75 of the GADF a table of standards was proposed which looked at the areas of development, the phasing of standards, different levels of standards, EcoHomes/BREEAM standards and prescriptive standards for energy, water, waste and materials. This was incorporated into the Core Strategy Preferred Options report, and further supported by the SEA (Part 5). The SEA/SA supported these standards in delivering sustainable developments in Ashford.

The GADF and Core Strategy Preferred Options (CSPO) report approach to delivering higher sustainable design and construction standards has been reviewed in light of the representations received in July/August 2005. The GADF/CSPO sustainability standards table was a very prescriptive and complex table. The Core Strategy submission document reviewed these standards and how they were presented, and through consultation with key stakeholders put forward a simpler clearly defined standards table. While the same approach was taken to the submission document they overall key change was the shift towards a carbon focused policy through carbon neutrality.

The reasons for this change were as follows:

- 1) Building Regulations and BREEAM/EcoHomes have been updated since the table of standards were first published.
- 2) The prescriptive standards and nomenclature for issues such as water and energy were not in line with those required as part of an EcoHomes/BREEAM assessment.
- 3) Following on from (2) this would place an extra burden on applicants to provide the information to justify meeting the targets, and also would impose resource implications for the Council in receiving, testing and monitoring those targets which are outside of EcoHomes/BREEAM.
- 4) The phasing of the standards needs to reflect the reviewed timescale of the LDF.
- 5) Increasing awareness and support from members on the design and sustainability agenda.
- 6) The table was complex and difficult to understand.
- 7) Studies exploring the opportunities for sustainable energy in Ashford were published.
- 8) Recent government statements in the Energy Review 2006, DCLG Speech to the Green Alliance and an indication to prepare a PPS on Climate change.
- 9) The availability of further guidance and detail on a Carbon Neutral Policy and its adoption by Milton Keynes in their Unitary Development Plan in December 2005.
- 10) Best practice and flagship schemes and policies.
- 11) A greater awareness by officers and members on the setting policies for Sustainable Design and Construction and the implementation of them.
- 12) A Biomass study was carried out for key projects in Ashford's growth, and the development of the Biomass market in and around Ashford has grown.

8 Analysis of CS10 Implications

8.1 Implications of CS10

It is often the case that the adoption of higher sustainable design and construction standards incurs substantial additional costs. Evidence collected by the BRE, Cyril Sweett, Housing Corporation, English Partnerships, the Environment Agency, and case study examples contradicts this assumption. The Government have highlighted the importance of increasing the standards for new developments to compliment the Sustainable Communities plan and wider agenda on Climate Change.

As indicated above the evidence base for the various issues considered in CS10 is pepper potted across numerous national and regional guidance documents. However within PPS22 it states:

Para 4.14 In preparing policies in relation to on-site generation, local planning authorities should take into account the following considerations:

- *Policies should not place undue burden on developers: local authorities should be mindful of the level of development pressure in their area in setting generation targets.*

Consideration of the 'undue burden' on developers has been integrated into the policy making process for CS10. In response to the question of the additional build costs, several pieces of evidence have been collected. These include:

- Putting a Price on Sustainability, BRE Trust and Cyril Sweett, 2005
- London Renewables Toolkit , London Renewables
- University of Oxford, 40% House (2005)
- Sustainable homes - the financial and environmental benefits, Environment Agency, 2005
- Resource Savings and EcoHomes, RSPB Discussion Paper, 2005.
- EcoHomes Achieving Very Good, Sustainable Homes and the Housing Corporation, 2006
- The costs of greening development (DRAFT), English Partnerships.
- EcoHomes Costings, Sustainable Homes, 2002
- Partial Regulatory Impact Assessment for Building Regulations 2006
- Estimating the Social Cost of Carbon Emissions, Government Economic Service Paper No 140
- One Planet Living in the Thames Gateway, WWF, 2003
- Enabling One Plant Living in the Thames Gateway, Bioregional Development Group, 2004

8.2 The undue burden on developers

Planning policy in PPS22 highlights the question of 'undue burden' on developers in respect of renewable energy. As policy CS10 takes a holistic approach in which renewable energy is just one part of, the undue burden question can be widened to include these covered by BREEAM/EcoHomes, however the case for BREEAM/EcoHomes has been made in section 4.

The London Renewables 'Towards Zero carbon developments' provides a detailed and comprehensive answer to this question in terms of delivering carbon emission reductions on new developments. The following is an extract from this document.

Legality

The issue here is whether or not a policy requirement to have a zero or low carbon development places an “undue burden” on a developer, primarily in terms of additional build cost. The local authority will need to feel that they have a secure legal footing for placing such a requirement on a site that would be sufficiently robust to defend should planning permission be refused and a developer go to appeal.

This security must not only come from policies and statements, but also in the form of assurances by regional and national politicians and inspectors that, in determining planning applications, carbon reduction issues are paramount. To justify these policies, boroughs will need to refer to the evidence base that supports them and to relevant government guidance. This guidance is continually evolving and strengthening. Currently, key documents to refer to in this regard include the London Plan, The Mayor’s Energy Strategy, PPS1, PPS22, SPG on Sustainable Design and Construction and the London Renewables Toolkit (see Section 1.6).

The new Local Development Framework, with its specific focus on Statements of Community Involvement and the community planning approach means that public perception and support should be a key issue in formulating planning policies. Any Towards Zero Carbon Developments - Supportive Information to Boroughs 38 consultation results such as questionnaire returns should give legitimacy to prescriptive policies. The consultation audience could potentially include a range of stakeholders such as developers interested in zero or low carbon projects, or local NGO’s. Supportive guidance in planning briefs that have been subject to consultation can also help the developer through the process.

Additional Build Cost

There are several arguments and issues that can be explored with developers on this issue, as set out below.

1. Can any additional build cost be passed on to the end-user, and/or purchaser of a building?

- There are increasing examples where developers are often able to market zero or low carbon developments at a premium. An example of this is seen in the mindset of developers committed to respond to planning policies requiring a proportion of energy demand to be met through on-site renewable energy. Many developers have viewed this as an opportunity to lead the field in the designing, constructing and marketing of low carbon buildings - with the opportunity to sell them at above market rate. Examples of this are the Fairview Homes development in Croydon (312 units), where the developer has recognised the benefits of installing renewables, and Chancerygate, who are proceeding with three developments in Merton which will incorporate 10% renewables.

- Potentially, this "marketability" aspect may increase in the future, as end-users become more aware of the energy performance of new buildings through the energy labelling measures that will come into force in the UK in 2007-08 from the EU Energy Performance in Buildings Directive. For housing this is expected to be introduced in June 2007.

- Local authorities can also assist in this process by liaising with economic development and regeneration officers to identify businesses in the borough that would have an interest in locating to a zero or low carbon development. An example might be a potential commercial end user prepared to pay a premium for a development because they are able to factor the relatively long pay back timeframe into a long term business plan. It may also serve to demonstrate their long term sustainability strategy in some way.

- This economic intelligence can be used in discussions with a developer as evidence of demand for zero or low carbon buildings at a particular site. Similarly, boroughs can make use of satisfaction surveys from occupiers of such developments as proof of demand.

- The WWF report 'One Planet Living in the Thames Gateway' claims that the cost of developing to 'Z-squared' standards would be comparable to, or even cheaper than, the cost of developing to current building regulations. The reasoning behind this suggests that any additional build costs have the Towards Zero Carbon Developments - Supportive Information to Boroughs 39 potential to be partly offset by planning gain and by higher property values. A local authority may wish to adjust its Section 106 'hierarchy' so that priority is given to realising these developments over other activities.

Does the developer have an interest in lower building running costs?

This is linked to the above point. On sites that are not speculative, the developer may also be the building occupant, or, in the case of a housing association, will have an interest in reducing the running costs for tenants as well as their own management costs for energy services, and energy for communal areas, etc. Where the developer is planning to provide commercial rents, they may also have an interest in reducing energy costs for communal areas. Other developer occupiers include public sector clients such as hospitals, schools, etc.

Zero carbon development incorporating renewable energy, along with energy efficiency measures and shared infrastructure such as community heating, can potentially offer savings in running costs in relation to alternatives such as individual boilers, and may offer attractive whole life costs.

Can any additional build cost be factored into the land value?

If the potential additional build cost for a zero or low carbon development, which is likely to depend on the scale of development along with a number of other factors, can be factored into the residual land value paid by a developer, then the developer would not face an additional burden. As planning policies change, to give greater weight to climate change mitigation and adaptation, the practices of developers and quantity surveyors, the value that they attribute to land and the ability to meet such policies on it, will change.

Will additional build cost represent an undue burden?

This is a grey area, and it is not possible to set hard and fast guidelines on what is or isn't an undue burden, as this will vary from site to site, and development to development. The cost of sustainable energy solutions should be established and worked in at the earliest stage and be part of the site valuation as is the case with meeting other planning policies. However, in the short term, in situations where the developer has bought the land before the policy existed and so was unable to take account of any additional build cost, there are aspects of a development which may affect the "overall viability" of a development, these include many factors - the original cost of the land and the value of the built development are just two of these.

Can additional build costs be minimised by working with developers more familiar with such approaches?

Developers can reduce the additional build cost by factoring the low carbon measures into their general approach. Once they do this then much of the cost is Towards Zero Carbon Developments - Supportive Information to Boroughs 40 down to the infrastructure itself - and economies of scale for producing these technologies should mean that these costs will in time fall. There are also specialist "Green" architects, engineers and services engineers, who may be interested in exploring innovative ways of progressing these developments in a way that minimises the additional build cost.

It should be stressed that the earlier that a development team commits to a zero or low carbon design, the less this aspect of the development is likely to cost.

Can any additional build costs be shared with an ESCo, or other funding partners?

As mentioned in Section 6.5, there are new opportunities for co-financing zero or low carbon developments through Private Finance Initiative schemes and partnerships with local Energy Services Companies (ESCO), where some of the infrastructure costs can be covered as part of a commercial arrangement. An obvious example of this is where a development is delivered through a CHP-driven community heat and power scheme, where the ESCo pays for the energy plant infrastructure and recoups its investment over time through the sale of heat and power. Leasing arrangements can also be made by the local authority or ESCo to deliver the energy plant component with a similar economic payback model.

Can any additional build costs be offset through other savings in conventional energy infrastructure?

Examples of this include the avoidance or reduction of the cost of heating and/or cooling systems for buildings through the use of zero heating or cooling approaches, or by using communal heating and cooling systems to avoid the cost of individual units. Another example is the potential to reduce electricity grid, and mains gas connection and upgrade costs by the use of energy efficiency measures, peak demand reduction, and embedded energy generation.

8.3 Other Supportive Arguments

Other possible arguments include:

- Rising energy costs and risks of disrupted supply are expected in the future. Developers and building occupiers will benefit from on-site generation/community heating through reduced risk and security of supply.
- Association with zero carbon developments could meet a company's corporate commitment to combating climate change. This can also be beneficial for business image and public relations with local communities and can contribute to corporate social responsibility objectives. Many large companies now have these policies.
- There is an incentive for developers to plan ahead and gain an advantage over their competitors in terms of being fully equipped to meet planning Towards Zero Carbon Developments - Supportive Information to Boroughs 41 policies and in gaining a good track record of delivering zero or low carbon projects.
- If there is widespread community and council support for zero or low carbon initiatives then the developer is more likely to win planning approval. Note - further information on issues around developers and renewable energy can be found in the London Renewables document - *The Role of Developers*. See: www.london.gov.uk/mayor/environment/energy/docs/renew_developers.rtf

2.6 The role of planning in the sustainable development agenda.

Planning policies have the ability to have a significant impact on the sustainability of development in the UK, by influencing the design and construction of building projects in the early stages. Table 2 below gives an indication of the scale of impact sustainable design and construction policies could have in each area of concern.

Currently approximately 150,000 new homes are built each year, and at least this level of development will continue in the future. Government is planning for 200,000 new homes per year in the future.

The inclusion of sustainability measures in new homes, will have measurable positive effects on the environment, but can also result in cost savings for the home owner. The Environment Agency estimates that it only costs £800 per house to achieve a 25% improvement in the overall sustainability of that home (using 2002 Building Regulations as a baseline). These improvements deliver savings to residents through reduced utility bills of approximately £138 a year. Even if costs were passed onto the house buyer, only up to £4 per month would be added onto a typical £100,000 mortgage. Therefore, more efficient homes can be more affordable overall, particularly for those on low incomes who spend a higher proportion of their income on bills.

Impact of sustainable design and construction standards

Policy Area	Scale of Possible Impact
Energy	<p>Households in the UK produce 27% of UK's carbon dioxide emissions, and improving efficiency will act to combat this. For example, homes built to BREEAM 'very good' standard reduce carbon dioxide emissions by 32%.</p> <p>Typical energy costs per household per year² are currently approximately £850. Therefore at current development rates, if every household development was provided with 10% on-site renewable energy, this would have a market value of £12,750,000 per year.</p>
Water	<p>More efficient household appliances can use a quarter less water, while rainwater harvesting and grey water recycling can produce further savings. Introducing basic water efficiencies into metered homes could save homeowners £55 a year in water bills without changing their lifestyles. Homes built to BREEAM 'very good' can cut water use by 39%. Given that the average UK household uses approximately 150 litres of water per day, if new developments were all built to BREEAM 'very good', water savings would be over 3 billion litres per year.</p> <hr/> <p>Climate change is making flood management an</p>
	<p>increasingly important factor in deciding where to locate new development. Presently, 1.85 million houses and 185,000 commercial properties are at risk from flooding, figures that are likely to increase under planned future development.</p>
Materials	<p>The construction sector uses over 420 million tonnes of material resources each year. Annually, 90 million tonnes of construction and demolition waste is generated - the industry produces three times the waste produced by all UK households combined, and only half the waste is being recycled back into the sector. Approximately 13 million tonnes of construction waste is material delivered to sites but never used. Homes built to BRE 'very good' reduce waste sent to landfill by 25%. The use of site waste management plans is often cost saving, while good practice levels of recycled content in construction are cost-neutral or cost saving.</p>
Waste	<p>Household waste accounts for about 9% (30.1 million tonnes) of the waste produced annually in the UK. While around half of household waste is reuseable, only 18% of household waste is recycled - 72% is sent to landfill.</p>

Environmental Protection	<p>Currently 88% of the population live in cities, towns and villages (of at least 1,000 people) which cover just over 8% of the land area. As the number of households grows then urban areas could expand into the surrounding countryside. If half of all new building takes place on previously developed land (10% less than government targets), the amount of land in urban use will expand by about 6,800 hectares a year. Considerate building will help to minimise the effect of development on the environment.</p> <p>The areas on and around buildings can provide valuable habitat. Domestic gardens in London account for 1/5 of the capitals surface area, but contain nearly 70% of the city's 5.5m trees which provide important wildlife habitats.</p>
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Source: Planning Policies for Sustainable Building: Guidance for Local Development frameworks (July 2006) Planning Officers Society.

8.3 Additional cost analysis

The following is a summary of the further evidence base collected on the costs of meeting carbon reduction targets and BREEAM/EcoHomes targets.

<p>Achieving EcoHomes Very Good (Housing Corporation)</p>	<p>This report prepared for the Housing Corporation listed in detail the costs of compliance for BREEAM/EcoHomes standards, it also included a breakdown of the cost for each credit and a number scenarios. A summary table is included below with further detailed included in the second table.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Base cost/m²</th> </tr> </thead> <tbody> <tr> <td>Two-storey, two-bedroom semi-detached house built with traditional brick & block external walls.</td> <td>£850-1050</td> </tr> <tr> <td>2.5-storey (i.e. a bedroom in the roof space) three-bedroom timber framed end-terrace house with brick and timber cladding façade.</td> <td>£900-1100</td> </tr> <tr> <td>Third floor two-bedroom corner apartment within a three-storey steel framed apartment block with brick façade.</td> <td>£1200-1600*</td> </tr> </tbody> </table> <p>* Costs are significantly higher than domestic house construction due to factors such as inclusion of lifts, services distribution and the use of steel framed construction. The greater variance is driven by the range of possible options within key elements such as cladding, roofing and internal fit-out.</p> <p>A more detailed cost analysis was carried out dependent on location scenarios for each of the different house types. For example a House Type 2 (115m² 2.5 storey timber frame) which was in an Urban setting would cost £119,470 for a Very Good and £122,020 for Excellent.</p>		Base cost/m ²	Two-storey, two-bedroom semi-detached house built with traditional brick & block external walls.	£850-1050	2.5-storey (i.e. a bedroom in the roof space) three-bedroom timber framed end-terrace house with brick and timber cladding façade.	£900-1100	Third floor two-bedroom corner apartment within a three-storey steel framed apartment block with brick façade.	£1200-1600*
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EcoHomes Costings : An exercise for Sustainable Homes (December 2002)	<p>Summary :-</p> <ul style="list-style-type: none"> Administrative costs varied between £200 and £550. Pass & Good Ratings: There is no cost to obtain a Pass or Good rating if site specific credits can be obtained. Otherwise the minimum measures to obtain Pass and Good rating are estimated to cost approximately £30 and £111 respectively. Very Good Ratings: Where site specific credits, over which the developer has no control, are included in a rating, the least cost to obtain a "Very Good" EcoHomes rating has been estimated to be £1430 per dwelling. Where site specific credits have been omitted, the least cost for a "very Good" rating is £1680. Excellent Ratings: Where site specific credits, over which the developer has no control, are included in a rating, the least cost to obtain an "Excellent" EcoHomes rating has been estimated to be £1760 per dwelling. Where site specific credits have been omitted, the least cost for an "Excellent" rating is £3040. <table border="1"> <thead> <tr> <th rowspan="2">Issue & Credits</th> <th colspan="4">Site Specifics *</th> <th colspan="4">No site specifics</th> </tr> <tr> <th>Pass</th> <th>Good</th> <th>V Good</th> <th>Excellent</th> <th>Pass</th> <th>Good</th> <th>V Good</th> <th>Excellent</th> </tr> </thead> <tbody> <tr> <td>Fuel use</td> <td>18</td> <td>21</td> <td>23</td> <td>22</td> <td>16</td> <td>18</td> <td>19</td> <td>19</td> </tr> <tr> <td>Pollution</td> <td>9</td> <td>13</td> <td>13</td> <td>13</td> <td>9</td> <td>13</td> <td>15</td> <td>15</td> </tr> <tr> <td>Materials</td> <td>5</td> <td>5</td> <td>9</td> <td>11</td> <td>5</td> <td>8</td> <td>3</td> <td>11</td> </tr> <tr> <td>Water</td> <td>0</td> <td>0</td> <td>6</td> <td>6</td> <td>0</td> <td>0</td> <td>6</td> <td>6</td> </tr> <tr> <td>Land</td> <td>3</td> <td>3</td> <td>3</td> <td>5</td> <td>3</td> <td>3</td> <td>3</td> <td>7</td> </tr> <tr> <td>Environment</td> <td>4</td> <td>6</td> <td>9</td> <td>13</td> <td>4</td> <td>6</td> <td>9</td> <td>13</td> </tr> <tr> <td>EcoHomes rating</td> <td>39</td> <td>49</td> <td>63</td> <td>70</td> <td>37</td> <td>48</td> <td>61</td> <td>70</td> </tr> <tr> <td>Costs</td> <td>£0</td> <td>£0</td> <td>£1,430</td> <td>£1,760</td> <td>£30</td> <td>£111</td> <td>£1,680</td> <td>£3,040</td> </tr> </tbody> </table> <p>*Site Specific includes credits won because of the site location but over which the developer has no control.</p> <p>Please note that these calculations are based on BR2000 and the costs of technologies at the time the report was prepared.</p>	Issue & Credits	Site Specifics *				No site specifics				Pass	Good	V Good	Excellent	Pass	Good	V Good	Excellent	Fuel use	18	21	23	22	16	18	19	19	Pollution	9	13	13	13	9	13	15	15	Materials	5	5	9	11	5	8	3	11	Water	0	0	6	6	0	0	6	6	Land	3	3	3	5	3	3	3	7	Environment	4	6	9	13	4	6	9	13	EcoHomes rating	39	49	63	70	37	48	61	70	Costs	£0	£0	£1,430	£1,760	£30	£111	£1,680	£3,040
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Costs	£0	£0	£1,430	£1,760	£30	£111	£1,680	£3,040																																																																																		
Putting a price on sustainability (BRE trust and Cyrill Sweett)	The report identified the costs associated with a range of sustainable solutions for different building types, demonstrating that significant improvement can be achieved at very little additional cost. The report also demonstrated that more sustainable buildings can offer major life-cycle cost benefits.																																																																																									

	<p>The findings identified that capital costs associated with reaching the 'Very Good' and 'Excellent' levels of sustainability performance in the BREEAM Ecohomes scheme were in the range of a few percent.⁷</p> <p>The Cyril Sweet 'Putting a Price on Sustainability' put forward a case study based on a two-storey, 4 bedroom semi-detached houses.</p> <div data-bbox="639 510 1246 875" style="border: 1px solid black; padding: 5px;"> <p style="background-color: #FFD700; margin: 0; padding: 2px;">Table 1 % increase in capital costs to achieve a Good, Very Good and Excellent EcoHomes rating in 3 locations</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2" style="background-color: #FFD700;">Location</th> <th colspan="4" style="background-color: #FFD700;">% increase in capital cost to achieve a Pass/Good/Very Good/Excellent</th> </tr> <tr> <th style="background-color: #FFD700;">Pass</th> <th style="background-color: #FFD700;">Good</th> <th style="background-color: #FFD700;">Very Good</th> <th style="background-color: #FFD700;">Excellent</th> </tr> </thead> <tbody> <tr> <td style="background-color: #FFD700;">Poor</td> <td>0.1</td> <td>0.9</td> <td>3.1</td> <td>—</td> </tr> <tr> <td style="background-color: #FFD700;">Typical</td> <td>0</td> <td>0.4</td> <td>1.7</td> <td>6.9</td> </tr> <tr> <td style="background-color: #FFD700;">Good</td> <td>0</td> <td>0.3</td> <td>1.3</td> <td>4.2</td> </tr> </tbody> </table> </div> <p>It is possible to achieve EcoHomes Very Good ratings for ~£800 to ~£3,700, while Excellent ratings can be achieved for ~£3,300 to ~£6,800.</p> <p>For a Building Regulations compliant 'base case' (2002) with a capital cost of £76,000</p> <p>The whole life cost implications for this scenario were in-use cost savings of 6% for energy , and 40% for water throughout the life of the building.</p>	Location	% increase in capital cost to achieve a Pass/Good/Very Good/Excellent				Pass	Good	Very Good	Excellent	Poor	0.1	0.9	3.1	—	Typical	0	0.4	1.7	6.9	Good	0	0.3	1.3	4.2
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<p>The Costs of Greening Developments (English partnerships 2005 - DRAFT)</p>	<p>The EP study found that the cost of obtaining an Excellent rating together with the other standards (CO2 reduction, water reduction, QPS and 10% onsite) is £300 to £3,000 more expensive than is the case for a Very Good rating together with these same standards.</p> <ul style="list-style-type: none"> • The study also found that For an Excellent rated development the additional cost of also requiring specific standards for energy and water is much less, with no additional cost incurred in the majority of cases (above the cost of achieving the Excellent rating). • Generally speaking the costs of requiring that specific standards are met are greater when the base cost of achieving the EcoHomes rating in isolation is lowest. 																								
<p>London Renewables Toolkit , London Renewables (September 2004)</p>	<p>The London Renewables Toolkit sets out how to incorporate renewables onto a development. It provides a checklist for the costs of delivering a range of renewable energy technologies.</p>																								

⁷ <http://www.cyrilsweett.co.uk/pdfs/Information%20Paper%20-%20Costing%20Sustainability.pdf>

<p>University of Oxford, 40% House (2005)</p>	<p>It stated that the UK residential sector can deliver a 60% reduction in carbon dioxide emissions by 2050, in line with the targets outlined in UK Government's 2003 Energy White Paper. It stated that the 40% House can be achieved. For new build this will require that heating demand is as close to zero by 2020, and the application of Low or Zero Carbon technologies to play a large proportion in 2050.</p>
<p>Sustainable homes - the financial and environmental benefits, Environment Agency, 2005</p>	<p>This study demonstrated that :-</p> <ol style="list-style-type: none"> 1. A 25 per cent improvement in resource efficiency has a maximum extra capital cost of £800 per homes. 2. These improvements produce savings for residents through reduced utility bills of approximately £138 per year. The total benefits of resource efficiency would be much greater than this if we could quantify the wider effects on the environment, health, etc. 3. The extra cost of a home built to higher levels of resource efficiency is unlikely to mean more expensive homes, but even if extra costs were passed on to the housebuyer, only up to £4 per month (£48 per year) would be added onto a typical £100,000 mortgage. Therefore, more efficient homes can be more affordable overall, particularly for those on low incomes who spend a higher proportion of their income on bills. 4. The cost of higher standards will fall with technological development and economies of scale, while utility bills may continue to rise. Failing to build more resource efficient housing foregoes significant benefits to households, society and the environment. 5. Investments now would also avoid costly corrective measures later. 6. The study demonstrated that the 25% improvement is 'Achievable' with the 'Aspirational' standards becoming more mainstream and feasible on large scale development within a few years. The costs of achievable standards were £800 whilst aspirational cost were 'several thousands pounds' per home.
<p>Estimating the Social Cost of Carbon Emissions, Government Economic Service Paper No 140</p>	<p>Within the costing of such standards many argue that the wider environmental and social costs should be taken into consideration. On a technical level this may include whole-life costs, maintenance costs and disposal costs (detailed above). Attempts have been made to evaluate the environmental and social costs of environmental impact and within Building Regulations this has focused on the social costs of carbon. The Partial Regulatory Impact Assessment of the EU Energy Performance In Buildings Directive outlines the social costs of carbon to be valued at £70 (at 2000 prices) to each tonne per year of carbon savings, with an escalator of £1 per year. For a 25% improvement in Carbon Emissions for each buildings for a typical dwelling (80m²) the annual emissions would be in the order of 1,750 kg Co₂ (equivalent to 477kg of carbon). A reduction in emissions of 25% would therefore save 119kgC per year, which would be valued at £1,041. This amount could therefore be spent on additional energy efficiency measures during construction whilst still keeping the design cost-effective.</p>
<p>One Planet Living in the Thames Gateway, WWF, 2003</p>	<p>The WWF report 'One Planet Living in the Thames Gateway' stated that the cost of developing to 'Z-squared' standards would be comparable to, or even cheaper than, the cost of developing to current building regulations.</p>

	<p>The WWF/Bioregional have estimated the following shared infrastructure cost savings for the different EcoHomes scenarios to be: -</p> <ul style="list-style-type: none"> o Scenario 2 - EcoHomes Very Good suggests a 2 per cent reduction o Scenario 3 - EcoHomes Very Good plus eco-citizen 5 per cent reduction o Scenario 4 - ZSquared- 10 per cent reduction. <p>The WWF report concludes that shared infrastructure will cost less by building to higher EcoHomes standards than current Building Regulations 2002.</p>
<p>Resource Savings and EcoHomes, RSPB Discussion Paper, 2005.</p>	<p>The RPSB study identified 3 key benefits to higher environmental standards: -</p> <ul style="list-style-type: none"> • The costs of building infrastructure to obtain those resources is avoided, and the costs of distributing them is reduced; • Any negative environmental externalities of consuming those resources are reduced; and • Household demand for those resources is lowered, which may in turn cut household bills. <p>The RSPB study highlighted that by setting higher environmental standards there was a significant Benefit: Cost ratio of 8:1 - see below.</p> <p><i>Costs</i> Cost of <i>water and energy</i> actions required in the EcoHomes excellent standard per home = £160</p> <p><i>Benefits</i> Reduces externality of Greenhouse Gas Emissions per home over 30 years = £510 Avoided Water Infrastructure Costs per home = £462</p> <p>Total = Benefits (£972) : Costs (£160) (<i>Ratio of 8:1</i>)</p> <p>The RSPB report estimates a saving of £462 in avoided water infrastructure costs based on reduction of 40% from EcoHomes Excellent. They state that as an example these savings would displace the need to construct new reservoir capacity costing between £2m and £5m per M/l per day of capacity. As a result the value of the saved water resource costs as a result of building to EcoHomes Excellent is estimated at £462 per household per year.</p>
<p>Z-Squared Developments (BedZed - Bill Dunster Architects)</p>	<p>WWF and Bioregional recently commissioned work to assess the costs of applying the Z-squared standards to development in the Thames Gateway. The study looked at the costing and practical implications of delivering a 2,000 home development in the Thames Gateway, including energy modelling to reduce the carbon emissions from the development. The study found that overall there was an estimated 8% increase on construction costs. There are close similarities in the approach to delivering sustainable homes and building between Ashford's highest standards for the 'Growth Areas' and those for the z-squared developments</p>

	<p>Z-Squared</p> <p>Z-squared is a combination of EcoHomes Excellent with on-site energy generation and distribution, water treatment and waste management infrastructure. EcoHomes water, energy, waste and recycling - maximum credits Best Practice for Sustainability Checklist</p> <p>Ashford's highest standard</p> <p>EcoHomes Excellent Maximum credits for water Excellent for Energy and Materials Use of the Sustainability Checklist 20%* Carbon Reduction through sustainable energy on-site generation Sustainable Drainage</p> <p>*Varies dependent on area and timescale</p>	
<p><i>Broadway Malyan and Fulcrum Consulting</i></p>	<p>The following extract is taken from the report</p> <p><i>From the summary table of options, it is obvious that photovoltaic panels should be rejected as an option for either the single block or ten block development.</i></p> <p><i>For the single block development option, the most capital cost efficient method is solar thermal panels utilising a communal hot water pre-heat thermal store and communal domestic hot water cold feed system. On more advanced analysis, the option of a Biomass boiler, bio-diesel CHP, or ground sourced heating system connected to a similar communal domestic hot water cold feed thermal store may also be of equivalent additional capital cost, but at this scale the site related issues would need analysing in detail to establish financial viability.</i></p> <p><i>For the ten block development option the lowest capital cost method is to use a large, wind farm type wind turbine. Planning constraints over the provision of such a large turbine are likely to be considerable in the majority of development positions making this option non feasible on planning constraint issues. If the authority requiring the 10% renewable provision would accept the provision of an offsite large scale turbine positioned in an area with advantageous wind conditions, then obviously this will be the cheapest option.</i></p> <p><i>If wind turbine provision is not feasible then the next most capital efficient system is the provision of biodiesel combined heat and power plant connected to a district heating network.</i></p>	
<p><i>Renewables Obligation Certificates and Renewable Energy Guarantee of Origin Certificates</i></p>	<p>ROCs can be used to advantage by Energy Services Companies involved in renewable energy who can claim and sell them.</p>	
<p><i>Demand</i></p>	<p>There is increasing evidence that house buyers are willing pay more to live in a more sustainable and energy efficient home. This can allay fears that there is no market or that these higher standards will have an affect on the ability to sell the property. One particular</p>	

	EcoHomes case study from a Royal Institution of Chartered Surveyors (RICS) report identified that 15% of Warrington buyers have signified a willingness to pay over 6% more for a sustainable home ⁸ . This 6% can be derived from commanding higher rents, higher market values, attracting tenants more quickly, reducing tenant turnover and lowering financial risks for investors
<i>Ashford Biomass Study</i>	A Study in 2005 outlined the capacity of the biomass industry to deliver biomass energy to a number of key sites within the town centre. It highlighted that there is a growing and ready supply of biomass which can be incorporated for heating and possibly CHP requirements. Further research has indicated that there is a great potential for Biomass to serve the growth of Ashford, and recent statistics indicate that this is often the cheapest option.
<i>Building Regulations</i>	BR introduced in 2006 required a 20% improvement in carbon emissions from BR2002. These are expected to rise every 5 years.
<i>Low Carbon Buildings Programme</i>	<p>The DTI's Low carbon buildings programme provides grants for microgeneration technologies for householders, community organisations, schools, the public sector and businesses. The programme is managed by the Energy Saving Trust.</p> <p>Launched on 1 April 2006, the programme will run over three years and replaces DTI's Clear Skies and Solar PV programmes, which closed for applications on the 31 March 2006. The programme is UK-wide (apart from the Channel Islands and the Isle of Man) and will demonstrate how energy efficiency and microgeneration will work hand in hand to create low carbon buildings.</p> <p>There will be two streams of grants available:</p> <ul style="list-style-type: none"> • Stream 1 - these grants apply to smaller projects for home owners and community groups among others. • Stream 2 - these grants apply to medium and large scale microgeneration projects and will available to public, not for profit and commercial organisations. Stream 2 grants will be launched later this year.
<i>Case Studies</i>	<ul style="list-style-type: none"> • Beddington Zero Energy Development • Slateford Green , Edinburgh • Millennium Green , Collingham Nottinghamshire • Gallions Ecopark • Warkworth Close, Gateshead • Bournville Solar Village, Birmingham • Great Bow Yard, Somerset • Millennium Mews, Liverpool • Nelson Street, Perth, Scotland • The Evergreens , Drum Housing Association • Pak Meadow, South Motlon (Devon & Cornwall Housing Association) • Scottish National Heritage HQ • Debut and Willans Green, Warwickshire • The Mills Building, Weybridge
<i>Other</i>	<ul style="list-style-type: none"> • The London Plan

⁸ <http://www.rics.org/NR/rdonlyres/93B20864-E89E-4641-AB11-028387737058/0/GreenValueReport.pdf>

<p>planning policies with a sustainable design and construction element (particularly a PPS22 policy)</p>	<ul style="list-style-type: none"> • London Borough of Merton • London Borough of Waltham Forest • Sefton Metropolitan Borough Council • London Borough of Croydon • London Borough of Ealing • London Borough of Bromley • Oldham Unitary Authority • North Devon District Council • Leicester City Council • Woking Borough Council • Tower Hamlets London Borough
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7.5 Costing summary

It is evident from the wealth of research above that the costs of delivering such standard is complex and often dependent on wider factors such as location, infrastructure and availability and supply of technologies. As detailed in the SEA wider measures and initiatives will need to be implemented to reduce these costs such as increasing the capacity of renewable energy in the borough, the supply of sustainable design technologies, community heating, waste collection and recycling, skills and measures to promote sustainable lifestyles. The Borough Council is working with its partners to deliver this wider agenda in order to compliment the Core Strategy policies.

Appendix

Appendix A	Definition of Zero Carbon Developments
Appendix B	Test of soundness analysis
Appendix C	Overview of Sustainable Energy Opportunities in Ashford, 2004
Appendix D	References

Appendix A: Definition of Zero Carbon Developments

The following is an excerpt from London Renewables 'Towards Zero Carbon Developments'

Definition of Zero Carbon Development

A zero carbon development is one that achieves zero net carbon emissions from energy use on site, on an annual basis.

The definition is further clarified as follows:

- a) Energy use on site relates to all energy uses of buildings and structures, and what goes on within them, excluding transport. These uses are (as given in the London Renewables Toolkit) heating, hot water, cooling, ventilation, lighting, cooking, appliances, computers, lifts, processes, floodlighting, etc. All non-building energy use on the site should also be included within the assessment, e.g. street lighting.
- b) Fossil fuels may be used on site, as long as there is sufficient export of renewable heat, cooling and/or power to offset the resulting carbon emissions.
- c) For multi-phase zero carbon developments, it will be agreed at the planning stage in which phase elements of zero carbon energy infrastructure are introduced. Furthermore, it will be required through appropriate planning conditions that all contributing technologies are installed prior to completion of the whole development. Where the infrastructure is not applied pro rata across each phase, adequate justification should be given in taking this approach and the delay of installation of zero carbon technologies to the final phase(s) should be avoided.
- d) Zero carbon status of the development, and how this has been achieved, should be detailed in an Energy Assessment, which authorities may use to assess this status. Energy Assessments are included with planning applications for major developments. These should include the predicted energy use and associated carbon emissions and state any savings, against contemporaneous building regulations, through improved design, energy efficiency measures, efficient supply options and renewable energy technology. Further details are presently available in the London Plan and the London Renewables Toolkit.
- e) Zero or low carbon energy may be imported from off-site sources in the form of heat (or cooling) from local networks, or in the form of electricity where this is connected by private wire and the development provides additionality. In some publications, zero carbon developments are also known as zero emission developments (ZEDs)
- f) Although the definition does not specifically cover climate change impact adaptation, waste, transport, embodied energy, water, noise, biodiversity, green space and air quality, the development should meet the Essential Standards given in the Mayor's Supplementary Planning Guidance on Sustainable Design and Construction, and any update to these in the Further Alterations to the London Plan, as a minimum and relevant local environmental and social standards that apply to new developments. It is expected that exemplar developments will seek to go beyond the essential standards in all areas of sustainability, particularly where they affect energy use.
- g) Adequate infrastructure for post-construction monitoring of energy use in the development should be provided.

Further definitions

Zero Carbon Development

A zero carbon development is one that achieves zero net carbon emissions from energy use on site, on an annual basis.

Carbon Neutral Development

This means that no net Carbon or Carbon Dioxide emissions from a building or activity. There may be emissions but these are balanced by savings in emissions elsewhere, see Carbon offset.

Low Carbon Development

A low carbon development is one that achieves a reduction in net carbon emissions of 50% or more from energy use on site, on an annual basis.

Z-Squared

Zero carbon and Zero waste developments

Carbon vs Carbon Dioxide Emissions

One tonne of Carbon is equivalent to 2.67 tonnes of Carbon Dioxide

Greenhouse Gas Emissions

This includes Carbon Dioxide and other Greenhouse Gasses, which have a Global Warming effect, such as Methane.

Zero Carbon Growth

This is essentially the same as a Carbon Cap i.e. no increase in Carbon or carbon Dioxide emissions from a settlement.

Carbon Offset

Carbon Dioxide emissions are balanced by savings in Carbon Dioxide elsewhere - see Carbon Neutral

Carbon Offset Fund

A fund into which payments are made, in return for Carbon dioxide savings, which are paid for by the fund.

Appendix B: Test of Soundness Statement

PPS12 sets out the 9 tests of soundness for examining Development Plan Document. Below is an assessment of Test 7 which states:-

1.4.12 Test vii: The strategies/policies/allocations represent the most appropriate in all the circumstances having considered the relevant alternatives and they are founded on a robust and credible evidence base.

Q. Is it clear that the Local Planning Authority considered all reasonable options and alternatives in preparing the DPD?

The approach to Policy CS10 involves an array of alternatives and options which have been discussed in this background report. In summary these looked at:-

- (1) options for the overall policy approach to sustainable design and construction,
- (a) options to incorporate a wide array of environmental features and the alternative approaches to tackling the core resources issues of energy, water and waste,
- (b) the reduction of carbon dioxide emissions through sustainable energy, and
- (c) alternatives to ensure that developments are carbon neutral.

Within each of these areas the alternatives in tackling these issues across all types of development areas and the level at which these standards should be imposed is highlighted.

These alternatives have come forward throughout the masterplanning process, beginning with the Capacity Study, the consultation on the masterplan and the GADF, the SEA/SA, the Core Strategy Preferred Options and subsequent meetings with relevant stakeholders including those represented on the Ashford's Future working groups (Utilities and Natural Resource Management Work Group). The alternatives and options illustrated in this report indicate how the Council has approached this critical issue. Throughout this process options and alternatives have been considered which best satisfy the vision for sustainable development in Ashford. The policy presented in CS10 is the conclusion of the assessment of alternatives and options.

Q. Are the assumptions in the DPD set out clearly and are they supported by evidence?

The assumptions made in the Core Strategy and the GADF are made through an assessment of national and regional guidance and evidence on issues such as climate change, sustainable energy, water supply and management, waste, carbon emissions and the costs of delivering these standards. Key sources of evidence are set out in the Core Strategy, and are further highlighted in this report (see Section 2). Both the assumptions and evidence base is set out in the Core Strategy and the GADF.

Q. Does the evidence clearly support the policies in the DPD?

The evidence on these issues, in particular climate change, energy, water and materials clearly supports the direction and policy approach taken by in the Core Strategy. Clear links to this evidence base are made in the Core Strategy and this background document. In particular, recent Government statements, Planning Policy Statements and Regional Policy highlight the need to take a forward thinking approach to the issues covered by sustainable design and construction. (See Section 2 for the evidence base)

Q. Is the evidence robust and credible - i.e. has it been prepared in accordance with national policy and good practice guidance?

The evidence base listed in Appendix A takes into account a wide array of research and strategies that have been prepared which support in one way or another the multi-faceted approach taken in the Core Strategy. This evidence base has varied from local capacity assessments such as the Handbook for Change, 2001, the Integrated Water Management Study (IWMS,2005), and A Study into the Sustainable Energy opportunities for Ashford (2005). To regional and national strategies such as the SEEDA Taking Stock Report (2001), RPG9 (and emerging RSS) , Energy Review and the SEEDA Sustainability Checklist.

Q. Where a balance has been struck in taking decisions between competing alternatives - is it clear how those decisions have been taken?

The background report has indicated the decisions that had to be made in assessing competing alternatives. These had been taken at a number of key stages in the process from the Capacity Study, the masterplanning , the Sustainability Workshop to continuing Councillor involvement through LDF Task Groups and Policy Advisory Groups. In addition, as the Sustainability Appraisal (SA) states, many of the changes have arisen from SA recommendations.

Appendix C: Overview of Sustainable Energy Opportunities in Ashford.

The following pages are an extract from a report prepared on behalf of Ashford Borough Council with support from Government Office South East. This funding support from the region is gratefully acknowledged. The report was prepared by Savills & Future Energy Solutions to provide evidence and support the policy approach to sustainable energy in Ashford through the LDF. This was received by the Council in June 2005 and as such may highlight some costs and current policy approaches which have been updated since time of preparation.

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ENVIRONMENTAL RATINGS
THE PLANNING PROCESS
NEXT STEPS

One **◆** *Overview of sustainable energy technologies suitable for Ashford*

SUSTAINABLE ENERGY CHARACTERISTICS

The menu of available sustainable energy technologies is extensive. This provides a wide range of possible approaches and solutions within the Ashford context, which we illustrate specifically within Section 3 of this report through a discussion of particular development sites.

In this section we consider some of the generic characteristics of various technology options.

- *Size and scale of technology: Sustainable energy technologies come in a very wide range of sizes and scales. There are technologies suitable for:*
 - *individual buildings (such as solar photovoltaics, micro CHP, ground source heat pumps, small wind turbines or chargers);*
 - *groups of buildings (for example CHP associated with heat networks, the principles of passive solar design applied to site layouts); and*
 - *generation of electricity for feeding into the electricity distribution network - such as wind turbines, CHP, etc.*

- *Passive / active technologies: Sustainable energy measures may be passive (in which typically they act to reduce energy demand) or active (in which they act to generate electricity, heat or both through their operation). Illustrative of these alternatives are the different forms of solar energy technology:*
 - *passive solar design - which optimises the use of solar heat, daylight and natural ventilation in buildings leading to reduced energy demand and enhanced occupant comfort;*
 - *solar water heating (which uses solar panels to collect the Sun's heat, contributing to reductions in energy demand for water heating;*
 - *solar photovoltaics - which uses the Sun's radiation to stimulate an electrical current in PV cells, thus generating electricity.*

- *Applicability to different forms of development: Sustainable energy technologies can be applied readily to new greenfield or in-fill development sites, and may often also*

be applicable in retrofit or refurbishment situations. This range of applicability makes it possible to consider solutions of this kind in almost any context.

In parallel with this wide range of applicability, sustainable energy technologies cover a very wide cost range. Some technologies are currently more expensive than conventional alternatives but others are essentially competitive in particular contexts and some may have virtually zero cost (e.g. aspects of passive solar design within estate layouts).

In Ashford's "major growth area" context, the extensive range of possible deployment scales for sustainable energy technologies is a distinct advantage, allowing the Borough to consider whether to meet its emissions reductions obligations through a few large schemes, a large number of smaller schemes, or a combination of the two.

ENERGY EFFICIENCY

We have included energy efficiency as part of the 'sustainable energy menu' for Ashford because:

- it is important to consider energy efficiency savings before maximising the value of renewable energy (RE) within development;*
- some technologies, including combined heat and power (CHP) and ground source heat pumps, can be considered to be either 'renewable energy' or 'energy efficiency' under certain circumstances. The explicit inclusion of both ensures that nothing is missed.*

Energy efficiency considerations in the Ashford development context should embrace the use of energy in buildings and transport. To encourage energy efficiency in buildings, the following design measures and standards can be taken into account for new developments.

i). Passive solar design

Passive solar design (PSD) seeks to optimise the use of solar heat, daylight and natural ventilation in a development, so reducing the need to provide these requirements through the use of scarce energy resources. A key priority in PSD is to enhance occupant comfort in buildings.

In residential development, PSD requires houses to have a principal (i.e. front or rear) elevation oriented within 25 degrees of south, to collect the light and warmth of the sun

for most of the day. PSD requires also that the south-facing elevation of a house is not overshadowed by adjacent buildings, trees or terrain, and that high standards of thermal insulation are used within the house. Further energy efficiency benefits can also be derived by ensuring that kitchens - a significant source of heat - are placed on the cool northern side of a dwelling, with the principal living quarters placed on the sunny southern side.

PSD methods can also be applied in non-domestic buildings to similar effect, although in some building types such as offices the emphasis changes from heat gain and towards the achievement of appropriate daylighting and effective natural ventilation. PSD methods should be considered, with other design objectives, in all new developments in Ashford.



Farnborough Grange junior school, Hampshire

Examples

- *West Oxfordshire District Council's new offices in Witney, employs PSD methods to enhance energy efficiency along with photovoltaic panels to provide some of the building's electricity.*
- *Guildford Borough Council's Parson's Green development of seven houses and four bungalows incorporates passive solar design to reduce energy costs for tenants.*
- Clerestory windows are employed at the Farnborough Grange junior school in Hampshire to minimise the need for artificial lighting on the northern side of the building even on overcast days. Overhanging eaves moderate solar gain in summer, providing a comfortable internal environment.
- Crookham Junior School in Hampshire was refurbished using a passive solar design approach – this reduced overheating in some rooms and increased the use of natural light.

ii). BREEAM ratings

The Building Research Establishment Environmental Assessment Method (BREEAM) could be used in all new developments in Ashford. BREEAM assesses the environmental quality of a development under various categories - energy⁹, transport, pollution, materials, water, land use and ecology, and health and well-being. Developments are measured on a scale of pass, good, very good and excellent. A range of different assessment schemes is available for different building types as follows.

Energy efficiency rating schemes

<i>Building type</i>	<i>Rating scheme</i>
<i>Housing</i>	<i>BREEAM EcoHomes</i>
<i>Offices</i>	<i>BREEAM 98 Offices</i>
<i>Industrial</i>	<i>BREEAM 5/93</i>
<i>Supermarkets</i>	<i>BREEAM 2/91</i>

Achieving a rating of 'excellent' for all new developments in Ashford would represent significant progress towards sustainability.

iii) Combined heat and power

Combined Heat and Power (CHP), the simultaneous generation of heat and power, is a highly efficient way to use either fossil (probably gas) or renewable fuels. There might be opportunities in large new developments for installing CHP plant - effectively mini-power stations - with associated heating networks.

Examples

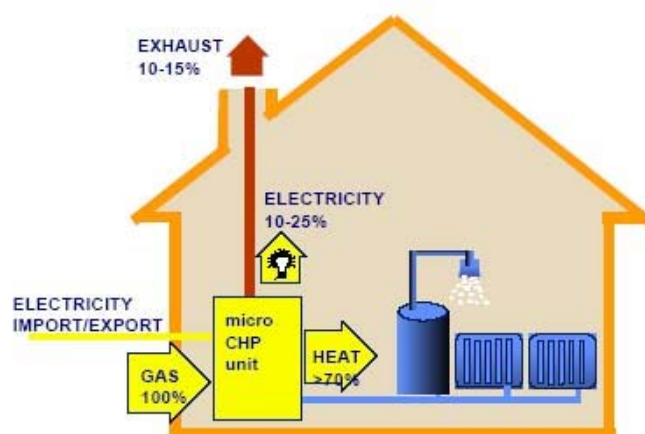
- *Woking Borough Council has a fuel cell CHP plant in the centre of the town, serving a leisure centre and housing. It also has a conventional (gas fuelled) CHP plant that includes a private wires network supplying electricity as well as heat and chilled water. Local customers include Holiday Inn, Quake nightclub, the Big Apple leisure complex and Metro Hotel, the HG Wells Conference and Events Centre, Victoria Way car park and Woking Borough Council's Civic Offices.*
- *Portsmouth City Council has a gas-fuelled CHP system that is being expanded to serve 360 homes, a school and arts centre.*

⁹ Energy issues addressed by EcoHomes include: the absolute level of CO₂ emissions, the percentage improvement across a site in average U-values versus Building Regulations, the provision of Eco-labelled white goods with "A" or "B" ratings, the provision of low energy external lighting

- *Southampton University operates a gas-fuelled CHP system serving many of the academic buildings and the sports centre.*
- *Harwell International Business Centre in South Oxfordshire has an independent network supplying about 5MW of power to a mix of commercial and industrial customers.*
- *Since the major refurbishment of the Bull Ring centre in Birmingham the retail and commercial users have been supplied on private wires.*
- *A new housing development at Newcastle Great Park, Newcastle-upon-Tyne is supplied via an independent electricity network.*

iv). Micro-CHP

Micro-gas turbines - essentially a mini-combined heat and power system that makes best use of natural gas - are now available at a size suited to domestic use. These very small gas turbines replace conventional domestic gas-fired boilers, and are approximately the same size and with similar connections. The unit responds efficiently to the varying electrical load of the property, with the waste heat utilised for household hot water and space heating.



The principle of micro CHP

Examples

- *The Carbon Trust and Powergen undertook a trial of micro-CHP in England, with several hundred units installed in 2003/04. Following this, Powergen's parent company E.ON UK, committed to buying 80,000 micro-CHP units over the next five years. The initial launch was in Hull in 2004, followed by similar initiatives in Coventry and Nottingham.*
- *A trial of micro-CHP started recently in Northern Ireland, installing units in a mix of Housing Association and privately-owned homes. The work includes considerable monitoring and aims to test both ease of use and actual energy savings.*

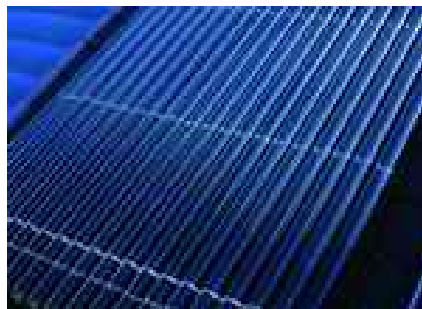
RENEWABLE ENERGY

The energy efficiency measures described in the previous section can reduce lifetime energy demand substantially, but will obviously not remove the demand for energy altogether. Further benefits can be derived if energy can be supplied from renewable sources - those occurring naturally and repeatedly in the natural environment.

The following renewable energy technologies are considered to be particularly well-suited for deployment in Ashford.

i). Solar water heating systems

These systems include the familiar solar panels that collect heat by the passage of water through matt-black pipes in a shallow glazed box, mounted on buildings so as to maximise exposure to the Sun. Solar panels provide hot water, and are typically roof-mounted to achieve the best solar exposure. An emphasis on southerly orientation facilitates the effective use of this technology.



Solar water heating panel close-up (Source: The Energy Saving Trust)

Examples

- *West Oxfordshire District Council new offices at Witney include solar water heating.*
- *The swimming pool at Hagbourne School in Oxfordshire is partially heated by solar water panels.*
- *Kent Energy Centre run a bulk discount scheme for solar water heaters called 'Sun Rise', which provides advice, information and a complete service for householders as well as reduced prices.*
- *West Kent Housing Association are installing solar thermal on 6 new houses.*

ii). Photovoltaic systems

These employ solar radiation to stimulate an electrical current in photovoltaic (PV) cells. These cells can be mounted either in panels on the exterior of buildings or, increasingly, are integrated into building materials such as cladding, glass and roof tiles. The high price of PV installations will limit their uptake in the short term. However, the Building Research Establishment anticipates that costs will fall such that a widespread deployment of the technology can be anticipated. New developments, retrofitted systems or wider refurbishment, all represent potential opportunities for deployment of PV. As such, roofs on new developments (domestic, commercial and industrial) should incorporate south-facing slopes in order to facilitate the eventual future use of PV technology.



Installation of solar photovoltaic sunslates

Examples

- *PV (and solar water heating) on nine new homes built for the Parchment Housing Group, a Housing Association, at New Lane in Havant.*
- *PV solar tiles are employed on eleven homes at Parsons Green in Slyfield, north of Guildford.*
- *Solar canopies on BP petrol stations, providing forecourt lighting.*
- *PV in 330 bus shelters in Plymouth, providing lighting and obviating the need to dig up roads to make connections to the local electricity network.*
- *14.8kW of PV being installed on Quest International, oral care compound and warehousing complex, Ashford, Kent, as part of a bigger programme of enlargement and refurbishment.*

Another possibility is mounting large arrays of photovoltaic panels, orientated so that they are south-facing, alongside major travel routes such as trunk roads or railway lines. (A modest pilot scheme can already be seen beside the M27 between Portsmouth and Southampton.) If appropriate these could be combined with noise shielding for residents. In Ashford the EuroStar rail line may offer a particular opportunity for this type of development.

iii). Wind energy

Wind energy is a mature technology capable of generating power at prices only marginally above those of fossil fuels. Wind turbines can be deployed singly, in small groups or clusters, and at "farm" scale - either on- or off-shore. Across the South East in general, and Ashford in particular, individual turbines and small clusters will be the most appropriate scale of deployment for the majority of circumstances.

There are different options, depending on scale:

- *Large wind turbines (50kW-3.0MW)*
- *Small scale free standing turbines (2-15kW)*
- *Small scale building-mounted turbines (0.4-6kW)*

To give an impression of size, a 1.5MW turbine might have a tower height of about 60 metres and a rotor diameter of around 70 metres. Large scale wind turbines might be suitable for installation on industrial estates where there is sufficient space for the turbines to be far enough away from buildings. Small scale free standing turbines, typically with a tower height of 5-10 metres and a rotor diameter of about 3.5 metres, can be suitable where there is a reasonable amount of open communal space, such as school playing fields.

Building-mounted turbines are becoming commercially available, with rotors up to 4 metres in diameter and offering up to 6 kW in generation capacity. This is a new technology developed within the last decade that looks set to become increasingly popular. Installing building-mounted wind turbines will normally require planning permission but should not be confused with larger conventional turbines as the hub will rarely stand more than three metres above a roof apex.

Examples

- A 6kW Proven wind turbine, 12.5 metres in height, was installed in May 2005 at the High Barn visitor centre at Itchen Valley Country Park, Eastleigh.
- A 250 kW turbine (30 m tower height, rotor diameter 26 m) is being installed in Swansea docks in June 2005, on an industrial site owned by Associated British Ports (ABP), in a project led by the City and County of Swansea.
- Car manufacturer Ford has installed two 1.8MW wind turbines at its Diesel Centre in Dagenham – these provide enough electricity to power the engine factory.
- Several schools have installed wind turbines – including Cassop School, Country Durham (50kW), Brill School in Buckinghamshire (6kW), and Nidderdale High School & Community College, in Pateley Bridge near Harrogate (25kW).



A small-scale free standing wind turbine

iv). Biomass heating and CHP

Organic materials such as straw, wood, energy crops and agricultural waste can be used as a source of heat. The technology is well proven and has widespread applications from a domestic level through to large-scale district heating or CHP systems. The availability of large volumes of wood chips from the maintenance of woodlands, parks and roadside vegetation in Ashford could provide a ready source of fuel for such systems.

Examples

(All but the final examples provide heat only)

- The Sustainability Centre, East Meon, Petersfield
- Hampshire Wildlife Trust's new HQ, Botley
- Environment Centre on Holywell Mead, High Wycombe
- Norbury Park Sawmill, Surrey
- Oakengates Leisure Centre in the Borough of Telford and Wrekin
- Worcestershire County Council's offices
- *A biomass-powered CHP plant was installed at the BedZED scheme in South London. This plant uses tree surgery waste and post consumer waste from wood and paper mills.*
- *Warwickshire County Council is considering using a biomass CHP system at the Camp Hill Urban Village in Nuneaton. This is the largest regeneration project in Warwickshire. It involves the redevelopment of over 450 occupied houses and their replacement with 620 new homes.*
- *Sheffield City Council already has an extensive conventionally-powered CHP network and is considering extending it to serve 900 existing flats, two schools, a college, an old people's home and local shops.*

v). Anaerobic digestion

This is the breakdown of organic wastes in the absence of air to produce a methane-rich biogas, which can be used for energy production either by burning in a gas boiler, or in a gas engine linked to a generator to produce electricity. A range of organic wastes can be treated in this way, including animal slurries and manures, wastes from food and drink manufacture and the organic fraction of municipal solid waste (MSW).

vi). Heat pumps

Ground warmth can be collected by circulating water through pipes embedded into the ground underneath or adjacent to a building. In Kent, soil temperatures only a few inches below ground are of sufficient warmth to allow energy to be abstracted and condensed, providing usable heat for some kinds of space heating system¹⁰. Some ground source heat pump systems are 'reverse-cycle' and so can deliver cooling in summer - using much less energy than conventional air conditioning.

The greater the depth of the embedded pipe, the greater the soil temperature and therefore the amount of heat accumulated. Buildings beside areas of open space could benefit from this technology. It is most cost-effective to install these during construction.

¹⁰ Ground source heat pumps have some limitations due to the maximum hot water temperatures that they can supply. Underfloor heating systems tend to be best suited to use of GSHP.

As well as ground source heat pumps, air source and water source heat pumps are also possible and work on the same principle.

Examples

- *Ground source heat pumps are being installed to serve a group of houses in the North York Moors National Park*
- *Heat for the village hall in Gamblesby, a small farming community near Penrith in Cumbria, is provided by a ground source heat pump.*
- *Ground source heat pumps have been retrofitted to 14 old person bungalows owned by Penwith Housing Association, Ludgvan, Cornwall*
- *Ground source heat pumps were fitted to 6 new homes for Westlea Housing Association, in Bushton, Wiltshire*
- *Ground source heat pumps have been retrofitted to 18 houses in Lumphinans, Fife for Fife Special Housing Association.*
- *Air source heat pumps are to be installed to serve a development of up to 40 homes in Cumbria.*

RENEWABLE ENERGY RESOURCES IN THE ASHFORD AREA

Regional Planning Guidance for the South East¹¹ has identified regional and sub-regional targets for deployment of renewable energy electricity generating technologies. These targets have been accompanied by indicative breakdowns of technology types and scales, based in turn on work carried out for both SEERA¹² and GOSE¹³. These studies are not prescriptive about the technology deployment but seek instead to illustrate the possibilities based upon an appreciation of the technical, economic, social, infrastructural, environmental and other implications of renewable energy sources.

Within this body of information, indicative breakdowns of the prospects for each County authority across the South East have been prepared. To show how these indicative breakdowns might be relevant to Ashford BC, some of the key data for Kent are illustrated below.

¹¹ "Harnessing the Elements", Energy Efficiency & Renewable Energy, May 2003

¹² "An Assessment of the South East's Renewable Energy Capacity and Potential to 2026", AEA Technology / Savills, May 2002

¹³ "Development of a Renewable Energy Assessment and Targets for the South East", January 2001

Technology type	Indicative number of schemes in Kent by 2016
Small-medium scale biomass combustion	Up to 4
Anaerobic digestion of green wastes (e.g. municipal cuttings)	8
Single wind turbines (at different scales)	36
Domestic scale photovoltaic installations	1300

In addition to the above, small-scale heat-producing renewable energy technologies such as solar water heating and building-installed biomass boilers are likely to figure strongly in future deployment, but were not included explicitly within the assessments above.

For Ashford BC, it can be inferred that these technologies are likely to form the basis for prospects across the Borough. In particular, the strong existing context for housing and mixed developments suggest that solar technologies, small-scale biomass and - possibly - small on-site wind generators, may be considered.

The large scale expansion of housing in the Borough, with probable associated new industrial and commercial development, offers particular opportunities for these sustainable energy technologies. All of the technologies mentioned would be lower cost being built into new developments, rather than retrofitted. The large scale of new developments opens up the possibility of the larger scale energy developments, such as biomass and gas CHP and private wires development. For individual household technologies the high numbers involved opens up the chance for extensive bulk discounts, reducing costs further. Furthermore careful design of the fabric and orientation of the buildings can maximise the usefulness of these local energy sources and substantially reducing the need for imported energy.

The converse to this is the risk that if this opportunity is missed developments will be built which will consume unnecessarily large amounts of energy for a long time to come.

STRATEGIC OPPORTUNITIES IN ASHFORD

The Greater Ashford Development Framework

The site-specific commentaries in this chapter provide a general impression of the of sustainable energy opportunities available at other development sites in the Borough of Ashford. This is all the more the case in the major urban extensions proposed on the periphery of the town. Because these new neighbourhoods are expected to bear the burden of meeting Ashford's sustainability commitments, a thorough, planned approach will be

essential. This is recognised in the emerging *Ashford Core Strategy* and is evident also in the emerging *Ashford Green Charter* document.

Ambitious energy targets are proposed likewise in the *Greater Ashford Development Framework*, although we would query the extent to which this thinking has influenced the master-planning process. Taking PSD as an example and as highlighted earlier in this chapter in the context of the Cheeseman's Green site, a standard dwelling with fenestration oriented east-west will have space heating demand 15% higher than the same dwelling would if oriented north-south, because it reduces the ability of the building to benefit from solar heat gain. Likewise, a dwelling oriented south-west to north-east will have space heating demand 9% higher than a south-facing equivalent.

The *Greater Ashford Development Framework* proposes that the town's new neighbourhoods should be laid out in a rectilinear grid. If the main spine roads in the grid were laid out broadly on a north-south or east-west axis, then the provision of a sunny southerly aspect for most dwellings would be facilitated. However, the orientation of spine roads and their associated neighbourhoods appears to be determined more by reference to abstract geometrical principles rather than site-specific considerations such as terrain, the presence of existing landscape features, and passive solar design considerations. Open-ended grid layouts can also suffer from wind tunnel effects and exposure to cold winds that, in winter, can result in a further increase in heating demand.

It is acknowledged that the detailed master-planning of these neighbourhoods might provide an opportunity to address these considerations. Nonetheless, the GADF illustrates the consequences that urban design decisions taken at the earliest planning stages can have for the sustainability of the development. Given that Ashford is committing itself to ambitious energy targets, it is suggested that the energy savings implicit in a passive solar design approach are too significant to overlook, and need not be at the expense of wider urban design objectives – including the gridiron concept.

Other strategic opportunities

The general opportunity for a biomass CHP scheme in the Ashford area has already been acknowledged in the context of the larger sites reviewed earlier in this chapter. There is a large wood fuel reserve from enhanced woodland management in the Ashford area and potential to grow short rotation coppice to provide a supplementary fuel source in the longer term.

Another opportunity considered worthy of consideration is the installation of either a single large wind turbine or a wind cluster alongside the M20 motorway and/or the international rail

corridor. These could be branded to provide 'gateway' features for Ashford, and could provide a welcome landmark on what is a relatively bland and featureless section of the M20. Potential sites include the area around the Ashford wastewater treatment works and the industrial estate on the opposite side of the motorway.

Subject to an analysis of the available wind resource, three wind turbines of - for example - 1.5 MW generation capacity could provide electricity equivalent to the demand of at least 4,000 dwellings, and would thus make a substantial contribution towards the fulfilment of Ashford's energy targets.

In practical environmental terms, the sites suggested should be remote enough from housing and other sensitive land uses to avoid problems with noise and shadow flicker. In any event, modern wind turbines are not noisy and localised noise would be swallowed up by that generated by motorway traffic. Whereas there was once concern that wind turbine development beside major roads might result in driver distraction, the RAC has more recently become supportive of wind turbine development near roads in that they provide a landmark and help to address the greater dangers of driver boredom and loss of concentration. The Lambrigg wind farm beside the M6 motorway in Cumbria provides a larger-scale precedent for such a scheme.

Two ◆ Sustainable energy policy options for Ashford

AVAILABLE POLICY INSTRUMENTS

There is a variety of existing policy instruments for achieving sustainable energy policy goals at the local level. However these instruments vary substantially, both in their approach and their status. Their characteristics are summarised briefly in the Table below.

INSTRUMENT	APPROACH	STATUS / LIMITATIONS
Building Regulations (Part L)	Compliance with standards	Mandatory. New construction / renovation / material change of use
EU Energy Performance in Buildings Directive ¹⁴	Promotion of building energy performance improvements	Mandatory. All buildings – mainly being implemented via Building Regulations
BREEAM (via EcoHomes / BREEAM Offices and other rating systems)	"Good practice" rating of building environmental performance	Voluntary. Does not apply to all building types. Good coverage of sustainability issues.

¹⁴ The EU's Energy Performance of Building Directive (2003) must be implemented by Member States by January 2006. ODPM is currently developing the Government's proposed approach to each of the articles that it contains.

		Energy not a focus
Greater Ashford Development Framework / Development Plans / LDFs	Regulation of land use in the public interest. Sustainable Development is now the “key purpose” of the planning system.	Precedent for coverage of energy issues still developing. Can be flexible for development type. Allows wider site layout, form, and orientation issues to be addressed.

To understand the extent to which these separate policy instruments might help to achieve energy policy goals for Ashford, whether singly or through their combined effect, we review briefly below the likely characteristics of each of the above instruments within the Ashford context. Within this review we also take account of the design code work that is being undertaken separately for Ashford by ECD and others¹⁵.

BUILDING REGULATIONS

Historically, amendments to improve the standards of energy efficiency within Part L of the Building Regulations have come into effect in 1990, 1995 and 2002. The final Regulatory Impact Assessment for the 2002 changes¹⁶, published in October 2001, estimated that these improvements would raise the performance of new dwellings by about 25% (adding around one to three per cent to construction costs), and significantly improve the performance of replacement boilers and windows. Similar performance improvements were introduced for buildings that are not dwellings. The cumulative effect of the 2002 changes on carbon emissions in 2010 was estimated to be a saving of 1.4 M tonnes per year.

The most recent proposals for amending the Building Regulations¹⁷ were issued for consultation in July 2004 and would, if implemented, again lead to an improvement in the energy efficiency of new buildings of around 25%. Principal features in the proposals include setting performance standards for buildings as a whole rather than for construction and services elements (in line with the new EU Directive) and to firm up on pre-completion testing of airtightness. Improvements on a lesser scale would also be obtained whenever people carry out work on existing buildings. These improvements are due to come into effect in 2005.

¹⁵ “Ashford Green Charter – Delivering Sustainable Development”, Ashford BC, ECD, Max Fordham, CABE – draft June 2005

¹⁶ Regulatory Impact Assessment of the 2002 Bldg. Regs., Part L – Conservation of Fuel and Power (ODPM, October 2001)

¹⁷ Proposals for Amending Part L of the Building Regulations and Implementing the Energy Performance in Buildings Directive (ODPM, July 2004)

The Building Regulations address both the construction of new buildings and the alteration and extension of existing ones. Amendments to Part L are now paying much greater attention than previously to work in existing buildings. In ODPM's view, such an emphasis is important, given the goal of reducing total carbon emissions. The existing stock of dwellings for instance numbers around 24 million and the UK is proposing to continue to build about 180,000 new units per year. Since turnover in the building stock is minuscule (ca. 1% per annum), it is important to improve the existing stock as well as to improve the standards for new buildings.

However, within the Ashford context, the rate of progress for energy performance improvements within the Building Regulations - on both new build and existing dwellings – could be seen as insufficient. The major expansion of Ashford foreseen within the Sustainable Communities Plan (31,000 new homes by 2030) implies a doubling of housing across the Borough within a 25 year period. Such an implied increase in energy demand across Ashford would make the local achievement of the Government's "60% cut in CO₂ emissions by 2060" aspiration virtually impossible without further complementary (and currently non-mandatory) measures, designed to improve the energy performance of new and existing building stock.

THE EU ENERGY PERFORMANCE IN BUILDINGS DIRECTIVE (EPBD)

This Directive was published in January 2003 and requires Member States to transpose its requirements into national law by January 2006. The Energy White Paper welcomed the EPBD and the UK is aiming to implement its provisions primarily through the currently proposed changes to Part L of the Building Regulations.

The aim of the Directive is to promote building energy performance improvement within the European Union, rather than to set specific targets. It lays down requirements for calculating energy performance in accordance with a national standard, making the results of such calculations known to prospective purchasers and tenants whenever buildings are constructed, sold or rented out, and for the display of such results in certain larger buildings that are occupied by public authorities. The principal provisions of the EPBD are set out in the Table below.

Principal Requirements of the Forthcoming EPBD

Article	Requirement
4	Setting of energy performance requirements. Minimum performance levels for different buildings (including existing) must be based on a methodology
5	New buildings. New buildings over a useful floor area of 1000m ² shall have technical, environmental, and economic alternative systems such as CHP, district heating, heat pumps
6	Existing buildings. When a building over 1000m ² useful floor area undergoes major renovation, energy performance shall be upgraded where technically, economically and functionally feasible

7	Energy performance certificate. When buildings are constructed, sold or rented out, an energy performance certificate shall be made available to the owner or by the owner. For buildings occupied by public authorities and institutions an energy certificate should be displayed in a prominent place clearly visible to the public
8	Inspection of boilers. Regular inspections of boilers OR the taking of steps to ensure that user advice is available
9	Inspection of air conditioning systems. Regular inspection of air conditioning systems

For Ashford, it can be anticipated that these changes may have a useful - but perhaps not critical - influence on the local energy in buildings context. Most of the provisions above apply to existing buildings and the provision of market information for existing buildings. Under circumstances where the bulk of Ashford's prospective new housing stock is likely to enjoy significantly better energy performance than most of its current stock, the requirement for Energy Performance Certificates may have an influence on the local housing market by encouraging a greater recognition of the benefits of low-energy design.

ENVIRONMENTAL RATINGS

The use of environmental ratings or other comparable scoring systems has acted as a competitive spur to parts of the construction industry, encouraging their use as a marketing tool within individual developments or across the whole range of development activity. The most notable of these environmental rating systems is the suite of BREEAM (BRE Environmental Assessment Method) calculations developed by the Building Research Establishment, which covers homes (EcoHomes), offices (BREEAM Offices) and other building types. EcoHomes awards environmental performance on a scale from "Pass" to "Excellent".

There are many potential advantages to be gained from applying environmental ratings as a sustainable energy policy tool. For the specific case of EcoHomes (currently being considered for such a role within the current draft of the Ashford Green Charter), these advantages include:

- The wide treatment of all sustainability issues, not just energy
- An accepted, easily understood and credible rating system
- Ecohomes' aim to encourage innovation and promote building above minimum requirements
- The demonstration of sustainability credentials to a wide variety of audiences including investors, developers, planning authorities and customers

- Some evidence that private developers would support a simple sustainability label and that it would help them deliver sustainability within a planning brief¹⁸ (paradoxically, the Local Authority Planning Departments consulted as part of this study did not agree, expressing concerns that a particular label could be open to legal challenge and deemed too restrictive)

For these reasons it seems appropriate that Ashford Borough Council should now be seeking to explore the more formal adoption of EcoHomes as a policy tool in support of sustainable development for housing across the Borough. However it should be borne in mind that there could be a number of drawbacks to this approach:

- The flexibility of Ecohomes is also one of its possible weaknesses. For a particular development assessment, there is no guarantee that energy issues will have been given special priority within its' wide-ranging rating, although the probability that energy issues are well-addressed will increase as the overall rating increases;
- Ecohomes – in common with most other environmental labelling schemes – is exclusive. This means that it only “rewards” the higher echelons of performance rather than requiring a rating for all development and refurbishment (as do the Building Regulations)
- Ecohomes can only be applied to new homes and refurbishments
- Despite its breadth and ambition, EcoHomes is not universal. The very narrow rating of EcoHomes “Excellent” achieved by the carbon neutral BedZED development in South London appeared to show scope for possible improvement in the assessment procedure¹⁷. This was due to the fact that EcoHomes could not fully reflect all of BedZED’s pioneering approaches

THE PLANNING PROCESS

The energy content of planning policy has been given a significant boost within the recently published Planning Policy Statements PPS1 and PPS22. These documents make clear that energy issues are properly matters for attention within the planning system, as part of the general intention to promote and encourage sustainable development.

Para 22 of PPS1 states that

- “Development plan policies should seek to minimise the need to consume new resources over the lifetime of the development by making more efficient use or reuse of existing resources, rather than making new demands on the environment; and should seek to promote and encourage, rather than restrict, the use of renewable resources”

¹⁸ “A Study into the Development of Sustainability Ratings for Homes”, Bioregional Development Group for the Advisory Committee on Consumer Products and the Environment, May 2003

- “Regional and local authorities should promote resource and energy efficient buildings, community heating schemes, the use of combined heat and power, small scale renewable and low carbon energy schemes in developments”

Within this context, Ashford’s growth area status provides an appropriate and timely opportunity to develop local policy approaches that can fulfil these national ambitions. There are now many emerging examples of local policy making of this kind. A cross-section of such approaches is appended to this document.

Ashford’s intention to adopt the use of EcoHomes and potentially other environmental ratings within future policy approaches will make a valuable contribution. Beyond this, it is recommended that Ashford BC should:

- Consider strategic opportunities for the deployment of sustainable energy, as discussed in Section 3;
- Seek to develop its own bespoke local planning policy approaches to energy to add to its sustainable energy portfolio, taking advantage of the rapidly emerging local precedent in this area;
- Consider innovative approaches to the supply of energy through the Energy Service Company concept

Further detail on the latter two recommendations is set out below.

NEXT STEPS

Policy pointers

The appendix to this report provides a range of sustainable energy policy examples from other local and unitary planning authorities in the UK, and are illustrative of how the permissive approach to such policies set out in *PPS22: Renewable Energy* is being applied.

Ashford is already well advanced in establishing policies and targets in the core strategy, comment on which has been provided by letter. To reflect these broad policies and targets, it is recommended that Ashford BC considers the following approaches.

- the inclusion of site-specific sustainable energy requirements in site-specific allocations and area action plans. In keeping with current government advice, these policies can be criteria-based, perhaps as a means of offering developers options for compliance, or

they could set specific targets for on-site generation along lines favoured by the London Boroughs;

- policies promoting the physical and architectural integration of sustainable energy technologies and design methods into new development, having regard to Ashford BC's wider concern to achieve high standards of urban design;
- supplementary planning documents explaining in detail how the various targets set out in the Core Strategy are to be achieved in individual developments. The SPD could include modules on individual applicable energy efficiency and renewable energy methods and technologies, as outlined in this report, and could provide guidance on considerations such as siting and design integration. CHP, PSD and the integration of active solar and photovoltaic systems are obvious topics for supplementary guidance. For the largest areas of development land, it might be appropriate to publish site-specific sustainable energy SPD.

An important consideration with SPD is one of timeliness. The advice should be in place from the earliest stages of a site's development process in order to inform negotiations, make the council's requirements clear and influence the master-planning process. SPD can be less effective if introduced at a later stage when fundamental decisions on development form might already have been made, and when the only remaining opportunities are for 'bolt-on' solutions.

Consultations

In taking forward the policies of the core strategy and other development plan documents, it is recommended that the property development and construction sectors, including house builders, are the target of specific consultations with respect to Ashford's sustainability targets. The technical deliverability of the targets within the timescales envisaged should be examined carefully and if necessary refined in order to ensure that they are attainable and can be defended from challenge at a later stage.

An energy services company for Ashford

Delivery of CHP and other energy systems at a neighbourhood scale could be promoted by the establishment of an energy services company. There are several models to examine, but we would recommend close examination of the approach taken by Woking Borough Council through its wholly-owned company Thameswey Limited. The company's board members are

drawn from senior council officers. It has developed a 'sustainable energy system' providing distribution infrastructure that will last many decades, but allowed fuel sources to be changed on shorter timescales. This has meant that, whilst gas-fired CHP was the main generator in 2004, renewable sources can be brought on line at some future time. PV systems are systematically being installed.

Woking has established its own 'private wire' electricity distribution network to connect its powers stations to Council office and residential properties. Energy efficiency measures have been implemented in the council's own buildings, and Thameswey also coordinates Home Energy Conservation Act (HECA) work in the Borough. Further projects are being promoted through Thameswey Energy Limited, a joint venture company 80% owned by a Danish pension fund.

A similar model to consider in Ashford would be an energy services company managed by a trust of council, landowner and developer interests, funded partly through developer contributions and tasked with assisting developers in practical ways to deliver Ashford's sustainable energy targets.

Appendix D References

Sustainable Design & Construction

- Reading Core Strategy - Policy CS 1 Sustainable Buildings.
- BREEAM and EcoHomes: <http://www.breeam.org>
- The contents and references of the remaining model policies in this report could be used as an outline for the topics to be covered in a sustainability statement
- Considerate Constructors Scheme: www.ccscheme.org.uk
- The Code for Sustainable Homes is anticipated to provide a benchmark of performance for new housing from 2007 onwards.
- Kent Design Guide (2006)

Carbon Emissions

- Reading Core Strategy has set a renewables only target of 15%. The draft review of the London Plan Policy has proposed a 20% renewables only target. Aggregating the carbon impact of building performance, renewables and efficient supply allows the developer to provide the optimal mix of design responses appropriate to the site, uses and management
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- The Mayor's Energy Strategy, Proposal 13. Available: <http://www.london.gov.uk/mayor/strategies/energy/download.jsp>
- London Borough of Merton, proposed LDF policy, Woking, Barking and Dagenham and many other policies relating to 10% renewable energy.
- London Renewables (September 2004) 'Integrating renewable energy into new developments: Toolkit for planners, developers and consultants'. Greater London Authority. Available: <http://www.london.gov.uk/gla/publications/environment.jsp>
- Energy Saving Trust (2002) 'Energy Efficiency Standards for New and Existing Dwellings'. Available: <http://www.est.org.uk/housingbuildings/publications/>
- For training events, technical support, a range of free publications and information on the EST Energy Efficiency standards for both new and existing dwellings go to <http://www.est.org.uk/housingbuildings/professionals/>
 - London Renewables 'Integrating renewable energy into new developments: Toolkit for planners, developers and consultants' (2004)
 - Town and Country Planning Association 'Sustainable Energy By Design' (2005)
 - Energy Savings Trust 'Meeting the 10 per cent target for renewable energy in housing - a guide for developers and planners (2006)
 - Milton Keynes Carbon Offset study, 2005 (National Energy Foundation)
 - Planning Policy Statement 22: Renewable Energy (ODPM)
 - Planning Policy Statement 22: Renewable Energy; A Companion Guide (ODPM)

Water Use

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- Envirowise: www.envirowise.gov.uk

- Waterwise: www.waterwise.org.uk

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- Reading Borough Council, Core Strategy, Policy C1. Available: <http://www.reading.gov.uk/environmentandplanning/planning/localplanningpolicy/localdevelopmentframework/General.asp?id= SX9452-A7815E38>
- North West Regional Assembly, Draft Regional Spatial Strategy, Policy EM5. Available: <http://rpg.nwra.gov.uk/planning/spatial.php>
- CIRIA (2005) 'Sustainable Water Management in Land Use Planning'. Available: <http://www.ciria.org/acatalog/C630.html>

Construction Waste

Sources of Policies

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